

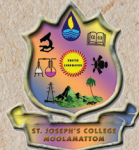
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EDITORIAL

The dawn of this decade witnessed the unmanageable hike of bogus information which disoriented the masses with their verisimilitude. The reliable source of information is imperative in this world of information explosion. ***Josephine Researcher-IV***, the novel initiative of St. Joseph's College, Moolamattom, brings together the likeminded researchers, scientists, social activists and faculty members belonging to various disciplines to contribute the veritable piece of information to the treasure chest of knowledge. The outcomes of explorations and experiments which infuse life to the pages enthuse the readers with insightful and inconclusive piece of information. This volume which affirms quality rather than the quantum of knowledge reiterates the interdisciplinary of research paradigm and spurs further researches.

This interdisciplinary research book, which functions as energy pathway, offers dynamic platform for the creative minds to disseminate the distilled knowledge for the inquisitive minds. The treasure trove of knowledge unravels itself before the explorer and demystifies the plurality of knowledge it eludes. On this occasion, we are thankful to the contributors, who are like Alfred Lord Tennyson's Ulysses says, "yet all experience is an arch whereto/Gleams that untraveled world whose margin fades/ Forever and forever when I move". The paramount role of the readers in bridging the energy pathway is appreciated on this context.

We are extremely grateful to our manager **Very Rev. Dr. Fr. George Edayadiyil CMI** for his insightful support. We are thankful to **Rev. Dr. Thomas George CMI** (*Our Local Manager and Chairman of the advisory board*). The inspiration and ingenious support of **Dr. Ebey P. Koshy**, our Principal is to be reckoned on this occasion for infusing life to this resource book. We also express our gratitude to Rev. Fr. Libin Valiyaparambil CMI, our Bursar.

The present issue (fourth Volume) includes nine research articles from science, four from social science and twelve from literature. We expect that these articles of primary and secondary nature would enable us to have a share in creating a more harmonious world.

Dr. Jose James
Dr. Joseph George
Mr. Roby Mathew

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EDITORS



Dr. Jose James

Dr. Jose James is serving as Assistant Professor in the Post-graduate and Research Department of Chemistry since 2011. He has extensive research experience in the field of polymer science under the guidance of Prof. Sabu Thomas, Vice- Chancellor of Mahatma Gandhi University, Kottayam. He has six international publications in per reviewed International Journals. He edited 2 International and 3 National Books. He has co-authored 7 International and 4 National Book chapters. He has been served as the Associate Editor of *Josephine Researcher* for the last three years. He has attended more than 20 International Conferences and presented 14 research papers. He has been serving as a reviewer of number of International Journals like *New Journal of Chemistry (RSC)*, *Nanoobjects (Elsevier)* etc... He served in the college as various capacities like staff secretary, PTA secretary, NSS programme officer, College Union staff advisor etc. He is a motivational speaker and performed as quiz master in various intercollegiate and Inter University competitions.



Dr. Joseph George

Dr. Joseph George joined the service in 2004 and presently acting as the Head, Department of Management Studies and IQAC Co-ordinator of the College. He did Doctoral Degree in the area of Human Resource Development & Labour Laws. He is a Post Graduate both in Commerce and Management. He is a graduate in Law and took Post Graduate Diploma in Human Resource Management. He is a Member of Board of Studies and acted as Chairman of various Board of Examinations. He is the executive committee member of Grand Academic Portal (Education), Ahmedabad registered under the Ministry of Finance, Govt. of India. He has worked as the Certified Financial Resource Person of Securities Exchange Board of India and acted as the Editorial Board member of GAP Global Journal of Social Sciences.



Sri. Rony Mathew

Sri. Roby Mathew, Assistant Professor and Head, Department of English, St. Joseph's College, Moolamattom, has been serving as the Chief Editor of *THROBS*, the annual newsletter of the college for the last three years. Having undertaken a Minor Research Project and a few publications in National and International journals, he has a stint of research experience to his credit. Pursuing his Ph. D programme in American nautical fiction, he has also been serving as the staff editor of college magazine for the past few years.

ACADEMICS FOR HOLISTIC AND FRUITFUL LIFE

Rev. Dr. George Edayadiyil

Provincial
St. Joseph's Province, Kottayam

As St Joseph College, Arakulam publishes the 2021 edition of Josephine, let us reflect on our mission. Our college situated on a very beautiful, serene, and picturesque hilly area in the district of Idukki in the high ranges is established for the seekers of knowledge and wisdom. We focus on quality based, disciplined, holistic, inclusive and Glocal approach as a centre for study, teaching, learning, research, service and holistic formation of the young minds. That is about the creation of an ambience in which this process happens naturally with the team work of all the stake holders, namely, the students, the staff, the parents, the university, the management, the well-wishers and the general public. Education is a team game where all the stake holders are integral parts working together with the single aim of inspiring and empowering the new generation in a holistic way for their own good and their families, societies and nations.

Our Interconnectedness

An anthropologist proposed a game to a tribe of *Nguni* children in Southern Africa. He put a basket of sweet fruits about 30



meters away and told them that whoever touches it first, can have the entire basket of fruits. He blew the whistle, so that they may start running. To his amazement they did not run alone, but rather they took each other's hands and ran together, then they sat together enjoying the treats. When he asked them, why they did not run alone for the basket, to have it all for oneself, they said: UBUNTU, and said how can one of us be happy when others are sad? Ubuntu is a *Nguni Bantu* term meaning "humanity." It is often translated as "I am because we are," or "humanity towards others," but is often used in a more philosophical sense to mean "the belief in a universal bond of sharing that connects all humanity." Over



two thousand years ago, black people of Africa developed a collective meaning to life, to describe the kind of relationship an individual person is expected to have with their family, community, society, environment and their spiritual world.

In our globalized and digitalized world, the common and shared bond is something that is to be given a better attention. The virtual, the imaginative and the ideal world makes us strangers in the real world of imperfections. The tendency of the day, is to grow alone rather than growing together. This is becoming true even in families. Pope Francis in his recent Encyclic letter, *Fratelli Tutti* quoting Pope Benedict XVI, highlights this aspect when he wrote: “society becomes ever more globalized, it makes us neighbours, but does not make us brothers.” He further writes: “Nobody is saved alone.” The pandemic COVID 19 has unequivocally shown the interconnectedness of humanity.

At times we blame the system and the challenges that we face, to escape from our own responsibilities and commitments as members of one human family. George Bernard Shaw said, “People are always blaming their circumstances for what they are. I don’t believe in circumstances. The people who are born on in this world are the people who get up and look for the circumstances they want, and if they can’t find them, they make them.” People create better circumstances where things happen. Such people create history. History is not something that happens, great men and women create history facing all the challenges and threats. It is true in the history of any institution and for our college too. There are people who stood against the odds to create the legacy of this

college. Learning history is about learning what we are and what we can be.

CMI Education Vision

The St Joseph College, Arakulam is a Christian catholic minority institution. The Catholic Church in India runs around 50,000 educational institutions including 400 colleges, six universities and six medical colleges. The CMI congregation runs over 400 schools, 39 colleges and a university. In the Bible, Proverb 29:18 says: “Where there is no vision, the people perish.” The CMI congregation has a profound and inclusive education vision of integration that rests on five pillars: 1) Holistic Education; 2) Value Education; 3) Quality Education; 4) Co-operation of Families; and 5) Social Commitment. The education vision of our college is rooted in these.

The Basic Reference Point

CMI Education mission has a reference point and a long legacy that comes from the life, spirit and vision of St Kuriakose Elias Chavara, the mystic founder of CMI congregation who was deeply involved in the socio, cultural and educational empowerment of the people of the 19th century Kerala. The starting of the Sanskrit school at Mannanam, Kerala in 1846 marks the beginning of the CMI legacy of education. This was something unimaginable in Kerala society of the 19th century which was very divided on various ways: caste, creed, colour, etc. According to K.S. Radhakrishnan, the renowned philosopher and the former Vice-Chancellor of Sanskrit University, Kalady, St Chavara’s revolutionary step in starting the inclusive Sanskrit school was instrumental in forming a common



public in the society of that time. Later in 1866 he inspired all the churches to start inclusive elementary schools associated with them, with the threat of the closer of the Churches otherwise.

Rooted in that legacy and through years, CMI holistic education philosophy has flowered and it aims: "...to form leaders who are intellectually competent, spiritually mature, morally upright, psychologically integrated, physically healthy, and socially acceptable; who will champion the cause of justice, love, truth and peace." As per CMI education policy, "education is the integral formation of the human person for the fulfillment of his/her individual and social responsibilities." Our education mission aims at individual and social transformation. "We aspire towards creating a just and humane society where dignity of the human person is respected, where unjust social structures are challenged, where our cultural heritage of ahimsa, religious harmony and national integration is upheld, and where the poor and the marginalized are especially taken care of." The challenging education vision of our college is integrally connected with the aspirations and the dreams of our mother land.

It is the commitment to the realization of the holistic individual and social welfare that has to inspire us in our education mission of excellence to go forward with passion, thanking God for the showers of blessings that we received from him all these years as an education institution. We are to be the faithful care takers of that noble legacy coming from our founders and nurtured by people who walked before us these years. Let us be grateful. The Motto of our college is "truth liberates."

The way to freedom is the way of truth. This is rooted in the Biblical and the Indian traditions. Knowledge dispels darkness of ignorance and fills the heart of all with the light of truth. This is the mission of the college. We shall not forget that there are people, systems and ideologies that try to keep people away from knowledge and wisdom feeding on the ignorance of the poor people.

Dreams of Our Land

The noble legacy of our nation that is enshrined in the preamble of our constitution makes us feel proud of our nation and of our ancestors: WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens: JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship; EQUALITY of status and of opportunity; and to promote among them all; FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation. Right now, whether the pillars of Indian democracy, namely, the legislative, executive and judiciary are working together to realise the dreams enshrined in our constitution? The signs of the times, liberalism, popularism and divisive politics and religions are forcing us to think otherwise. Are the Indian dreams on anvil today after 74 years of independence? Are the generations that fought and brought us the freedom based on the age-old Indian values and ethos becoming strangers to us?

In a changing society, how far do the changes make the society cultured and civilized? Are the changes for good? Here is a story of a man who wrote a letter to a



hotel asking permission to accommodate his dog. "I would very much like to bring my dog with me. He is well groomed and very well behaved. Would you be willing to permit me to keep him in my room with me at night?" In reply the hotel owner wrote: "I have been operating this hotel for many years. In all that time, I've never had a dog steal towels, bedclothes or silverware or pictures off the walls. I've never had to evict a dog in the middle of the night for being drunk and disorderly. And I've never had a dog run out on a hotel bill. Yes, indeed, your dog is welcome at my hotel. And if your dog will vouch for you, you're welcome to stay here, too." A beautiful reply indeed. It speaks volumes about the distorted human nature and the unpolluted goodness of creatures and nature. All our developments and growth need to make us more cultured and refined, more open and generous, more inclusive and integral, more creative and happier, more grateful and giving, and more authentically human and deeply spiritual. Let us pray and act for the realization this dream.

Change Agents in a Changing World

We are living in an ever changing and challenging world that moves at a tremendous pace. The pandemic COVID 19 has brought in a new normal which was unthinkable a year back. The time has changed and we too have changed. At this time of history, we shall train the young ones for life rather than for jobs. The great Greek philosopher Heraclitus wrote: "The only thing that is constant is change." Change is an eternal reality that we encounter on a day-to-day basis. Science says that for an average person the cells totally change within a span of seven years. We are constantly created

anew. How can we cope up with these changes in this ever-changing world? In this digitalized and globalized netizen's world, people are getting divided with narrow-mindedness. At times, people tend to become barbarians in our age. How can we create a better world of peace and harmony?

In such a fast changing world our education vision, mission, policies and strategies are to be constantly reinterpreted, updated and made alive by critically and creatively responding to the times by being faithful to the original spirit and focused vision in tune with the needs and aspirations of all stake holders.

One of my confreres, Fr Varghese shared his experience with me a few years back. He was going for a trip to the Himalayas and on the way, he walked with some Hindu pilgrims going for a festival. On the way to the mountain where the festival was held, there were many booths with exhibitions, displays, games, etc. Since he got tired of walking, he got into a booth with not too many people. A respected swami was giving a talk in that booth on the subject, "Rigidity and Flexibility." He said that what is rigid is going to die and what is flexible is going to survive. He gave the example of the teeth and tongue. See, how our teeth go, but what about the tongue? It lasts. Further he gave the example of the Catholic Church. He said it is surviving because it adapts and renews itself time and again. Today Pope Francis with his clarion call for change and by his love for the poor, marginalized and youth is challenging and renewing the church from inside.

As for us, we have to renew and revitalize ourselves from within to be relevant



and meaningful for this ever changing and challenging world. Education is the powerhouse of humanity. Gurukulas, Academies, Schools and Universities were the change agents in history. So, we shall not be complacent. Constant renewal and adaption with a focus on the internal resources and the ambience are necessary for the survival any living organism. Let us be agents of change wherever it is needed. For that we need a solid vision, genuine motivation and deep commitment. Let's remember the ancient quote: "When you change the way you look at things, the things you look at change."

Motivation

In *Alice's Adventures in Wonderland* by Lewis Carroll, there is a beautiful and relevant dialogue between Alice and the Cat.

Alice: "Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where—" said Alice.

"Then it doesn't matter which way you go," said the Cat.

"--so long as I get SOMEWHERE," Alice added as an explanation.

"Oh, you're sure to do that," said the Cat, "if you only walk long enough."

Let us not be like Alice, not knowing where to go. We have the vision and mission to guide us on the way. Book of Psalms 143:10 reads: "Teach me to do your will, for you are my God, may your good Spirit lead me on level ground." Trust in God remains as our foundational core value. Let ours be a purpose driven life strengthened by the providence of God.

The onus is upon us, and on nobody else, to take this centre of learning, research and service forward on a path of excellence with vision, commitment, hard work and passion. For that let us be the best of what we can. Here is a poem by Douglas Malloch, titled, **Be the Best**:

It you can't be a pine on the top of the hill,

Be a scrub in the valley – but be

The best little scrub by the side of the rill;

Be a bush, if you can't be a tree.

If you can't be a bush, be a bit of the grass,

And some highway happier make;

If you can't be a muskie, then just be a bass-

But the liveliest bass in the lake!

We can't all be captains, we've got to be crew,

There's something for all of us here.

There's big work to do and there's lesser to do

And the task we must do is the near.

If you can't be a highway, then just be a trail,

If you can't be the sun, be a star;

It isn't by size that you win or you fail-

Be the best of whatever you are!

This is what we shall all be and this is what we animate our students to be.

Be the best of what we are.

The Path of Excellence

Ours is an era of excellence. Under the new education policy (NEP) average or mediocre institutions cannot stand the test of time. Here is a story. A German once visited a temple under construction in India, where he saw a sculptor making



an idol. Suddenly he noticed a similar idol lying nearby. Surprised, he asked the sculptor, "Do you need two statues of the same idol?" "No," said the sculptor without looking up. "We need only one, but the first one got damaged at the last stage." The gentleman examined the idol and found no apparent damage. "Where is the damage?" he asked. "There is a scratch on the ear of the idol," said the sculptor, still busy with his work. "Where are you going to install the idol?" The sculptor replied that it would be installed on a pillar twenty feet high. "If the idol is that far, who is going to know that there is a scratch on the ear?" the gentleman asked. The sculptor stopped his work, looked up at the gentleman, smiled and said, "I will know it."

The desire to excel doesn't depend on whether someone else appreciates it or not. "Excellence" is a drive from inside, not from outside and that drive creates history. Let us have that collective will for excellence to take our students too in the path of excellence. Former Director of CMC Vellore, Dr Sunil Chandy once said: "We are not opposed to merit but what the government defines as the exclusivity of merit. We believe in suitability. Let's say we have candidates with full score in all subjects, they can get into any medical college. But to convert him/her into a physician takes a different kind of suitability." "Getting 99 percent does not ensure that you will make a committed doctor. I would rather train a chap with 55 percent who has a sense of social consciousness." This Dr Chandy described as 'merit with a mission.' We need to have a profound social sensitivity as individuals and as an institution. As an education institution in the district of Idukki, we have

a tremendous responsibility to empower our student community coming mostly from the agrarian background. We cannot turn a blind eye to the thousands of farmers who are organizing non-violent protection against the farm laws legalized by the central government. We have to stand with justice. St Chavara said: "the day that you haven't done any good for others, will not be counted in the book of life." This is the culture of Excellence we try to inculcate in the students and we create a disciplined, holistic and inclusive ambience in which the students are trained for life rather than for a career. The ambience matters and all the stakeholders are responsible for that in their own unique way.

Our college is to be a nurturing ground for an individual's holistic development to make an effective contribution to the society in a dynamic environment. Do we have a mission with a passion trusting in the providence of God? We believe that "The Glory of God is man fully alive." This stands at the core of our path of excellence.

Every institution has a culture of its own. What is the unique culture of our college? Do we have one? Is it just one among the hundreds of other colleges? What kind of difference can we make as a centre of learning for the better future of our students and for the good of the society? Do we have a benchmark to actualise our potentials as individuals, members of different departments and as a college? What is the benchmark here? To what extent are we able to take forward the young dynamic minds that come to us? Are we here for a purpose? So, let us try hard to realise our own potential for the betterment of our own students and for the



good of those around us and the society. We need to have the passion for excellence on the individual, departmental, and of college levels. We read in Brihadaranyaka Upanishad, 4.4.5:

You are what your deep, driving desire is/
As your desire is, so is your will

As your will is, so is your deed/
As your deed is, so is your destiny

Intense desire, will, and deed – this is the path to create destinies for us and our societies.

Team Work

It is in the ambience of educational institutions that the culture of the society and the nation is nurtured and matured. This is all the more true in our times when the socialization process that takes place in families is minimum due to small nuclear families and because of the invasion of digital media. We come together and work together with a vision and a mission. A sentence attributed to Aristotle reads: “The whole is more than the sum of its parts.” Further, one of the important war strategies that Chanakya proposes in His book *Kautilya's Arthashastra* is “Never go into battle alone” however confident you are. We need real team spirit in our education mission especially in these challenging and complex situations of the world.

When we consider the two major stake holders of this institution, namely the students and the staff, we find more elements that unite them than separate. Based on the set theory in mathematics, if we draw circles around these, we find a lot of intersection points. The air we breathe, the water we drink, the space we occupy, our dreams and our challenges, the service we undertake here, the time we spent in

this campus, when we meditate on these and other points we come to know that there are more points of intersection than of divergence. But we need to realise that there are centripetal and centrifugal forces within us and in our communities and societies. Can we count on the centripetal forces to strengthen our collective will and goals for the good of the student community and for the good of humanity at large? Arnold J. Toynbee, one of the most famous British historians of the last century in his twelve-volume analysis of the rise and fall of civilizations, claims that most of the ancient civilizations died of internal decay rather than of external attack. Unity of the staff fraternity together with the management needs to be the strength of the College.

As there are many stake holders in this institution, our inner strength comes from the percolation of the vision and mission by all the stake holders, the students, parents, staff, the management and the public. This fit between the individual and the organization is the key to committed team work in the path of excellence. It is here that we need collective decision making and implementation in an atmosphere of togetherness.

Make a Choice which is Ours

William Jennings Bryan said in 1899: “Destiny is not a matter of chance, it is a matter of choice; it is not a thing to be waited for, it is a thing to be achieved.” Our former president, Dr APJ Abdul Kalam wrote: “Dream is not that which you see while sleeping it is something that does not let you sleep.” Our college is the result of the dreams and sleepless nights of many who made things happen with vision, determination, commitment,



and hard work trusting in the providence of God. Even today we toil together to take our college to a grater tomorrow. We have to build a system of organizational excellence and a consistent all-round development strategy with a far-sighted vision.

Today, despite all the developments and growth, many are insensitive to the harsh social realities that exist. There is a sharp divide between the rich and the poor in our country. Many turn their face away from truth, justice, gender justice, freedom, poverty, equality and job loss. We have to look at the socio, political, cultural and economic realities around us in a critical and creative way. We have heard the famous prayer of Rabindranath Tagore: "Where the mind is without fear, and the head is held high; Where knowledge is free; Where the world has not been broken up into fragments by narrow domestic walls; Where words come out from the depth of truth; Where tireless striving stretches its arms toward perfection; where the clear stream of reason has not lost its way into the dreary desert sand of dead habit; Where the mind is led forward by You into ever widening thought and action- Into that haven of freedom, my Father, let my country awake." These lines reflect the heart of our Motto: Truth Liberates.

We have to ask: Are we living in a world of freedom or fear? Are we in the process of creating a just and human society? Do we live in a culture of mutual respect and care? Do our women, children, and less privileged feel safe? Are we allured by systems and ideologies that create a divided society? Are power, money and fame the only things that matter in our time? At times, the Indian scenario presents a bleak picture. We know that corruption

of various types reigns everywhere and it even challenges the foundation of our republic, namely, the legislature, executive and judiciary. We need to be watchful and act prudently as the citizens of our country.

Nick Vujicic writes in his book titled, *Life without Limits*, three types of guides who have made impact in his life. They are the Mentors, Role Models and Fellow Travelers. He further explains: "Mentors are people who've been where you want to go, but they are also supporters and encouragers who share your dreams and truly want you to succeed." "Role models have been where you want to go, but they aren't usually as close to you as mentors." "Fellow travelers are usually peers, co-workers, and others with similar goals to yours, who are walking on a parallel road." The staff fraternity and the parents can be all the three for our seekers of knowledge and wisdom. It is in serving these learners that we shall find our true happiness and peace. Let me salute all the staff and parents for their wonderful contributions to the College and to the students for making the college what it is today. It is the staff fraternity that is to take the college and the students to new heights with innovative and collaborative projects and programs. Let us make our college a centre of Excellence, creating a new education culture, which is the nurturing ground, for teaching, learning, research and service. Let our college march forward in her service to the seekers of knowledge and wisdom and for the welfare of all – Sarvodaya. God bless you all and let us seek the intercession of our patron St Joseph for whom Pope Francis has dedicated this year through the apostolic letter *Patris Corde* (With a Father's Heart).

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LIFE SKILLS PROFICIENCY OF ADOLESCENTS IN RELATION TO SELF-CONFIDENCE AND SOCIAL INTELLIGENCE

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Introduction

The World Health Organization defines life skills as the abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life. They represent the psychosocial skills that determine valued behavior, reflective skills such as problem solving and critical thinking, and personal skills such as self-awareness and interpersonal relationship skills. Specific emotional, cognitive, and behavioral and resilience skills play a vital part in ensuring an adolescent's personal and social success (Langford & Badeau, 2015). Children and adolescents with psychosocial skills have positive mental health and wellbeing (Savoji & Ganji, 2013; WHO, 1993). These skills are known to be the key contributors to negotiating and mediating challenges that young people face in becoming productive citizens (Prajapati, Sharma, & Sharma, 2017).

Today behavioral disorders and social deviations among adolescents lead to aggression, destructive tendencies, alcoholism and drug abuse, violence, inability to maintain healthy relationships

with others, emotional instability, inability to take decisions and solve problems effectively. These issues are mainly due to lack of life skills, self-confidence and social intelligence which should be providing them with the ability to confront such difficult situations and prepare themselves to solve life's problems. The research on addiction to drug and drug abuse in adolescents indicated three relevant related factors – low self-confidence, disability in showing emotions and lack of social intelligence. Recent research reveals that the life skill education has positive effect on self-confidence, social intelligence, psychological health, assertiveness, self-esteem, and decision making among adolescents. Learning and practicing of life skills in relation to self-confidence and social intelligence would lead to reinforcement in the perspectives, values and manners of adolescents.

Given the role of life skills as a strong catalyst for the development of positive behavior, building life skills in the early years of life will help adolescents navigate their social and emotional challenges such as coping with emotional pain, conflict, peer pressure and relationship issues



(Aishath Nasheeda et al., 2018). How life skill programs are structured and delivered can significantly impact long-term program quality. Therefore, it is important to deliver these programs systematically in order to have a lasting impact on the health and wellbeing of participants (Holt et al., 2008). Findings reveal great promise for life skills education as a way to promote positive behavior and to act as a buffer against risk-taking behaviors for adolescents in developing countries (Aishath Nasheeda et al., 2018). There is a need to understand adolescents' learning experiences within life skills education and to identify which skills are most effective at times of difficulty. Examining adolescent experiences within the embedded culture of the individual is important to understand how individuals from different backgrounds construct life skill knowledge into reality.

Life Skills in Curriculum

Life skills proficiency is also an educational intervention that is designed to address areas with wants- and result-based participatory learning. There is a growing demand to educate adolescents with life skills to help them deal with their day-to-day life challenges and transition into adulthood with informed healthy choices. (Aishath Nasheeda, et al., 2018). The goal of life skills proficiency is to equip individuals with fitting information on risk-taking behaviors and build up skills such as communication, boldness, self-awareness, problem solving, critical and creative thinking, etc., to protect them from ill-treatment, misuse and exploitation. Demonstrating its effectiveness, significance and value, life skills have become a major part of many intervention programs

around the globe, particularly those aimed at the prevention of alcohol abuse, drugs and smoking (Huang, Chien, Cheng, & Guo, 2012). Developing countries such as India, Sri Lanka, Maldives, Bangladesh, Thailand, Myanmar and Nepal incorporate life-skill concepts into their curriculum at different grade levels (WHO, 2001). Countries in the Asia and Pacific Regions, for instance, combine life skills into comprehensive Sexuality Education (CSE) programs to reduce risk behavior and improve the health and well-being of young people (UNFPA, 2015).

Drawing on Bandura's social learning theory, skills are learnt through interaction, processing and structuring of experiences (Prajapati et al., 2017). One of the more recent approaches to teaching life skills is through an infusion. Infusion integrates preventive objectives and activities into academic activities. The fundamental purpose of the infusion approach is to educate learners on how to transform knowledge and concepts to become skilled in their daily life. Thus, life skills proficiency contents are infused into the basic subjects of higher education prospectus with a ground-breaking delivery technique. Infusion has been shown to be effective in reducing smoking, binge drinking, and use of marijuana (Smith et al., 2004; Vicary et al., 2004) and as a result, many countries have integrated life skills into their primary, secondary and higher education curricula. However, for an infusion approach to be effective, it needs to be designed well and delivered age-appropriately (Konkel, 2016).

Preparing young generation to confront today's severe situations in educational scenario seems to be a vital task. Helping



adolescents in the growth and development of necessary skills for effective life, creation or increase of self-confidence in confronting problems, solving them, to have successful compatibility with social environment and effective and constructive life in society seems crucial (Shoari, 1998). Therefore, most of the learning environments in the world have initiated the education of life skills in relation with self-confidence and social intelligence in order to prevent behavioral disorders and social deviations. Educating on the life skills is one of the means of psychological and mental health development which would further lead the individual to social, cultural and political evolutions. Studies reveal that life skills tend to be effective in bringing about individual changes relevant to knowledge, skills and attitudes in risk areas as well as psychosocial skills (Menrath et al., 2012). Programs conducted in countries like India and Iran, such as the Life Skills Education Program, comprised of a series of developmental sessions consisting of communication skills, assertiveness, anger management, decision-making, creative and critical thinking skills, etc. (Naseri & Babakhani, 2014; Parvathy & Pillai, 2015). Scholars, however, have emphasized the need to implement sustainable life skills programs as a top priority (James et al., 2006; Jegannathan et al., 2014). Gatekeepers, policy makers, administrators and teachers of life skills need to believe in the potential and value of the life skills programs and receive appropriate training (James et al., 2006; Jegannathan et al., 2014). Further, long term monitoring and evaluation reviews are required to gather empirical evidence on the effectiveness of programs (Tuttle

et al., 2006). This includes participant feedback and discussion on each life skills topic in order to improve application of the skills taught (WHO, 2001).

Life Skills for Adolescents

Adolescence is a period of multiple transitions marked by physiological changes, efforts toward the construction of identity, and a progression from concrete to abstract thought and the ability to think abstractly, multi-dimensionally and to reason more effectively. It is an emotionally intense and often stressful period. Adolescence nature is multifaceted and flexible; the same potential may have different results depending on whether the environment encourages or discourages it. Each adolescent has his own unique traits and express them as uniquely. Adolescence is a transition stage and thus is the period of tremendous psychological imbalances among students. During adolescence, students try to understand more about society, social relations, social approval, respect, social identity, etc. They begin their social contact in a wider sense, approach various social institutions in a novel way, develop morale, and understand taboos, standards, and mores of society. Their behavioral aspects undergo many changes in a rapid speed. Some of them accept society with increased social awareness and some of them may become agitators, aggressors, bullies, or even criminals.

Life skills for adolescents would mean adolescents being able to maintain smooth and effective inter-personal relations, fulfilling personal and social responsibilities, making accurate and timely decisions, solving conflicts without any delay and healthy and positive arguments with dynamic actions which



are helpful to themselves and others. For these young adults, life skills are expounded as, “personal and social skills that adolescents should have learned in order to take effective and certain actions regarding other people and society” (Nori, 1998). They are abilities for adaptive and positive behavior that enable adolescents to deal effectively with the demands and challenges of life. In a wide sense, the skills that function for the well-being of these adolescents to develop into active and productive members of their communities, nurturing a greater sense of confidence, usefulness, sensitivity and openness, are considered as life skills for them. Caring, understanding, cooperation and collaborative learning are important life skills which stimulate cooperative learning, conflict resolution, group-oriented method of problem solving and task performance. Hence, future research should be directed toward investigating how life skills program knowledge is translated into behavior and attitude change in these adolescents (O’Hearn & Gatz, 1999; Parvathy & Pillai, 2015; Pierce, Gould, & Camiré, 2017).

Self-Confidence as a Life Skill

Self-confidence is an attitude that is characterized by a positive belief that you can take control of your life and of your plans. It is a belief in your abilities. The feeling of self-confidence is a positive state of vibration where the subconscious mind is directed towards success. When an individual’s level of self-confidence increases, then his/her chances to succeed in life also increases. Self-confidence deeply depends on one’s character, guts, and self-worth and it focuses more on doing things that give positive results. Each positive

experience is a positive reinforcement that increases one’s self-confidence. Thus, self-confidence is an attitude which allows individuals to have a positive yet realistic views of themselves and their situations. Even when some of their expectations are not met, they continue to be positive and accept themselves. It is the belief in one’s ability to succeed and is the stepping stone to progress, development, achievement and success in life. The successes and achievements in turn will strengthen one’s self-confidence further. Self-confidence thus becomes the key determinant for human cognitive, motivational, affective and decision making processes. Self-confident people know how to take the edge off doubts, conquer fears, and how to find a silver lining in a sky gone gray with storm clouds. They get to the root of the problem; focus on it and understand that one needs to resolve each issue before one can move on. Learning how to be confident is the most important life skill that adolescents need to acquire. It impacts their happiness, success and well-being. All other desirable qualities use confidence as the foundation. Historically, confidence was thought of as an innate personal trait — some were born with it; others were not. However, more recent research substantiates that confidence is learned and developed. No one is born with confidence. People begin to develop confidence during the growing-up process. Adolescent age strengthens the foundation of self-confidence laid in childhood.

Social Intelligence Skills for Adolescents

Social intelligence is the capacity to understand the society and its heartbeats. It is generally defined as an aggregate



global capacity of an individual to act purposefully, think rationally and deal effectively with a given situation. Thorndike (1920) defined Social Intelligence as “the ability to understand others and act wisely in human relations”. It is also the ability to understand the feelings, thoughts and behaviors of people in social or interpersonal situations and to act appropriately based on that understanding. The main dimensions of social intelligence are patience, cooperativeness, confidence, sensitivity, recognition of social environment, tactfulness, sense of humour, and memory. Socially intelligent individuals possess tolerance, cooperation, sympathy, social acceptance, helping mind, and a spirit of we-feeling in the society. Social scientist Dr. Ross Honeywill believes that social intelligence is an aggregated measure of self- and social-awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social changes. Recently, popular science writer Daniel Goleman has drawn on social neuroscience research to propose that social intelligence is made up of social awareness (including empathy, attunement, empathic accuracy, and social cognition) and social facility (including synchrony, self-presentation, influence, and concern) (Introducing Social Intelligence, 2021). Recent research in the emerging field of social neuroscience—what happens in the brain while people interact—is beginning to reveal subtle new truths about what makes a good person. One exhibits empathy and become attuned to others’ moods—this action literally affects both their own brain chemistry and that of others. Indeed, researchers have found that when two (or more) independent brains react

consciously or unconsciously with each other, the individual minds become, in a sense, fused into a single system. Another finding in neuroscience reveals that, the brain produces a class of neurons called spindle cells with an extra-long branch to make attaching to other cells easier and transmitting thoughts and feelings to them quicker. This ultra-rapid connection of emotions, beliefs, and judgments creates what behavioral scientists call our social guidance system. Goleman and Boyatzis define social intelligence as “a set of interpersonal competencies built on specific neural circuits (and related endocrine systems) that inspire others to be effective.” The socially intelligent, who influence others, are skilled at appealing to others and developing mutual trust from key players in a situation. They give constructive feedback to colleagues and help others focus on growth opportunities. These socially intelligent people build an atmosphere of cooperation, helpfulness, and respect in other people. They help others commit to the group’s effort. They help a team to develop an identity, positive relationships, and spirit. Adolescents with high social intelligence understands subtle etiquettes and knows how to listen to people. These adolescents can typically motivate others to cooperate, and people generally enjoy being around her/him. Socially intelligent adolescents have the ability to pick up emotions in other people and to work out what’s really going on with them; to appreciate another person’s perspective; to understand and appreciate the impact of one’s communication on others; to cultivate rapport and be attuned with the broad diversity of adolescents, and to manage interactions effectively and to engage with others for mutual benefit.



Operational Definition of the Key Terms:

Life skills are abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life [WHO, 1996]. The following are the ten generic skills.

Critical Thinking: According to Michael Scriven & Richard Paul, critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. It implies making reasoned and well-thought out judgments with clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

Creative Thinking: It is an ability that helps adolescents look beyond their direct experience and address issues in a perspective which is different from the obvious or the norm. It adds novelty and flexibility to the daily life of adolescents. It contributes to problem solving and decision making by enabling adolescents to explore available alternatives and various consequences of their actions or inaction.

Decision Making: The process of assessing all the pros and cons of each issue by considering all possible options and the merits and demerits various decisions might have in the present and in the future on them. This skill teaches the adolescents to take appropriate decisions in crucial, decisive and critical situations.

Problem Solving: Choosing the best-suited decisions out of different options, in the face of various types of obstructions

and hurdles, and going through the process again and again until a positive and dynamic outcome of the problem is achieved. Through this skill, adolescents acquire knowledge and experience to unearth the best solutions for their problems.

Interpersonal Relationship: This skill teaches the adolescence to begin and reinforce cooperation, trust, and sportsman spirit. Further it helps them to understand the significance and worth of mutual relationships with others and how to relate with others always in a positive and reciprocal manner. It helps them to maintain healthy and enduring relationships with their peers, friends and their family members.

Effective Communication: It is a process of indoctrination. This skill educates the adolescents to understand others, conditions, expresses desires and demands active listening, and seeks assistance and advices in times of need. Clarity and integrity of thoughts enhance the additional meaning of the message. Contextual communication improves its effectiveness as it takes into consideration the age, region, sex and intellectual abilities of the recipient.

Coping with Emotions: Emotion is a mental reaction, which manifests itself in the mind of an individual. It creates responses in the brain called feelings, which causes physical changes in the body. This includes alteration of expressions in the face and chemical alteration in the brain. Upon coping with emotions, being aware of how emotions influence behavior, one can take conscious effort to solve personal and interpersonal problems, in order to try to master, minimize or tolerate stress and conflicts appropriately.



Coping with Stress: Coping with stress is an ability to recognize the source of stress, how to be aware of the experience of stress and how to take action to reduce and control it in one's life through life skills education. It is the process of spending mental, conscious energy on dealing with problems in life. The first fraction of coping with stress is being able to tolerate stress – to function reasonably well in stressful situations and get through them. The second component is recovering, that is, getting back to normal when the stressful situation is over.

Self-Awareness: Self-awareness is the capacity for introspection and the ability to recognize oneself, his character, strengths and weaknesses, desires, feelings, motives and dislikes as an individual separate from the environment and other individuals. Daniel Goleman proposed a popular definition of self-awareness, as “knowing one's internal states, preferences, resources, and intuitions.” This definition emphasizes on the capacity to monitor one's inner world, thoughts, feeling and emotions as they arise. Self-awareness is the capacity to go beyond accumulating knowledge about ourselves – to recognize one's own feelings, behaviors, and other characteristics like cognitive, reasoning, physical, psychological and intellectual power and the ability to notice and monitor one's inner world.

Empathy: It is an ability to understand another person's thoughts, feelings and condition from his or her point of view. It helps one to understand and accept others and their behavior, which may be very different from him. According to Hodges and Myers, “Empathy is the capacity to comprehend and experience

what another person is experiencing from within his frame of reference, that is, the competence to put oneself in another's situation. Empathy includes a broad range of emotional states, together with caring for the others, a desire to help them, experiencing emotions that is equivalent to another person's emotions, being sensitive to another person's thinking or feeling

Conclusion

According to the WHO (1997), internalizing the core essential life skills helps the adolescents to deal with the concerns in the modern world in a dignified and mature way bringing success to them. Learning of life skills together with self-confidence and social intelligence, will make adolescent students to engage in problem solving, make conjectures and test their ideas. This will further form assertive students who will assist and lead the group in all its endeavors providing equal status and role to all students and creating an atmosphere to realize the importance of everyone's thinking. In such a situation, roles are clearly defined and students are accountable for their assigned tasks in order to maintain individual responsibility and group accountability. Psychologists believe that learning of life skills together with self-confidence and social intelligence helps students to effectively negotiate and navigate through complex relationships and also difficult environments. A positive learning environment with life skills, builds confidence, resilience and hope in students. It also prepares them for success in the future. It promotes group interactions that help the adolescents to discover his/her own strengths and limitations in following instructions, understanding ideas, generating new ideas, making joint



decisions, listening to others' ideas and learning to appreciate different points of view.

Most accomplishments require more than a sharp mind. In fact, an impressive intellect is of little value if it is not paired with self-knowledge and an ability to work well with others. True success requires a great deal of life skills along with self-confidence and social intelligence. Adolescents smart in these skill sets, are able to read between the lines by picking up on the subtle changes in the tone and body language of others. Their listening skills extend beyond auditory clues to include the visual and tactile hints that are often missed. When a colleague or friend is uncomfortable, they are able to uncover the reason and quickly put them at ease. They do not only listen well, they know how to speak in an impressive and interesting way. They are able to express themselves without dominating a conversation. They are conscious of entertaining without offending. They have mastered the delicate balance it takes to be interesting, but not intimidating. They do this by reading others. They are conscious of making their friends feel valued, loved, and important. Other students enjoy being around them. They just spread a good feeling wherever they are. Life skills flourish knowledge, values and views, that guide the children how and when to perform a task. Unfortunately, this crucial set of life skills with self-confidence and social intelligence is not adequately taught in modern educational scenario. Therefore, more attention is required in the contemporary scenario to develop programs that are ongoing and sustainable, through systematic planning, implementation, monitoring and

evaluation in order to help adolescents acquire these skills.

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A LOT CAN HAPPEN OVER A COFFEE: A CASE STUDY ON CCD

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Cafe Coffee Day, a part of Coffee Day Global Limited, is India's favourite hangout for coffee and conversations. Cafe Coffee Day popularly known as CCD, opened its first cafe in 1996 at Brigade Road, Bangalore. V.G Siddhartha from Chikka-mangaluru District of Karnataka was the man behind changing the beverage culture of India with a variety of drinks and side dishes. Cafe Day Global which is the parent of CCD chain was incorporated in 1993. V.G Siddhartha opened first CCD outlet with an initial investment of 1.2 crore.

CCD founder V.G. Siddhartha who feared of achieving a target of 500 tons end up selling 6500-7000 tons of branded coffee, exports about 28000 tons of coffee, sells another 2000 tons locally each year and has a carrying capacity of 75000 tons which is largest in the country and additionally cafe attract at least 40000-50000 visitors per week. CCD is a 750 crores ISO 9002 certified company has over 6000 acres of coffee estate which is one of the largest in Asia. Largest number of Coffee Day Cafes is located in Bangalore. It has even tied up with world space and micro sense to enable its cafes with satellite radio and Wi-Fi respectively. Its first Wi-Fi cafe was opened in Lavelle road Bangalore.

Vision:

“To be the best cafe chain in the country by offering world class coffee experience at affordable prices’.

Mission:

- To be ranked number one among the service sector
- To provide the best quality service to customers at affordable price
- To create own niche merchandising like Indian coffee powder, cookies, coffee mugs and curry paste.

Bean Good: Coffee Day Growth

| Year | No. of cafes | No. of cities | No. of vending machines |
|---------|--------------|---------------|-------------------------|
| 2013-14 | 1568 | 211 | 25561 |
| 2014-15 | 1518 | 215 | 29760 |
| 2015-16 | 1607 | 231 | 35441 |
| 2016-17 | 1682 | 241 | 41845 |
| 2017-18 | 1722 | 245 | 47747 |
| 2018-19 | 1750 | 250 | 48000~ |

Source: Coffee Day Annual report



Birth of Cafe Coffee Day

V.G. Siddhartha is born to a family which has a history of growing coffee since 1870 and owned several acres of property. Siddhartha started his career as a trainee in Indian stock market at FM Financials, Mumbai in 1983. With the two years of experience in stock market, Siddhartha left Mumbai to build something of his own by 1985. While working on FM Financials, Siddhartha bought Sivan Securities in 1984 and turned it into a successful investment banking and stock broking company with the seed investment given by his father, he invested 5 lakhs in a property at Bangalore. He started Sivan Securities with the amount left.

Between 1985 and 1992, he made a lot of money through inter market arbitration. With the 10% arbitration margin per day, he made about rupees 1 lakhs to 2 lakhs per day and in the process, he was steadily buying land near his father's plantation. By 1991, he would have over 5000 acres of coffee plantation, which meant 20 sq. km of land.

Back then, coffee growers would make 35 cents per pound of coffee, while the international price was \$1.20. Despite owning large tracks of coffee plantations, Siddhartha wasn't quite making a lot of money from his coffee business. Much of that was because India's coffee sector was still under the control of the coffee board. There was no open market system and coffee planters were supposed to pool the coffee to the coffee board.

The year 1991 was crucial for India as the government decided to embrace a new economic policy of liberalisation. Siddhartha, along with a few others, went to meet Manmohan Singh, India's then

finance minister, credited for opening up the Indian Economy.

By 1992, with the government then opening up the sector, Siddhartha was among the handful to tap into the opportunity. That year, Siddhartha started his coffee business, Amalgamated Bean Company Trading Ltd. (now called Coffee Day Global) an integrated coffee business that ranges from procuring, processing and roasting coffee beans to retailing of coffee products.

In March – April 1993, he sold 4000 tons of coffee to international buyers at 80 cents per pound, with a frost affecting business in Brazil, Siddhartha was able to sell coffee at \$ 2.5 per pound. Soon, he started retailing coffee through a chain of stores under the brand Fresh & Ground.

Between 1992 and 1995, it became India's biggest trader in commodity because there is a frost, and the prices went up by three times.

But the big idea to set up retail outlet came from a chance to meet with one of his buyers in Europe, the owner of Germany's best Coffee Chain, Tchibo. To his dismay, Siddhartha would learn that the family had only ventured into the coffee business as late as 1948, when they opened a ten by ten stores in Hamburg. Siddhartha was inspired by Tchibo and the rest is history.

The first Cafe Coffee Day retail store was launched in 1995 and in 1996, first outlet was opened in 1996 July 11 at Brigade road Bangalore, Karnataka. CCD's first outlet attracted many people with the offer – a coffee and an hour internet surfing with rupees 100. The initial investment to start the first outlet was rupees 1.2 crores.

After acquiring Sivan Securities; Coffee Day invested in Mindtree Hospitality Firm in 2000. And Sivan Securities was renamed as Way 2 Wealth Securities. Way 2 Wealth Ltd. is a venture capital division came to be known as Global Technology Ventures and setup Global village Tech Park as Incubator Park in Bangalore, providing office space, communication links, recreational facilities and a commercial centre.

The Hospitality venture through Coffee Day Hotels & Resorts Private Limited launched a subsidiary under brand name "The Serai" in Chikkamangaluru. By 2010, private equity firm Kohlberg Karvis Roberts & Co, standard chartered and NS invested in Coffee Day enterprises. In the year 2011 Coffee Day picked another 7.62% in Mindtree and Coffee Day Global acquired Sical Logistics through Tanglin. His business ranged from coffee business and plantation to real estate and financial investment.

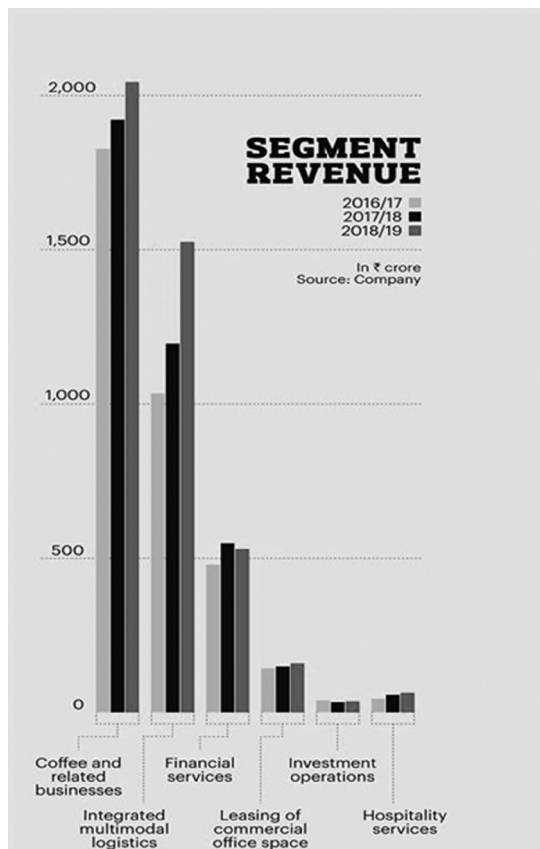
In the year 2015, Cafe Coffee Day goes public with listing at \$ 1 billion valuation and tax department attached Mindtree shares owned by V.G. Siddhartha and Coffee Day enterprises. Through IPO, CCD raised \$175 million.

CCD group exports India's biggest green coffee with a turnover of 2500 crore. CCD now has 1750 outlets in more than 200 cities including Prague, Vienna, Kualalumpur, Czech Republic, Nepal, Egypt, Malaysia etc. The company reported a revenue of Rs.1777 crores in FY 2018 and Rs.1814 crore in FY19.

Today CCD sells 6500-7000 tons of coffee, sells another 2000 tons locally each year exports about 28000 tons of coffee and has a carrying capacity of 7500 tons, which

is largest in the country. Additionally CCD attracts about 40000-50000 visitors per week.

A money control report puts the annual turnover of the Coffee Day enterprises at Rs. 4264 crores. V.G. Siddhartha owns 12000 acres of coffee plantations in 2015 Forbes list pegged his net worth at \$1.2 billion.



Source: www.economictimes.com

Initial challenges faced by CCD

- Major challenge faced by CCD chain was to make a revolutionary change in Indian culture; where people refer to use tea rather than coffee.
- Next was the tough competition from

International chain such as Costa Coffee, Starbucks and also from various domestic players and concept cafes.



Source: www.economictimes.com

Strategies followed by CCD to overcome challenges

To stand up against competition CCD has build 3As strategy.

- Affordability
- Accessibility
- Acceptability

Combination of Aspiration and Affordability worked better for Indian

Cafe Coffee chain. It gives coffee an attractive makeover and remained as favourable hangout choice for school and college students. It wasn't restricted to metro cities; it took coffee to cities and towns across the country and offered same experience everywhere. It brings people together to relax and unwind and to make people speak more about CCD by saying "Lets Catch Up".

Starting of crisis

The things started to go in a wrong way when they started to follow Debt Centric Method. That means borrowing money from market. About Rs.1.5crore is needed to start that much outlet faster. So commonly debts will occur; because raising such money by importing coffees is not possible; so they started borrowing and also by other means.

2015: In 2015, their debts were accumulated as 6300crores; so they launched an IPO and 1150crore were raised from an IPO.

2015-2016: The Company's net debt was Rs.6600 crores including short term borrowing. The company's cash flow was a negative Rs.533 crore at the end of 2015-2016. The promoter group had already pledged more than half of their holding to raise money largely for construction business (Tanglin) and hospitality business.

2016-2017: The net adjusted debt stood at Rs.3323 crores. By the end of June 2017, close to 50% of promoter, group shares and 39% of Siddhartha's share were also pledged. This was because the income tax department conducted a raid at CCD and find out 362 crores of unaccounted income. A person was caught in Singapore with Rs. 1.2 crores of cash and declares that

the money belongs to V.G. Siddhartha; this was the reason for income tax department to conduct raid in different offices for 20 times.

After outrage on social media under tax terrorism, the income tax department reported that search on a prominent politician's case had led to credible evidence of concealed transaction by CCD and after search operations on Siddhartha's company and other properties he had admitted to not revealing unaccounted money of around Rs. 480 crores.

His first high headache was a loan of Rs. 300crore that took several years ago from HDFC Ltd. That loan was coming up for repayment early this year, Siddhartha however managed to convince Axis bank and Standard Chartered Bank to put in close to Rs. 1000 crore in his business.

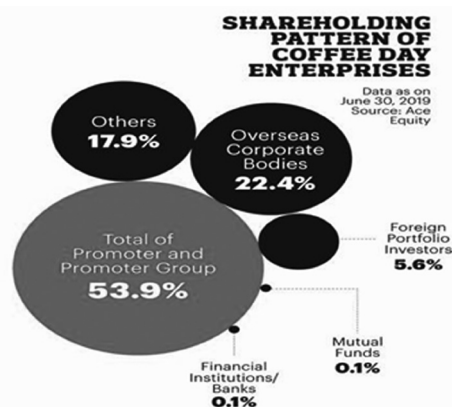
2018: Together with all these, main auditor of CCD reported that 40 subsidiaries was not conducted any audits for the last period. This reached the Board of Directors and all the lenders came to know about this and they said that they will not give money because they lost trust on CCD and the shareholders said that they need buy back i.e., by taking the shares back the company should give money back. But the company was not in a situation to repay the money; so much pressure was created by the shareholders; and in 2018; in an unverified note, Siddhartha has blamed one of the private equity investors for pushing him to return capital apart from his taxation woes.

Standard Chartered sold its private equity asset in December 2018 to ICG strategic equity, the private equity arm of the US based Intermediate Capital group.

2019: In 2019, the debt was at 6600crores. They earn Rs. 4264crore revenue at 2019, but the profit was only 143crores out of that and this was not enough to cover the debt of Rs.6600crores.

V.G. Siddhartha in his personal capacity owns 32.75% stake in CDEL, the listed company of which 0.3% of his personal share are pledged. In total the promoter group and family own 53.93% shares. In 29 July 2019, Siddhartha went missing and his body was found in Netravathi river backwater two days later. A letter assumed to be written by Siddhartha addressing board of directors and staff was made public in which he takes responsibility for not creating a profitable business mode.

In September 2019, the company appointed auditing firm Ernst and Young to scrutinize their books of account. They also suggested that the auditors will also go into circumstances of last letter written by founder and the points he made in it.



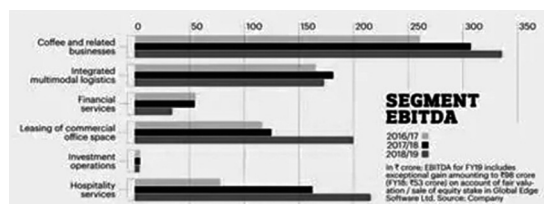
Source: www.google.com

Analysis of the crisis Trapped in the corner:

The curious case of V.G Siddhartha's alleged suicide and purported note has

caused consternation across corporate India. Coffee Day Enterprises, the holding firm of CoffeeDay, had a total debt of around Rs. 6550 crore as on March 2019. The group's coffee business, which includes some exports reported revenues of Rs. 1777 crore in FY18 and Rs.1814crore in FY19.

Besieged from all sides Siddhartha's core business of coffee was badly hit. A 13 year low coffee price in the international market dragged Indian prices also to multi-year lows despite lower domestic production. Indian Coffee exports too are expected to be down 10 per cent this year.



The Mindtree Connect



Sources close to developments have revealed that debt level of the entity had drastically reduced after Siddhartha's controversial stake in most of his business to pare his debt.

Earlier in March 2019, he had sold his entire 20.32 per cent stake in the

Bengaluru headquartered IT services firm to engineering major, L & T for around Rs. 3200 crore, which had been utilized to pare some debt from Coffee Day Enterprises balance sheet.

Grasping at Straws

The amount of debt was impairing his business as working capital requirements could not be met. While the Mindtree stake sale gave him some room to manoeuvre, the going had got really tough. In his desperation, he was also reportedly in a dialogue with global beverage maker Coca-Cola for an equity sale in flagship Cafe Coffee Day (CCD) at an enterprise valuation of around Rs.10000 crore may have been on the anvil.

It was also reported that Blackstone was in talk to buy a majority stake in Siddhartha's real estate venture Tanglin Developments for around Rs. 2800 crore.

Nowadays everyone look forward to expand their business. CCD also opened several outlets across the country. The very first problem started here. Out of the unorganised outlets CCD opened in the same locality; some shop will have business and rush and the other remain empty. Even though some of the outlets remain vacant these outlet also have running expenses and they don't have enough profit to cover up this.

Customers used CCD for availing free Wi-Fi and other costless services. They only order low cost item and spent 4-5 hours in the outlets. Thus the outlet seem rush but they may not earn enough profit.

CCD opted COCO model, ie, company owned company operates rather than franchisee model. If they were opted

franchise model they will never face such an expense because they will get rent and fee and the other operating expenses in franchisee model.

Debt increased in CCD outlets and the loss tempted them to take loan, but they became unable to repay these loans; debt increased more and they invested earnings from business in real estate.

Even though they have assets above 12 crores they invested in real estate, this was a suicidal attempt. According to economic times, they have 6500 crores debt and 3500 crores by CDEL promoter and 1000 crores by the owner. This created low liquidity and piled up debt.

Another reason for the failure of CCD was their gross margin. They expanded geographically all over the world but their gross margin remains same. There was no one to check the unnecessary expansion.

Under Income Tax Scanner

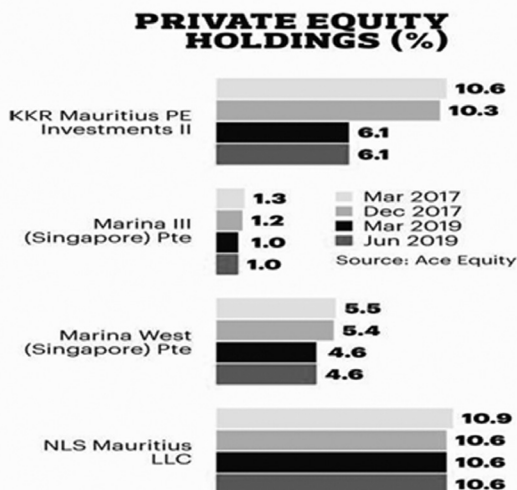
In September 2017, the Income Tax Department first raided premises of India's largest coffee chain Cafe Coffee Day and they found Rs. 650 crore concealed income from the documents seized while concluding the search and seize operations.

Foul Play

In his purported letter that Cafe Coffee Day boss V.G Siddhartha wrote, he expressed unhappiness over not creating "the right profitable business" and alleged "harassment" by a senior income tax officer.

Siddhartha is the elder son- in- law of former Karnataka Chief Minister S.M Krishna. Siddhartha is credited with creating India's largest coffee empire. But he

was under huge pressure from his private equity partners. Even though Siddhartha mention in his letter as *one of the private equity partners*, we don't know who was forcing for repayment. KKR Mauritius PE investments, Marina III PE investments, Marina West PE, NLS Mauritius LLC are some of the private equity firms of CCD.



Source: www.economictimes.com

The Last Letter

The letter says, *I have failed to create the right profitable business model despite my best efforts. I would like to say I gave it my all. I am very sorry to let down all the people that put their trust in me. I fought for a long time but today I gave up as I could not take any more pressure...*

He could not take any more pressure from one of the private equity partners, forcing him to buy back shares, a transaction he had partially completed six months ago by borrowing a large sum of money from his friend. Tremendous pressure from other lenders lend to him succumbing to the situation and was a lot of harassment from the Income Tax Department in the form of attaching

our shares on two separate occasions to block their Mindtree deal and then taking position of their Coffee Day shares...

V.G. Siddhartha

To our Board of Directors and Coffee day family,

After 37 years, with strong commitment to hard work, having directly created 30,000 jobs in our companies and their subsidiaries, as well as another 20,000 jobs in technology company where I have been a large shareholder since its founding, I have failed to create the right profitable business model despite my best efforts.

I would like to say I gave it my all. I am very sorry to let down all the people that put their trust in me. I fought for a long time but today I gave up as I could not take any more pressure from one of the private equity partners forcing me to buy back shares, a transaction I had partially completed six months ago by borrowing a large sum of money from a friend. Tremendous pressure from other lenders lead to me succumbing to the situation. There was a lot of harassment from the previous DG income tax in the form of attaching our shares on two separate occasions to block our Mindtree deal and then taking position of our Coffee Day shares, although the revised returns have been filed by us. This was very unfair and has led to a serious liquidity crunch.

I sincerely request each of you to be strong and to continue running these businesses with a new management. I am solely responsible for all mistakes. Every financial transaction is my responsibility. My team, auditors and senior management are totally unaware of all my transactions. The law should hold me and only me accountable, as I have withheld this information from everybody including my family.

My intention was never to cheat or mislead anybody, I have failed as an entrepreneur. This is my sincere submission, I hope someday you will understand, forgive and pardon me.

I have enclosed a list of our assets and tentative value of each asset. As seen below our assets outweigh our liabilities and can help repay everybody.

Regards,
V.G. Siddhartha

Observations & reflections

An analysis of CCD's available financials from stock exchange notes, Siddhartha's own suicide note and corporate presentations, assuming these are all true figures, nothing that would the business down; nothing in the available figures suggest that a collapse was imminent or the business had failed permanently. The company has assets well over its liabilities to cover its obligations and there was investor's interest in CCD to pick up a part of the stake in the fast growing coffee chain. Siddhartha had already pledged most of his shares. The company's borrowings were heavily used for expansion plans. Besides coffee business, CCD had ventured into real estate, hospitality among others. What possibly worried Siddhartha was rising debts and interest burden, which wasn't unique to CCD. At a time when general economy was slowing steadily, demand has decreased drastically across the segments

and credit lines are drying upon account of a continuing liquidity crunch. Most of the companies in the consumer business have been facing a similar situation, promoting many of them to cut costs, labour, and sell non-core assets. Most of the FMCG firms have been posting weak results.

What is puzzling here is that not all doors were closed before Siddhartha and CCD for the promoter to end life citing business failure. Selling his assets and part of his shareholdings would have given a new lease of life to CCD and Siddhartha, helping the company to pare its debts and focus on core business. Over the year, the overall debt jumped to 64% to around Rs.6547crore and the interest outgo increased. There were several financial institutions that lend money to CCD including IFCI being one of the major lenders.



Source: various reports

The role of some private equity players and their nominees on Coffee Day Enterprises and also some independent



directors has come under the scanner of market regulator SEBI. In the letter to the company's directors and employees, Siddhartha said that he had 'given up' in the face of pressure from one of the private equity partners to buy back shares. A senior resource from CCD reported to a newspaper that, *should the PE firms and lenders be not booked for abetment to Siddhartha's suicide? It took Siddhartha's life by demanding 25% returns where as it borrowed from State Bank of India at 8%. Is that company responsible for Siddhartha's suicide?*

Now use simple logic, how can a plain shareholder, large or small, put pressure on promoter to do buy back unless there is a deal?

As of March 2019, Coffee Day Enterprises, which is the holding firm for CCD, had a total debt of around Rs 6,547 crore. Not only this, his other companies like, Devadarshini Info was under 1171crore debt and Gonibedu Coffee estate was under 775 crore debt. Out of which 1028crore debt was personally guaranteed by him of the Coffee day enterprise. This likely reduced drastically after Siddhartha sold his stake in Mindtree for about Rs 3,200 crore. The total debt had now reached 10,000 crore, out of which Coffee day enterprise had 6547crore debt.

In order to get aid from these debts he started giving most of his shares to banks, so that with that money he could clear off some debt. But it's not thousands of debt we are talking about, it was a debt of crores, which is not that easy to clear off. Due to which, in the stock exchange, he sold his 20.41% stocks of an IT company, Mindtree. With this he earned 3200crore, which helped him to clear off some loan.

But again, this was not sufficient. He was continuously planning to work this out. He even thought to sell off the Coffee day enterprises stakes to Coca Cola.

The urgency to sell his stake in Mindtree was magnified in the aftermath of the IL&FS crisis, when troubled lenders refused to roll over debt as they would have normally done.

While Cafe Coffee Day has historically been seen as a beloved chain in India, its sheen had been wearing off over the last decade. Losses jumped from mere Rs 7.72crore in FY 2009, to over Rs 150 crore in FY 2016. On a consolidated basis, the company had reported profit after tax of Rs 6.64 in FY 2011, but this rocketed to a loss of Rs 155.75 crore by FY 2015.

In the last two years, things started looking upwards, with Coffee Day Enterprises reporting a profit of Rs 48.94 crore in FY 2018. The group's coffee business expected to close FY 2020 with sales of over Rs 2,000 crore. In fact, in the last few months, market buzz indicated that Siddhartha may have been looking to sell his equity in CCD to Coca Cola for up to Rs 8,000 crore.

In the audit by the firm EY, it is likely to conclude on their draft report that 20 - 25 billion rupees (\$270 - 300 million) is missing from its accounts. It also details hundreds of transactions between the founder's listed and personal businesses that were not conducted at arm's length.

Thus the question arises that on what rule is such a non transparent deal allowed in listed shares? What is the difference between such a deal and pledge of shares?

The CCD founder has also had various



run-ins with the Income Tax department. In 2017, his offices in Bengaluru were raided in the search for undisclosed income. His letter also refers to the January 2019 incident when the department had attached the shares that he and Coffee Day Enterprises owned in Mindtree Ltd., a move that sparked worries that would prevent them from selling their stake in the IT firm.

In its regulatory filing, Mindtree said that the attachment was for a “tax demand” that was likely to be raised on Coffee Day and Siddhartha.

It was unclear whether this attachment had anything to do with the Rs 650 crore in undisclosed income the IT department had claimed it unearthed in its 2017 raids. The attachment, according to Mindtree's filing, also *prohibited for transfer or charge* of 22.2 lakhs equity shares of Coffee Day Enterprises Ltd., and 52.7 lakhs shares held by Siddhartha.

At the time, Coffee Day enterprises insisted that there was no tax liability on the part of Siddhartha as the company and its promoters had filed the revised returns – a claim that the CCD founder makes in his alleged letter to the Board as well.

In February 2019, the IT department appeared to relent and released the attachment on Siddhartha and Coffee Day's Mindtree's shares.

However, on the same day, to make up for this, it directly attached 46.01 lakhs shares of Coffee Day Enterprises held by the CCD founder.

Siddhartha has received an order under section 281B of the Income Tax Act, 1961, on February 13, 2019, provisionally

attaching 46,01,869 shares of Coffee Day Enterprises held with Way2 wealth Brokers of V.G Siddhartha to safeguard the interest of the revenue in respect of likely future tax and penalty obligations in respect of open assessments,” the company said in a regulatory filing at that time.

While the exact contours of the IT department's grievance with Siddhartha are unknown, the CCD founder has referred to it as “harassment” and that it led to liquidity concerns and his eventual “succumbing” to the situation.

With the Cafe Coffee Day in every nook and corner, certainly, many a cups of their coffee was a turnover in many lives. Waking up to the parting of the once most successful entrepreneur it gives chills to every youngsters who once followed his journey as a roadmap.

Mental health and wellness rapidly deteriorating in our country, not only to V.G Siddhartha but in our Kerala too. Recent case of Joy Arackal is also an example. Depression is being underrated in India, giving up life is seeming easy, it's extremely saddening.

V.G Siddhartha was a godfather for many, but what if the society has done just a black day with such a disastrous end. The challenger to star bucks, internationally famous Cafe Coffee Chain and his rise and fall is a lesson to youngsters.

There were many reasons on the failure of CCD. Media reflect the same old story of excessive borrowing by company which is disproportionate to intrinsic valuation of company.

Siddhartha started with a small capital and ended up creating an empire of around



Rs. 20,000 crores. He did that, as he said, not by chasing money but by chasing his passionate dreams.

Now there are two ways one could do that. One way is to invest that money in a business, accumulate the profits over a time, reinvest that profit in other businesses and gradually diversify. This is a slow process and one may not live to realize one's entire dream in one's life time.

There's another, more rapid way of growing, to realize one's dreams in one's lifetime. That's to fuel growth by taking loans and other like means. Here again there are accepted standards to maintain, like debt-equity ratio. While passionately chasing one's dreams there'll be temptation to cross the acceptable limit and accumulate more loans than one can manage, especially so when one has powerful political connections to stall loan recovery by banks. But we are not eluding Siddhartha's to be the case. That time will tell. But that's the general trend for lot of businesses. Siddhartha fuelled feverish growth of his companies with loans and probably by some dubious means as well. Whether it was within acceptable limits, whether there were any misuse of political power time will tell. Siddhartha's greatness lies in turning the investment, whatever the source may be, into highly successful internationally reputed business generating employment to several thousands of local people.

But what about the loans and the dubious means, if any? After all banks have to survive. Well usually in such cases one ropes in a big company flush with cash to buy a big slice of stake or even to take over the company if necessary. That was

precisely what Siddhartha was trying; he was in talks with Coco Cola to invest in Cafe Day to tide over the loans.

Then why did he die?

Essentially an entrepreneur's job is risky one. It's like walking on a razor's edge. It's the system that can make a hero out of a successful entrepreneur by acknowledging his positives or a zero out of him by focusing on the negatives.

Looks like our hero Siddhartha was a late in the wrong political end, with wrong political connections, using dubious *hawala* means. There was also a private equity investor who was behaving like a money lender.

When we look at the large picture, what Siddhartha created against the negatives, one wishes the system was more tolerant, more compassionate, even grateful as to reward his achievements and at the same time punish, if justified, just so much as to correct him. It's all about maintaining a delicate balance.

But the sad thing is the system cruelly threw Siddhartha into river Nethravathi. A fate no entrepreneur deserves. This must stop at all cost if we are to nurture the spirit of entrepreneurship. Without entrepreneurs Indian economy is doomed.

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SPIRITUAL INTELLIGENCE AND MORAL VALUES AMONG ADOLESCENTS

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Abstract

Morality and Spiritual intelligence are one of the most important dimensions in every one's life, and the level of moral development would affect any person's life. The present study aims at finding out the spiritual intelligence and moral values among adolescents. The study was conducted on a sample of 502 adolescents, out of these, 199 boys and 303 girls. The researcher used questionnaire method for the collection of relevant demographic details from the respondents. For the collection of necessary data, the investigators used the Spiritual Intelligence Scale by King and DeCicco (2009) and Moral Value Scale (MVS; Gupta and Singh, 2010). The data were analyzed by using Mean, S.D., 't' test, ANOVA and correlation. The results indicated that there is a significant difference in age, gender and religion, type of family, adolescents have or have not siblings and time for personal prayer.

Keywords: Spiritual Intelligence, Moral Values, Adolescents

Introduction

Spiritual intelligence is a set of

intellectual capabilities based on non-material and transcendent aspects of reality, specifically those that contribute to the integration, awareness and adaptive application of the non-material and transcendent aspects of one's existence. The concept of spiritual intelligence was first raised in the academic literature in psychology by Stevens (1996) in her book, *Spirituality in Nursing: from Traditional to New age*, and then in 1999 by Emmoms. Spiritual intelligence was coined and introduced by Danah Zohar (2000). The word spiritual in the Zohar/ Marshal concept comes from the Latin word *spiritus*, which means, "*that which gives life or vitality to a system*". Then Danah Zohar and Ian Marshal combined and did research on SI and defined it as the intelligence with which problems related to meaning and value are addressed and solved. It is an intelligence with which one will plan and place one's actions and one's life in a wider, richer, meaning-giving context. Spiritual intelligence is the intelligence with which one can access one's deepest meanings, purposes, and highest motivations. It is the intelligence with which fundamental questions are asked and with which answers are reframed. SI



becomes a form of “hyper thinking giving rise to” meaning-giving, contextualizing, and transformative intelligence.

According to Wolman (2001), Spiritual Intelligence is the human capacity to ask ultimate questions about the meaning of life and to experience simultaneously the seamless connection between each of us and the world in which we live. The spiritual intelligence is an awareness of world or globe and place of the person where he is situated. According to Vaughan (1998), Spiritual Intelligence suggests wisdom and compassion; understanding and inner peace; love and freedom; depth and breadth of vision. According to Emmoms (1999), ‘Spiritual Intelligence is a framework for identifying and organizing the skills and abilities needed for adaptive use of spirituality’.

Spiritual Intelligence is the ultimate intelligence with which we address and solve problems of meaning and value, the intelligence with which we can place our actions and our lives in a wider, richer, meaning-giving context, the intelligence with which we can assess another. Thus spiritual intelligence has a significant impact on the excellence of student's life and it goes devoid of saying that teenage years are a sensitive stage which requires instruction to make a brighter outlook and be uncovered to the difficulties.

A moral value is a universally accepted ethical principle that governs the day to day living of life. Moral values are usually communal and shared by the public in general, thus if there is no agreement among community members no moral values will be established. Moral values are the worthy ideals or principles that

one follows to distinguish the right from the wrong. These ideals or virtues are considered worthy in building up the character of an individual. Moral values refers to the good virtues such as honesty, integrity, truthfulness, compassion, helpfulness, love, respectfulness, hard-work, etc.

The word moral is derived from the Latin word “Mos” that means custom, practice or rule, a way of accomplishing things. Morality is inferred from a person intrinsically motivated resistance to a temptation and from its guilt feelings that follow acts of transgression when he understands and also accepts prevailing standards of morality of the specific society (Kohlberg, 1976). Students are the future of India. The future of our country depends upon the moral values imparted to them during their children life. Moral lessons should be properly implemented among students in school and colleges.

Adolescents is the intermediate period between childhood and adulthood. This period is otherwise called as the age of teenagers. It includes three sub periods, such as: early adolescents (12 years -14 years), middle adolescents (14 years -17 years) and late adolescents (17 years -19 years). Adolescents is the developmental transition between childhood and adulthood entailing major physical, cognitive and psychological changes. During this period physical changes that occur are universal, but social and psychological changes largely depend on the cultural contexts. As this is the transitional phase of life adolescentss rebel against their parents and society most often. Therefore, this period is labelled as storm and stress period.



Method

Descriptive research design was used in this study. Sample (N=502) selected from Meenachil Taluk in Kottayam district, Kerala.

Tools

1. Demographic data sheet prepared by the researcher.
2. Spiritual Intelligence Scale by King and DeCicco (2009)
3. Moral Value Scale (MVS) by Guptha and Singh (2010).

Reliability and Validity

The split half reliability co-efficient of the test is calculated to be 0.91 after correlation and the test-retest reliability is 0.89. Both co-efficient are at the level 0.01. Hence SISRI 24 is a reliable measurement for assessing spiritual intelligence.

The test retest reliability and the split-half reliability were estimated for each age group separately. MVS was validated against MJT (moral judgement test) developed by Sinha and Verma (1992). MJT measures moral judgement which involves the cognitive capacity and insight to see the relationship between the abstract principles and concrete cases and to judge the situations as right or wrong, keeping in view the knowledge of moral standards.

Objectives

1. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of their age.
2. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of their gender.
3. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of their religion.
4. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of their type of family.
5. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of whether they have siblings.
6. To find out whether there are any significant difference in spiritual intelligence and moral values among adolescents on the basis of their time spend for personal prayers.
7. To find out whether there are any significant difference in age, spiritual intelligence and moral values.

Hypotheses

1. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their age.
2. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their gender.
3. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their religion.
4. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their type of family.

5. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of whether they have siblings.
6. There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their time spend for personal prayers.
7. There will be a significant difference in age, spiritual intelligence and moral values.

Results and Discussion

The following session explains the difference in the spiritual intelligence and moral values among adolescents.

Table No. 1

Mean, standard deviation and corresponding 't' values of spiritual intelligence and moral values among adolescents based on gender

| Variables | Mean of Boys(N=199) | SD | Mean of Girls(N=303) | SD | 't' values |
|------------------------|---------------------|-------|----------------------|-------|------------|
| CET | 17.18 | 4.84 | 18.79 | 5.30 | 3.45** |
| PMP | 13.33 | 3.83 | 14.99 | 3.61 | 4.92** |
| CSE | 16.19 | 4.71 | 18.33 | 4.27 | 5.25** |
| TA | 11.35 | 3.78 | 13.44 | 7.07 | 3.82** |
| Spiritual Intelligence | 58.06 | 14.43 | 65.56 | 15.61 | 5.42** |
| Lying | 5.50 | 1.29 | 5.53 | 1.28 | 0.26 |
| Dishonesty | 6.45 | 1.22 | 6.74 | 0.89 | 3.13** |
| Stealing | 7.85 | 1.19 | 8.43 | 0.89 | 6.26** |
| Cheating | 5.65 | 1.26 | 6.45 | 1.21 | 7.04** |
| Moral Value | 25.47 | 3.37 | 27.17 | 2.63 | 6.32** |

**significant at 0.01 level

*significant at 0.05 level.

Above table revealed that spiritual intelligence and its all subscales significantly differed among boys and girls. Spiritual intelligence higher among girls than boys. Girls in the society lead a prescribed life according to the norms of the society than boys.

Mohanty (2018) found that girls are better than boys in the development of both spiritual intelligence and positive self-identity.

In the case of moral values except lying, keep statistically significant difference.

Moral values higher among girls. Cultural features and attitude towards girl children from a significant adults may be developed a higher level of moral value among children.

"There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of their gender."

Hypothesis is accepted.

Table No. 2

Mean, standard deviation and



corresponding 't' values of spiritual intelligence and moral values among adolescents based on type of family.

| Variables | Mean of Nuclear family(N=371) | SD | Mean of Joint family(N=131) | SD | 't' values |
|------------------------|-------------------------------|-------|-----------------------------|-------|------------|
| CET | 18.31 | 5.26 | 17.70 | 4.95 | 1.14 |
| PMP | 14.46 | 3.80 | 13.96 | 3.70 | 1.31 |
| CSE | 17.81 | 4.56 | 16.55 | 4.47 | 2.72** |
| TA | 12.95 | 6.58 | 11.64 | 4.18 | 2.13* |
| Spiritual Intelligence | 63.55 | 15.78 | 59.87 | 14.71 | 2.33* |
| Lying | 5.56 | 1.29 | 5.41 | 1.25 | 1.10 |
| Dishonesty | 6.58 | 1.05 | 6.76 | 1.02 | 1.68 |
| Stealing | 8.22 | 1.07 | 8.14 | 1.03 | 0.77 |
| Cheating | 6.18 | 1.27 | 6.00 | 1.32 | 1.41 |
| Moral Value | 26.56 | 3.10 | 26.32 | 2.97 | 0.75 |

**significant at 0.01 level

*significant at 0.05 level.

Above table revealed that subscales of spiritual intelligence conscious state expansion (CSE) and transcendental awareness (TA) and total spiritual intelligence showed significant difference. Other subscales did not varied significantly according to their type of family.

In the case of moral values, no significant difference was observed.

"There will be a significant difference

in spiritual intelligence and moral values among adolescents on the basis of their type of family."

Hypothesis is partially accepted.

Table No. 3

Mean, standard deviation and corresponding 't' values of spiritual intelligence and moral values among adolescents basis on they have or have not siblings.

| Variables | Mean of have siblings (N=462) | SD | Mean of haven't siblings (N=39) | SD | 't' values |
|------------------------|-------------------------------|-------|---------------------------------|-------|------------|
| CET | 18.27 | 5.21 | 16.84 | 4.71 | 1.64 |
| PMP | 14.44 | 3.73 | 13.07 | 4.22 | 2.17* |
| CSE | 17.63 | 4.54 | 15.79 | 4.61 | 2.43* |
| TA | 12.76 | 6.18 | 10.87 | 4.41 | 1.87 |
| Spiritual Intelligence | 63.12 | 15.53 | 56.58 | 15.19 | 2.52* |
| Lying | 5.53 | 1.28 | 5.48 | 1.27 | 0.21 |
| Dishonesty | 6.64 | 1.06 | 6.43 | 0.78 | 1.21 |
| Stealing | 8.26 | 1.00 | 7.58 | 1.44 | 3.85** |
| Cheating | 6.14 | 1.29 | 6.00 | 1.25 | 0.68 |
| Moral Value | 26.58 | 3.01 | 25.51 | 3.59 | 2.10* |

**significant at 0.01 level

*significant at 0.05 level.

Above table revealed that subscales of spiritual intelligence personal meaning production (PMP) and conscious state expansion (CSE) and total spiritual intelligence showed significant difference. Other subscales did not varied significantly according to whether they have siblings.

In the case of moral values, subscale of moral values stealing and total moral values showed significant difference. Other subscales did not varied significantly according to whether they have siblings.

“There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of they have or have not siblings.”

Hypothesis is accepted.

Table No. 4

Mean standard deviation and corresponding ‘t’ values of spiritual intelligence and moral values among adolescents based on time for personal prayer.

| Variables | Mean of Yes(N=459) | SD | Mean of No(N=43) | SD | ‘t’ values |
|------------------------|--------------------|-------|------------------|------|------------|
| CET | 18.35 | 5.29 | 16.06 | 3.19 | 2.78** |
| PMP | 14.50 | 3.81 | 12.55 | 2.88 | 3.24** |
| CSE | 17.76 | 4.61 | 14.53 | 2.72 | 4.51** |
| TA | 12.87 | 6.19 | 9.81 | 3.61 | 3.18** |
| Spiritual Intelligence | 63.49 | 15.76 | 52.97 | 9.04 | 4.30** |
| Lying | 5.54 | 1.30 | 5.37 | 1.00 | 0.82 |
| Dishonesty | 6.67 | 1.01 | 6.13 | 1.24 | 3.25** |
| Stealing | 8.26 | 1.03 | 7.55 | 1.16 | 4.26** |
| Cheating | 6.20 | 1.28 | 5.37 | 1.09 | 4.12** |
| Moral Value | 26.69 | 3.00 | 24.44 | 2.97 | 4.70** |

**significant at 0.01 level

*significant at 0.05 level.

Above table revealed that spiritual intelligence and its all subscales significantly differed on the basis of personal prayers. Spiritual intelligence higher among adolescents have their personal prayers than adolescents haven’t their personal prayers.

In the case of moral values except lying, keep statistically significant difference. Moral values are more among in adolescents have time taken for personal prayers. Moral values and its subscales dishonesty and Stealing are higher among

in adolescents haven’t time taken for personal prayers than adolescents have time taken for personal prayers.

“There will be a significant difference in spiritual intelligence and moral values among adolescents on the basis of personal prayers.”

Hypothesis is accepted.

Table No. 5

Correlation table of age group, spiritual intelligence and moral values.



| Variables | Age group |
|------------------------|-----------|
| CET | -0.233** |
| PMP | -0.110** |
| CSE | -0.134** |
| TA | -0.084 |
| Spiritual intelligence | -0.176** |
| Lying | 0.046 |
| Dishonesty | -0.059 |
| Stealing | 0.041 |
| Cheating | -0.110* |
| Moral value | -0.033 |

As per the table age is related with spiritual intelligence. The relation is negative and significant. Which means that as age increases spiritual intelligence and moral value subscale cheating decrease.

As age increases critical existential thinking (CET), personal meaning production (PMP), conscious state expansion (CSE) and total spiritual intelligence decreased. In the case of moral values subscale cheating also decrease, as increases.

Hypotheses is partially accepted.

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HAPPINESS AMONG WOMEN UNDERGONE TUBAL LIGATION SURGERY.

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Abstract

Artificial birth control methods are used to prevent conception or pregnancy through the use of various devices, drugs, agents, sexual practices, or surgical procedures. One among such surgical procedure for women is known as Tubal ligation, wherein fallopian tubes are cut, blocked or burned or a combination of all these to seal them and prevent future fertilization. The primary objective of the study was to evaluate the happiness of women undergone tubal ligation surgery in Idukki district. Snowball sampling method was used for the selection of the samples. The study was conducted on 100 women who have undergone tubal ligation surgery. Descriptive research design was used by the researcher. The results revealed that anxiety and depression of women undergone tubal ligation surgery is influenced by number of children and pregnancy complications. It is also revealed that the level of happiness is higher among women undergone tubal ligation surgery.

Keywords: *Anxiety, Depression, Stress, Happiness, Tubal ligation, Artificial birth control surgery.*

Introduction

Tubal Ligation is a type of surgical sterilization procedures for women. “Tubal” refers to your fallopian tubes, and “ligation” means to tie off (WebMD, 2019). It is a surgical procedure in which the fallopian tubes are permanently blocked or removed. Studies suggest that tubal sterilization is a remarkably safe surgical procedure. The most effective form for preventing pregnancy is sterilization and it is the permanent form of birth control (Spadoto et al., 2014).

The most accepted method of contraception in India is female sterilization or tubal ligation. Tubal sterilization is the most practiced method of contraception globally. It has been estimated that the procedure has been performed on 190 million women worldwide. Among other advantages, tubal sterilization is a balanced contraceptive method (Lutala et al., 2011). India officially launched its population policy and family planning policy in the year 1952 which was the first in its kind all over the world. During the programme, the government made available many contraceptive methods to the couples like condoms, IUD,



diaphragm, and sterilization. The method of sterilization gained popularity soon after the implementation. During its early years, the programme focussed on the health rationale of family planning. Family planning as a strategy for population stabilisation received attention only after 1971 population census (Chaurasia & Gulati, 2007).

The studies related with psychological and physical repercussions among women undergone tubal ligation surgery is less in number. However the studies conducted among women undergone tubal ligation states that they have experienced psychological problems in a number of ways after being sterilized (Lutala et al., 2011). Yet another studies revealed that women undergone tubal ligation experienced some of the common mental health disorders like depression anxiety and stress (Luo . et.al. in 1996).

Mental health is all about how people think, feel, and behave. It refers to cognitive, behavioral, and emotional well-being. According to World Health Organization(2004), "Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community." According to this definition mental health has been often conceptualized as a purely positive affect, marked by feelings of happiness and sense of mastery over the environment. The contributing factors which disrupt mental well being includes factors in people's lives, interpersonal connections, and physical factors. The ability to enjoy life is an important characteristic of a mentally well person.

That means happiness and mental well being are interconnected. In order to achieve psychological resilience, one needs to make a balance between life activities, responsibilities, and efforts. When there is an imbalance, especially when a person experiences conditions such as stress, depression, and anxiety, mental health is at risk and disrupt a person's routine.

Depressive disorders are the most common mental health problem in any human community with ten percent of the population evicted by depression at any given time (WHO, 2008). According to the World Health Organization (2012), unipolar depressive disorders were ranked as the third leading cause of the global burden of disease in 2004 and was expected to move into the number one place by 2030. Depression is the also most frequently encountered mental health problem affecting woman's overall health. Prevalence rates are approximately twice among women than men with 30 percentage has been reported among women in South East Asia (Gururaj et al., 2020). The National Mental Health Survey also proved that Depression was higher in females, separated or widowed (Malhotra & Shah, 2015).

Little science exists to explain how or why mental health influences contraceptive behavior. Psychological research suggests that altered cognitive processes may contribute to heightened "perceptions" of physical symptoms among women with mental health conditions. Depressed or anxious women may also internalize negative or incorrect information about contraception and have exaggerated concerns about risks and side effects (Beck, 1987).

Happiness is as a state of well-being and contentment (Merriam-Webster, n.d. 2020). It is perhaps one of the most salient of human pursuits. Happiness has been the most important goal for humans throughout history (Tamir et al., 2017). Aristotle considered his eudaemonia, usually translated as 'happiness', to be the ultimate goal of humans, and superior to all other goals. Eudaemonic happiness was suggested to be related to psychosocial functioning and distinct, albeit correlated, with pleasure-driven hedonic happiness. Cross-cultural research conducted in 47 countries indicated that happiness is rated higher than all other personal values such as health, love or wealth (Medvedev et al., 2017). Majority of the women are satisfied and happy after the decision to undergo sterilization. But the scientific studies regarded with the relationship between happiness and tubal ligation is lacking. The present study is an attempt to understand the level of happiness among women undergone tubal ligation surgery.

Method

Descriptive research design was used in this study. Sample (N=100) selected from the Idukki district.

Tools

1. Demographic data sheet prepared by the researcher
2. Oxford happiness questionnaire developed by Michael Argyle and Peter Hills (2001)
3. Anxiety, depression, stress scale developed by Pallavi Batnagar (2011)

Reliability and Validity of Anxiety, Depression Stress

Reliability of the total scale in terms

of internal consistency as measured by Cronbach's Alpha and Spearman- Brown coefficient is 0.81 and 0.89. The obtained reliability for anxiety depression and stress subscales as measured by Cronbach's Alpha is 0.76 and 0.75 and 0.61 and when measured by Spearman- Brown coefficient is 0.86 and 0.76 respectively.

Reliability and Validity of Happiness

The Oxford happiness questionnaire has a high reliability value of 0.91. It has a high test retest reliability. As well as a strong correlation ($r = 0.90$) with other well known happiness measures like the depression happiness scale.

The construct validity established through association of the measure with a variety of individual differences in traits and cognitive variables that are associated with psychological wellbeing. Robbins and Francis and Edward (2010) found the construct validity in terms of positive association with extraversion ($r = 0.38$) and negative association with neuroticism ($r = 0.57$) Oxford happiness questionnaire accesses the same construct with validity as the Oxford happiness inventory.

Objectives

1. To find out whether there is any difference in anxiety, depression, stress and happiness of women undergone tubal ligation surgery on the basis of number of children.
2. To find out whether there is any difference in anxiety, depression, stress and happiness of women undergone tubal ligation surgery on the basis of problems confronted on pregnancy.

Hypotheses

1. There will be a significant difference



in the anxiety, depression, stress and happiness of women undergone tubal ligation surgery on the basis of number of children.

2. There will be a significant difference in the anxiety, depression, stress and happiness of women undergone tubal ligation surgery on the basis of problems confronted on pregnancy.

Results and discussions

The following session explains the significant difference of anxiety, depression, stress and happiness of women undergone tubal ligation surgery.

Table 1

Mean, SD and corresponding 't' values of anxiety, depression, stress and happiness based on their Number of children.

| Variables | Mean of having two children (N=75) | S.D | Mean of three children and above (N=25) | S.D | 't' values |
|------------|------------------------------------|---------|---|---------|------------|
| Anxiety | 4.4667 | 3.39448 | 6.3200 | 3.00998 | 2.429* |
| Depression | 2.0000 | 2.88050 | 3.4800 | 3.44141 | 2.117* |
| Stress | 4.3333 | 3.01946 | 5.2800 | 3.03480 | 1.356 |
| Happiness | 3.9568 | .50123 | 3.8193 | .43836 | 1.223 |

*significant at 0.05 level

The above table shows that there is significant differences in Depression, Anxiety, based on their number of children. In depression the 't' value 2.117 is higher than the table value, then it is significant at 0.05 level. In anxiety the 't' value 2.429 is higher than the table value, then it is significant at 0.05 level. Stress and happiness did not vary significantly on the basis of number of children.

Hence, hypothesis, there will be a significant difference in anxiety, depression, stress and happiness of young mothers undergone tubal ligation surgery based on number of children is partially

accepted. Present study supported the findings of Luo et al., in 1996. They found that the risk for depression is higher among women who had undergone tubal ligation surgery and also they found that the risk of anxiety is also higher after tubal ligation surgery. It may be because of the regret and guilt feeling experienced by them after the surgery. Present findings contradicted the findings of Ertel et al., 2011.

Table 2

ANOVA of ADS and happiness of women undergone tubal ligation surgery with respect to problems confronted.

| Variables | | df | Mean squares | f |
|------------|---------------|----|--------------|---------|
| Anxiety | Between group | 4 | 50.954 | 5.201** |
| | Within group | 95 | 9.797 | |
| | Total | 99 | | |
| Depression | Between group | 4 | 19.987 | 2.210 |
| | Within group | 95 | 9.046 | |
| | Total | 99 | | |

| | | | | |
|-----------|---------------|----|--------|--------|
| Stress | Between group | 4 | 22.756 | 2.632 |
| | Within group | 95 | 8.647 | |
| | Total | 99 | | |
| Happiness | Between group | 4 | .769 | 3.568* |
| | Within group | 95 | .216 | |
| | Total | 99 | | |

* significant at 0.01 level *significant at 0.05 level

The table reveals that the calculated 'F' value of anxiety is 5.201, which is greater than the table value and it is statistically significant at 0.01 significant level. The calculated 'F' value of happiness is 3.568, which is greater than the table value and it statistically significant at 0.05 level. The calculated 'F' value of stress is 2.632, which is lower than the table value and it is not statistically significant. The calculated 'F' value of depression is 2.210, which is lower than the table value and it is not statistically significant. In the case of happiness F value is greater than the table value and it is significant at 0.05 level which means that happiness varied among different groups of women.

The result of group mean analysis is given below.

Post hoc test of anxiety with respect to problems confronted during pregnancy

| Confronted problems | N | Subset for alpha= 0.01 | |
|---------------------|----|------------------------|--------|
| | | 1 | 2 |
| Abortion | 6 | 3.5000 | |
| None | 72 | 4.2639 | |
| Stillbirth | 8 | 6.6250 | 6.6250 |
| Miscarriage | 8 | | 7.5000 |
| Pre-term birth | 6 | | 8.6667 |
| Sig. | | .055 | .212 |

According to the results, women confronted with pre-term birth group and miscarriage group kept a difference with aborted women group. Still birth group women do not differed with any other groups. Anxiety is comparatively low among aborted women. The present findings supported the findings of Tavoli, et al., in 2018. They found that women confronted with miscarriage experience higher level of anxiety and depression as compared to women without history of miscarriage.

Post hoc test of happiness

| Confronted problems | N | Subset for alpha = 0.05 | | |
|---------------------|----|-------------------------|--------|--------|
| | | 1 | 2 | 3 |
| Still birth | 8 | 3.5388 | | |
| Miscarriage | 8 | 3.5905 | 3.5905 | |
| None | 72 | 3.9598 | 3.9598 | 3.9598 |
| Pre-term birth | 6 | | 4.0632 | 4.0632 |
| Abortion | 6 | | | 4.2874 |
| Sig. | | .082 | .051 | .177 |

The group mean analysis indicated that stillbirth and miscarriage kept a difference with abortion. The findings of present study indicates that the happiness is higher among aborted women group than the women confronted with stillbirth group and miscarriage group. The above findings



supported the study of Rocca et al., (2012) which revealed that women confronted abortion experienced more relief, comfort and happiness. It might be due to the satisfaction experienced by the women confronted with abortion and the absence of the pregnancy related problem in the future. The argument of the researchers is supported by the finding of Lutala et al., (2011). It revealed the fact that after tubal sterilization, participants experienced either physical or mental relief that gave them a sense of satisfaction. Women undergone abortion face short-term negative emotions after an abortion. At the same time, evidences of experiencing negative long-term impacts on mental health is not proven through scientific studies. So hereby researchers assume that as a long term impact happiness and relief prevails over guilt, regret and sadness.

Conclusion

The number of women undergoing tubal ligation has become larger in India and worldwide. Clinical and psychological repercussions of tubal ligation is to be studied thoroughly. But majority of studies over the topic proves that some of the common mental health problems like depression anxiety and stress affects the quality of life and happiness of women undergone tubal ligation.

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THE INFLUENCE OF EXERCISE ON WELLNESS AMONG EX-SERVICE MEN HAVING LIFESTYLE DISEASE

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Abstract

People from different parts of the nation join the armed forces; get involved in the activities of the force for a period of time. After the period of service, the person retires from the armed force and gets introduced into a different community. The present study is aimed to reveal the connection between exercise, wellness and lifestyle diseases. The convenient sampling was used for the selection of the samples. The study was conducted on 156 Ex-servicemen who have served in different sections of the armed force. Ex-servicemen who have Diabetics (N=49), Cardiac diseases (N=35) and BP/Cholesterol variations (N=47), all of the mentioned lifestyle diseases (N=15) and without any lifestyle diseases (N=10) are selected for the study. The researcher used questionnaire method and interview method for the collection of relevant demographic data from the respondents. There is a significant difference was observed with the wellness of persons doing exercise with others.

Keywords: Wellness, Exercise, Ex-service-men, Lifestyle diseases

Introduction

A person who services in the armed force goes through different circumstances which demands both physical and mental hard work. The majority of the jobs in the armed force are physically demanding jobs and the service men follows a well disciplined way of life in which a person gets about four hours of exercise in a day, balanced diet and periodic medical checkups. But things begin to change when a person retires from the armed force after the completion of service period (basically of 15 years). They experienced various problems related with their retirement. Bellino (1969) listed seven anxiety-producing problems experienced by military retirees: employment, finances, changing social factors, residence, new household patterns, integration into civilian life, and changing interpersonal relations. Bellino (1970) noted that civilian life often resulted in the military retiree spending more time at home than ever before, which often caused adjustment problems for the family. Garber (1971) observed that unemployed retirees experienced a high incidence of family disruption, as well as a higher



divorce rate than the general population. They are entered into an entirely different society and their habit of doing exercise and concentration upon their duties based on their trade begins to change with the retirement. Hence the majority of the persons gradually loses their interest to follow those habits especially that of doing exercise, having a balanced diet etc. By this way, the retirement brings drastic changes in their life. As time passes, due to the changes in their lifestyle (decrease in the duration of exercise and difference in the quality and quantity of food and the periodic medical checkups), majority of them affected with lifestyle diseases.

Presence of any lifestyle diseases may bring changes in the wellness of the person. This brings changes in the thought, emotions, control, work and the positive humor of the person. It also brings changes in the wellness factors including: creativity, physical, social, essential and coping of the person. This definitely puts an influence upon the person's way of viewing the world around him/her changes. The stress and strain in the daily life may results maladaptive adjustments among them. Various research studies evidenced that diet and lifestyle are the major factors influenced susceptibility to many diseases. Some of the effects of lifestyle diseases upon a person include; tiredness, low appetite, unable to tolerate life stress, adoption of health risk behaviors, inability to find a task enjoyable, sudden anger, reduced curiosity, decreased confidence levels, increased nervousness, inability to take quick decisions and so on.

The lifestyle diseases can be considered as diseases linked with the way people live their life, which is commonly caused by

lack of physical activity, unhealthy eating as well as alcohol, drugs and smoking abuse.

Lifestyle disease can be defined as a disease associated with the way a person or group of people lives. Lifestyle diseases include atherosclerosis disease, stroke, obesity, type 2 diabetes; and diseases associated with smoking and alcohol and drug abuse. Diseases that mostly have an effect on our lifestyle are heart disease, stroke, blood pressure, obesity and diabetes. The diseases that appear to increased among ex-service men too. The sudden changes in the lifestyle of ex-servicemen like quitting exercise and avoiding timely food may also contribute to this. Presence of any lifestyle diseases brings changes in the normal functioning of a person. The burden of disease reduces the wellness among veterans. The presence of any of the disease or disorder affects not only the person himself, but those who are around him/her also (William and Schiel, 2016).

According to ICMR (2017) the range of disease burden or DALY rate among the states in 2016 was 9-fold for ischemic heart disease, 4-fold for chronic obstructive pulmonary disease, and 6-fold for stroke, and 4-fold for diabetes across India. Non-communicable diseases (which include lifestyle diseases) caused for 62 percentage of all deaths from major disease groups. Three of the five leading individual causes of disease burden in India were non-communicable, with ischemic heart disease and chronic obstructive pulmonary disease as the top two causes and stroke as the fifth leading cause.

Mental and physical fitness were important in the well functioning of a



person. Regular physical exercises enhance the total fitness. The studies of Jones (1998) and Vuori (1995) found enormous positive effects of daily exercise. The people who make exercise as essential part of their routine are more happy and efficient than others. Exercise does not mean to go to gym or some club for daily activity; it only means to do some physical activity no matter how and where. Exercise is useful in preventing or treating coronary heart disease, osteoporosis, weakness, diabetes, obesity, and depression. Strengthening exercises provide appropriate resistance to the muscles to increase endurance and strength. Cardiac rehabilitation exercises are developed and individualized to improve the cardiovascular system for prevention and rehabilitation of cardiac disorders and diseases. A well-balanced exercise program can improve general health, build endurance, and slow many of the effects of aging. The benefits of exercise not only improve physical health, but also enhance emotional well-being. Regular physical activity remains an essential behavior for endorsing health, postponing or preventing predominant musculoskeletal disorders such as mechanical low back pain, neck and shoulder pain and decreasing the risk of increasing coronary heart disease, hypertension, diabetes, osteoporosis, obesity and colon cancer.

Majority of the sample is doing any type of exercise such as muscle stretching, muscle strengthening and other forms of exercise (including yoga and cardiac exercises). Some of them have returned to their exercise patterns after the onset of the lifestyle disease.

Deviations from the regular pattern

of life of veterans created multifaceted change in the remaining life of the veterans. The concept of wellness, safety feeling and comforts may be crushed in between the drastic change and social demands of the surroundings. At this stage, regular lifestyle could not be followed and the fitness and wellness may go down. In this scenario, present study is relevant and entitled as 'The Influence of Exercise on Wellness of Ex-servicemen having Lifestyle Disease'.

Objective

To examine the influence of exercise on wellness of Ex-servicemen having lifestyle diseases.

Hypothesis

There will be a significant difference in the wellness of the Ex-servicemen having lifestyle diseases on the basis of the type of exercise.

Tools

1. Demographic data sheet prepared by the researcher
2. Five Factor Wellness Inventory developed by Myers, Sweeney and Hattie (2004)

Method

A number of 156 Ex-servicemen were selected by using convenient sampling method. Ex-servicemen having Diabetics (N= 49), BP/Cholesterol (N=47), Cardiac diseases (N=35), all of the mentioned lifestyle diseases (N=15) and without any lifestyle diseases (N=10) were included in the study.

Reliability and Validity

Hattie, Myers and Sweeney (2004) reported alpha coefficients for the five sec-

ond order factors as: Creative self- .93, Coping self- .92, Social self- .94, Essential self- .91, Physical self- .90 and .94 for total wellness. The sample in their study included 3043 persons who had completed the wellness evaluation of lifestyle, however, only the 73 items that comprise the 5F-Wel were examined in their reliability analysis.

The authors report that several studies provide evidence of construct validity of the Five Factor

Wellness Inventory (e.g., self-esteem, Spurgeon, 2002; relationship self-efficacy, Shurts, 2004; and spirituality, Gill, 2004; as cited in Myers & Sweeney, 2004). In-

ternal consistency was examined for the 5F-Wel using a sample of 2,093 persons, including 52% males and 48% females (Myers & Sweeney, 2004). The alpha coefficients are reported to be high for both the first- and second- order factors and ranged from .90 to .85 (Myers & Sweeney, 2005, p. 41). In the third-order scales, alpha coefficients ranged from .70 to .87, except for Self-Care (.66) and Realistic Beliefs (.68) (Myers & Sweeney, 2005).

Results and Discussion

The following session explains the influence of exercise upon the wellness of Ex-servicemen having lifestyle diseases.

Table 01

ANOVA with respect to type of exercise

| Type of Exercise | | Sum of Squares | df | Mean Square | F |
|------------------|----------------|----------------|-----|-------------|---------|
| Coping self | Between Groups | 384.359 | 2 | 192.179 | 4.069* |
| | Within Groups | 7225.661 | 153 | 47.227 | |
| | Total | 7610.019 | 155 | | |
| Physical self | Between Groups | 176.683 | 2 | 88.342 | 3.270* |
| | Within Groups | 4133.907 | 153 | 27.019 | |
| | Total | 4310.590 | 155 | | |
| Creative self | Between Groups | 1146.195 | 2 | 573.097 | 6.472** |
| | Within Groups | 13548.030 | 153 | 88.549 | |
| | Total | 14694.224 | 155 | | |
| Essential self | Between Groups | 1.723 | 2 | .862 | .023 |
| | Within Groups | 5691.969 | 153 | 37.202 | |
| | Total | 5693.692 | 155 | | |
| Social self | Between Groups | 17.951 | 2 | 8.975 | .465 |
| | Within Groups | 2954.530 | 153 | 19.311 | |
| | Total | 2972.481 | 155 | | |
| Total wellness | Between Groups | 5249.991 | 2 | 2624.995 | 4.07* |
| | Within Groups | 98645.907 | 153 | 644.744 | |
| | Total | 103895.897 | 155 | | |

* Significant level at 0.05 level



The above table shows that the ANOVA of the wellness of the ESM with lifestyle disease on the basis of the type of exercise done by the ESM. It shows that the wellness of the ESM with lifestyle disease is varied according to the type of exercise, whether they are following muscle stretching or muscle strengthening exercise. The calculated 'F' value of the wellness is 4.07, which is higher than the table value; hence it is statistically significant at the 0.05. The calculated 'F' value of the wellness factor coping self is 4.06 which is higher than the table value and it is statistically significant at 0.05 level. The calculated 'F' value of the wellness factor physical self is 3.27 which is higher than the table value and it is statistically significant at 0.05 level. The calculated 'F' value of the wellness factor creative self is 6.47, which is higher than the table value and it is statistically significant in the 0.01 level of significance.

Post Hoc Tests

Table 02
Coping Self

| Type of Exercise | N | Subset for alpha = 0.05 | |
|-------------------------------|-----|-------------------------|-------|
| | | 1 | 2 |
| Muscle stretching exercise | 130 | 50.55 | |
| Muscle strengthening exercise | 16 | 53.43 | 53.43 |
| Others | 10 | | 56.20 |
| Sig. | | .215 | .235 |

According to the post hoc tests, the ESM with lifestyle disease have difference in the wellness subscale coping self based on the type of exercise which they are doing. The mean of wellness factor coping self of the ESM who are doing

muscle stretching exercise is 50.55 and that of ESM doing other forms of exercise is 56.20, which means that the ESM doing other forms of exercise kept a difference with muscle stretching exercise group.

Table 03
Physical Self

| Type of Exercise | N | Subset for alpha = 0.05 |
|-------------------------------|-----|-------------------------|
| | | 1 |
| Muscle stretching exercise | 130 | 25.98 |
| Muscle strengthening exercise | 16 | 28.31 |
| Others | 10 | 29.50 |
| Sig. | | .059 |

According to the post hoc tests, the ESM with lifestyle disease have no difference in the wellness factor 'physical' based on the type of exercise which they are doing. The mean of wellness factor 'physical' of the ESM who are doing muscle stretching exercise is 25.98 and that of ESM doing other forms of exercise is 29.50. In ANOVA the F value is statistically significant but in group mean analysis there is no group mean difference was observed.

Table 04
Creative self

| Type of Exercise | N | Subset for alpha = 0.05 | |
|-------------------------------|-----|-------------------------|-------|
| | | 1 | 2 |
| Muscle stretching exercise | 130 | 54.49 | |
| Muscle strengthening exercise | 16 | 58.56 | 58.56 |
| Others | 10 | | 64.80 |
| Sig. | | .201 | .051 |

According to the post hoc tests, the ESM with lifestyle disease have difference in the wellness factor 'creative' based on the type of exercise which they are doing. The mean of wellness subscale creative self of the ESM who are doing muscle stretching exercise is 54.49 and that of ESM doing other forms of exercise is 64.80, which means that the ESM who doing other forms of exercise is more creative than the rest of the categories based on the type of exercise.

Table 05
Total Wellness

| Type of Exercise | N | Subset for alpha = 0.05 | |
|-------------------------------|-----|-------------------------|--------|
| | | 1 | 2 |
| Muscle stretching exercise | 130 | 195.51 | |
| Muscle strengthening exercise | 16 | 206.68 | 206.68 |
| Others | 10 | | 216.00 |
| Sig. | | .193 | .278 |

According to the post hoc tests, the ESM with lifestyle disease have difference in the wellness based on the type of exercise which they are doing. The mean of wellness of the ESM who are doing muscle stretching exercise is 195.51 and that of ESM doing other forms of exercise is 216.00, which means that the ESM who doing other forms of exercise is having more wellness than the rest of the categories. As per the result, individuals doing other forms of exercise keeping more wellness than others.

Conclusion

The main aim of the study was to investigate about the influence of exercise

upon wellness of the Ex-service men having lifestyle diseases. The study found that the habit of daily exercise have a noticeable influence upon the wellness of the Ex-servicemen with lifestyle disease. Exercise plays an important role in the wellness. The transformation of the life of people retired from the armed force has led them to lead a life that is entirely different, a life in another community with another lifestyle. Majority of the people who have retired from the armed force have lifestyle disease of one or another type. The people who once served the nation are now trying to deal with their issues in the day to day life. The restrictions put by the lifestyle diseases upon the retired people have brought changes in their personality also. They are unable to enjoy what they enjoyed in the past and are unable to do what they wish to do.

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HAPPINESS AND SELF-CONCEPT OF SEXUALLY ABUSED ADOLESCENT GIRLS

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Abstract

The prime focus of this study is to illustrate the happiness and self-concept of sexually abused female adolescents. A number of 70 participants (N = 70) were selected from various institutions of Idukki District by using convenient sampling method. The happiness questionnaire by Bharadwaj & R Das (2017) and The self-concept questionnaire by Saraswat (1984), were administered to collect data from the respondents. It was found that there is significant difference in self-concept and happiness based on age and educational qualification respectively and happiness increases with the belief of having someone to share their feelings. As the age increased the adolescents showed a significant difference in self-concept which indicates their acceptance towards dreadful life events.

Keywords: Happiness, Self-concept and sexually abused

Introduction

Child sexual abuse is an upcoming terror in our society. Sexual assault in childhood or adulthood impacts not only the victim, but also the victim's family and friends as well as society as a whole. In

this regard, sexual assault is a public health problem that concerns everyone. According to WHO: "Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power". The reports and ratio of sexual abuse cases can be obtained from official webs of state and central governments, news papers, journals etc.. whereas the psychological and physiological aftermath on those victims are seldom detailed. Childhood sexual abuse (CSA) can have many medical, social, and psychological sequelae, which are wide ranging and need to be addressed. Sexual assault has numerous potential consequences that can last a lifetime and span generations, with serious adverse effects on health, education, employment, crime, and the economic well-being of individuals, families, communities and societies. The consequences of sexual assault are complex and difficult to document. Victim studies reveal the difficulties experienced by people who have been sexually assaulted compared to their



non-assaulted counterparts. However, most of these studies do not allow these difficulties to be attributed to the sexual assault alone. As per the data revealed by National Crime Record Bureau 21,605 child rapes were recorded in 2018 which included 21,401 rapes of girls and 204 of boys. Overall crimes against children has increased steeply over six times in the decade over 2008-2018. As per the report of Childline, in Kerala during the period between April and September, 2019 a number of 690 cases of child sexual abuse were reported.

Happiness always reflects the state of mind. It is a state of well-being characterized by emotions ranging from contentment to intense joy. Happiness or a happy person has been defined as someone who experiences frequent positive emotions, such as joy, interest, and pride, and infrequent (though not absent) negative emotions, such as sadness, anxiety, and anger (Lyubomirsky et al., 2005). Exposure to adverse experiences in childhood can have substantive negative impacts on individuals' physical and mental development, affecting behavioral choices during adolescence and adulthood and ultimately long-term health outcomes. Negative childhood experiences, such as physical or sexual abuse, exposure to domestic violence, family breakdown and bullying in school or community settings, have been associated with poor educational attainment, low employment, substance use, involvement in violence and poor physical and mental health. The psychological and physiological mechanisms linking childhood adversity and poor adult health are increasingly being identified (Bellis, Hughes, Jones, Perkins, and McHale 2013).

Self-concept is a general term used to refer to how someone thinks about, evaluates or perceives themselves. To be aware of oneself is to have a concept of oneself. According to Baumeister "The individual's belief about himself or herself, including the person's attributes and who and what the self is". It seemed that there is a close connection between self concept and sexual abuse. Majority of the studies over the topic proved their significant relationships. Sexually abused children had lower self-concept, social support and perceived parental quality, and higher psychopathology than the control group did. Higher self-concept, social support and perceived parental quality were linked with lower levels of psychopathology (Ateret Gewirtz-Meydan 2020)

Objectives

- To study whether there is any significant difference in happiness and self-concept among sexually abused adolescent girls
- To study whether there is any significant difference in happiness and self-concept based on their age.
- To study whether there is any significant difference in happiness and self-concept based on their education
- To study whether there is any significant difference in happiness and self-concept based on their belief of having someone to share their feelings.

Hypotheses

- There will be a significant difference in happiness and self-concept among sexually abused adolescent girls are significantly different.
- There will be a significant difference



in happiness and self-concept based on their age.

- There will be a significant difference in happiness and self-concept based on their education.
- There will be a significant difference in happiness and self-concept based on the belief of having someone to share their feelings.

Method

Descriptive research design was used by the researchers to conduct the study. Participants (N=70) of the study were selected from Idukki District by using convenience sampling method. The researchers obtained permission from Child Welfare Committee of Idukki district to collect data from shelter homes. The researchers followed all the rules, regulations and guidelines of Child Welfare Commomittee regarding the confidentiality of sexually abused adolescent girls . The data was collected from the respondent individually by obtaining their verbal consent and administered the questionnaire.

Instruments

- Demographic data sheet prepared by the researchers.

- The happiness scale - The happiness questionnaire was developed by Dr. Rajeev Lochan Bharadwaj and Dr. Poonam R Das, professors of department of psychology (2017). This scale has twenty-eight items relating to issues of happiness and hold the property to evoke response correctly. The scale of happiness can be administered in both individual or group testing situations. Scale has both positive and negative items.

- The self - Concept scale - The self-concept questionnaire was developed by Dr. Raj Kumar Saraswat, professor in psychology. The self -concept questionnaire provides six separate dimensions of self-concept such as physical, social, intellectual, moral, educational and temperamental self-concept. It also gives a total self-concept score. The inventory contains 48 items and each dimension contains eight items which is provided by five alternatives.

Results and Discussion

Table no:01

The mean, Standard Deviation and corresponding 't' values of happiness and self-concept based on the belief of having someone to share feelings.

| Variables | Mean of having belief that there is someone to share feelings (N=50) | SD | Mean of not having the belief that there is someone to share feelings (N=20) | SD | 't' values |
|--------------|--|-------|--|-------|------------|
| Self-concept | 113.14 | 19.34 | 108.45 | 16.53 | 0.953 |
| Happiness | 108.45 | 21.38 | 154.65 | 26.56 | 2.42* |

*significant at 0.05 level.



The above table reveals that there is a significant difference in happiness of sexually abused female adolescents based on the belief of having someone to share feelings. The 't' value of happiness is 2.42 which is higher than the table value. But self-concept doesn't show any significant difference with the belief of having someone to share feelings. In happiness, the mean of having the belief to share feelings with someone was 108.45 and mean of not having someone to share feeling was 154.65.

The present findings supported the study of Schonbucher, Maier, Kuo, Schnyder, and Landolt (2014). they conducted a study on sexually abused and found that they had received more emotional support from their parents to better cope with the abuse. The worst part about struggling and being frustrated is feeling like we're

alone and no one understands. But this table demonstrates a positive vibe in happiness with children who could share their feelings because problem shared is a problem halved. So hereby the result justifies that these rehabilitation centers act as a social support system where they are cared for, has assistance available from other people (colleagues, Social workers, professional social workers etc.) , and most popularly, that each and every child of the institution is part of a supportive social network.

Hence, hypothesis "there will be a significant difference in happiness and self-concept based on the belief of having someone to share their feelings" is partially accepted.

Table no:02

ANOVA with respect to age groups.

| Variables | | Sum of squares | df | Mean square | F |
|---------------|----------------|----------------|----|-------------|-------|
| Self- concept | Between groups | 2312.12 | 2 | 1156.06 | 3.59* |
| | Within groups | 21541.07 | 67 | 321.50 | |
| | Total | 23853.20 | 69 | | |
| Happiness | Between groups | 1879.77 | 2 | 939.88 | 1.70 |
| | Within groups | 37036.80 | 67 | 552.78 | |
| | Total | 38916.58 | 69 | | |

*significant at 0.05 level of significance.

From the above table the calculated 'F' value of self-concept 3.59 is in between the table value and is significant at 0.05 level. So, there is a significant difference in self-concept based on age group. The calculated 'F' value for happiness is 1.70 which is lower than the table value. So, there is no significant difference in happiness. So here the hypothesis "There will be a significant difference in happiness and self-concept based on age group is partially accepted.

The results of group mean analysis given below:

Table No:03

Post hoc test of self-concept

| Age group | N | Subset for alpha = 0.05 | |
|-----------|----|-------------------------|--------|
| | | 1 | 2 |
| Above 17 | 16 | 102.75 | |
| 15 to 17 | 27 | 111.11 | 111.11 |
| Up-to 14 | 27 | | 117.85 |
| Sig. | | 0.127 | 0.217 |

As per the table self-concept is more among age group up to 14. They kept statistically significant difference with above 17 group. The table revealed that the higher group (above 17) obtained a low score in self-concept than other groups. As defined by Baumeister (1999) the self concept is The individual's belief about himself or herself, including the person's attributes and who and what the self is. When relating the result of this table with above definition it is believed that as the child is getting older and matured the 'very incident' (sexual

molestation) is haunting them for their entire life span. It is universally accepted fact that the number of unreported sexual abuse cases are always higher than the reported ones. And this result is leading to the very conclusion that majority of marital adjustment problems, personality disorders, depression, suicides have been rooted in sexual abuse or molestation. As discussed in the introduction part sexual abuse can cause a multidimensional defect in the child and this statement is exemplified through this table.

Table no:04

ANOVA with respect to education.

| Variables | | Sum of squares | df | Mean square | F |
|--------------|----------------|----------------|----|-------------|-------|
| Self-concept | Between groups | 1121.43 | 2 | 560.71 | 1.653 |
| | Within groups | 22731.76 | 67 | 339.28 | |
| | Total | 23853.20 | 69 | | |
| Happiness | Between groups | 4662.02 | 2 | 2331.01 | 4.55* |
| | Within groups | 34254.56 | 67 | 511.26 | |
| | Total | 38916.58 | 69 | | |

*significant at 0.05

From the above table the calculated 'F' value for self-concept is 1.653 which is lower than the table value. So, there is no significant difference in self-concept based on their education. The calculated 'F' value for happiness is 4.55 which is higher than the table value and is significant at 0.05 level. So, there is a significant difference in happiness based on their education. The hypothesis "There will be a significant difference in happiness and self-concept based on educational qualification" is partially accepted.

But the table also reveals that happiness of sexually abused female adolescents very based on their education.

The results of group mean analysis given below:

Table No: 05

Post Hoc test of happiness

| Education | N | Subset for alpha=0.05 | |
|-----------|----|-----------------------|--------|
| | | 1 | 2 |
| Above 12 | 2 | 125.50 | |
| 10 to 12 | 24 | | 160.16 |
| 7 to 9 | 44 | | 169.72 |
| Sig | | 1.00 | 0.493 |

The table reveals that happiness is low among girls having +2 and above level of education. They keep statistically sig-



nificant difference with other two groups. lower educational groups did not vary each other and they have higher level of happiness. It is because as children become more conscious over the dreadful experience they came across and tend to develop several irrational feelings and attitude on their self and life. The aftermath of all these mental process prevent them from experiencing common joys and mirth of live events.

Table no:06

Correlation of happiness and self-concept.

| Self-concept | Happiness |
|--------------|-----------|
| | 0.468** |

** significant at 0.01 level.

As per this table self-concept is related with happiness. The relation is positive and significant at 0.01 level which means that when self-concept increases happiness also increases and vice versa. It is because when there is a development in the self concept of children they become capable of understanding their strengths and limitation which obviously contribute a rich inner self. Thus children might be able to tackle their challenges in daily life and become happy over life .

At the same time being happy in life is to be self - realistic and self realization is achieved through the development of self concept. This is the way both factors are interconnected in children.

Conclusion

The foremost intention of the study was to examine the happiness and self-concept of sexually abused female adolescents. The study could reveal the very fact that the victims who had someone to share their feelings showed higher level of happiness. At the same time it is also found as the age increased the self concept also decreased. The victims as well demon-

strated lower happiness as their education amplified. The study is significant as well as beneficial to the professional social workers, clinical psychologists, psychiatrists, teachers, doctors and parents to understand the victim's inner reflections and thought process.

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WOMEN ENTREPRENEURSHIP AND ECONOMIC UPLIFTMENT: A CASE STUDY WITH SPECIAL REFERENCE TO PALAI MUNICIPALITY

Jovana Pramod

Abstract

Entrepreneur is an Economic agent who plays a vital role in the economic development of a country. Economic development of a country refers to steady growth in the income levels. Traditionally, an entrepreneur has been defined as a “person who organize and manages any enterprise, especially a businessmen”. While women are starting more business than men, they find it harder at the outset to grow their business and access venture capital than men entrepreneurs in our country. Most women business owners in Indian organization were either housewives or fresh graduates with no previous experience of running a business. Thus women business owners were in traditionally women oriented businesses like –garments, beauty care and fashion designing which either does not require any formalized training or are developed from a hobby or an interest into a business. The present study is concerned with intent to analysis the present situation of women entrepreneurship. In the present areas women are coming in front and taking up the enterprises. It increases the status of women as well as promote for the economic development of

country and household income. It empowers the women.

Key words: Empowerment, Women, Entrepreneurship, Business, Interest

OBJECTIVES

- To study how women entrepreneurship helps to generation of employment
- To study how women entrepreneurship improve their status
- To study how does it leads to income generation
- To provide solution to various problems faced by women entrepreneurship

STATEMENT OF THE PROBLEM

The problem selected for the study is about the socio-economic impact made by the women entrepreneurs in the society and the changes occurred to them when they started the business and whether it was effective or not and the problems faced by them.

METHODOLOGY

The methodology adopted to carry out the study contest are of the following:



● **DATA COLLECTION**

For the purpose of study, primary and secondary data are used. The primary data was collected directly from the enterprises led by women, centered in Palai municipality, using a structured interview schedule. The secondary data was collected from Newspaper, Internet, journal and other publications.. The data has been collected from Pala municipality and from 25 respondents.

● **TOOLS FOR ANALYSIS**

The data collected through interview schedule, were tabulated and analyzed using various statistical tools and mathematical techniques, pie diagrams, graphs, charts and tables. They are used for analyzing the data in a simplified and attractive manner.

REVIEW OF LITERATURE

J.S Saini and B.S Rathore [2001] in their book 'Women Entrepreneurship: theory and practice' deals with entrepreneurial philosophy, where the success of women entrepreneur has been discussed. According to the authors, success of a women entrepreneur depends on the entrepreneur's willingness to hold responsibility for her own work

S.S Khanka [2009] in his book 'Entrepreneurship Development' illustrates the personal characteristics of successful entrepreneurs as hard work, desire for high achievement, high optimism, independence, foresight, better organizing capacity and innovativeness. According to the author, success of a small enterprise is, to a great extent, attributed to the success of the entrepreneur himself.

Sujatha Mukherjee [2010] in her article,

profiling the urban women micro-project women entrepreneurs in India, in the journal of 'entrepreneurship Development' draws the picture of an entrepreneur as a person who assumes the risk associated with uncertainty. According to the author, being entrepreneurial involves combining personal characteristics and financial means and resources within an environment to set up a business.

Mary Kay Copeland [2010] in her article, 'strategies of a successful women entrepreneur' has deliberated on the characteristics of a successful women entrepreneur. According to author, the behavior and personality characteristics that leading resources have found in effective and successful women entrepreneurs are- self confidence, risk bearing capacity, discerning power, creativeness, resilience, tenacity and courage.

Women Entrepreneurship

A woman entrepreneur is a woman who initiates, organizes and runs a business enterprise of her own or with the support of a group of like minded people. Female population who chooses to venture into industrial activities are Women entrepreneurs. The government of India defines a Woman entrepreneur's enterprise as one which is owned and controlled by woman or women having a minimum financial interest of 51%. Just like a male entrepreneur, a Woman also explores activities, undertake risks, innovates, co-ordinate and controls, supervise and lead effectively.

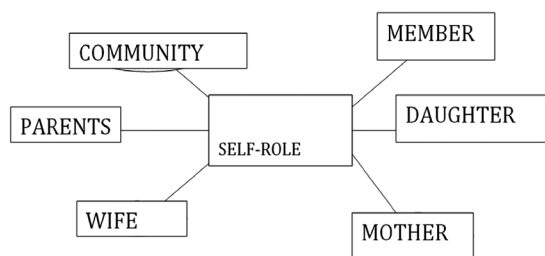
There are certain innate qualities in a woman which makes her a successful entrepreneur. Her managerial skills, caring attitude and deft manners are characteristics that to be pointed out.

A woman becomes an entrepreneur either on account of pull factors which motivate her such as independence, self actualization, reputation etc. or an account of push factors which compelled her to take up entrepreneurship. Push factors include acute financial crisis, death of earning members etc.

ROLE OF WOMEN ENTREPRENEURS

Women and social-role interface

In the journal "A Reflection of the Indian woman in the entrepreneurial world" published by Indian institute of management (IIM), Ahmadabad defines the role of women entrepreneur in a diagrammatic way as given below.



Role of women as an entrepreneur can be explained as follows.

1. Imaginative
2. Attribute to work hard
3. Persistence
4. Ability and desire to take risk
5. Profit earning capacity

Data Analysis and Interpretation

The present study is an attempt to study the impact of Women entrepreneurship in Palai. It also sought to analyse the role of women entrepreneurs in promoting economic, social upliftment of women.

This chapter deals with analysis of data collected from Pala municipality. The main objective of this chapter is to examine the impact of women entrepreneurs in promoting women upliftment, through a sample study. All the relevant information received from the questionnaire are analysed through a special package of computer. The tabulated data was analysed and interpretations were made according to sequence of objectives. Several charts and tables were used to make interpretations easier.

PALA MUNICIPALITY

Pala is a municipal town 28 km east of Kottayam in the Indian state of Kerala spread over an area of 15.93 km². It is situated 173 km north from the state Capital Thiruvananthapuram, on the banks of the Meenachil River and is the head quarters of the Meenachil Taluk and the Pala Revenue Division. Pala connects to high ranges through Thodupuzha and Kanjirapally Taluks.

SHOPWISE CLASSIFICATION

The study was made among 25 different shops, which can be classified as;

Shopwise Classification

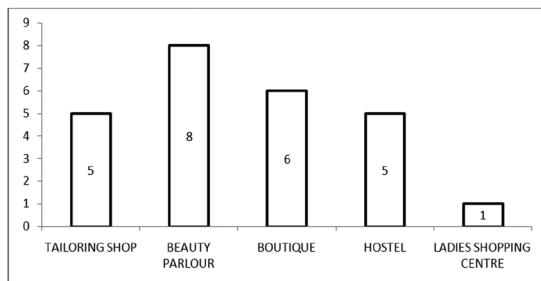
| Sl. no | Type of Shop | No. of Repondents | Percentage |
|--------|------------------------|-------------------|------------|
| 1. | Tailoring Shop | 5 | 20% |
| 2. | Beauty Parlour | 8 | 32% |
| 3. | Boutique | 6 | 24% |
| 4. | Hostel | 5 | 20% |
| 5. | Ladies Shopping Centre | 1 | 4% |
| | Total | 25 | 100% |

Source; Primary Data



The below graph shows that 20% of the respondents were running tailoring shops and 32% of the respondents are running beauty parlours. While 24% of the respondents are running boutique and 20% of the respondents are running hostels and 4% are running ladies shopping centre.

SHOPWISE CLASSIFICATION



BRANCH WISE CLASSIFICATION

A study was also made to look whether they had further branches for their enterprises.

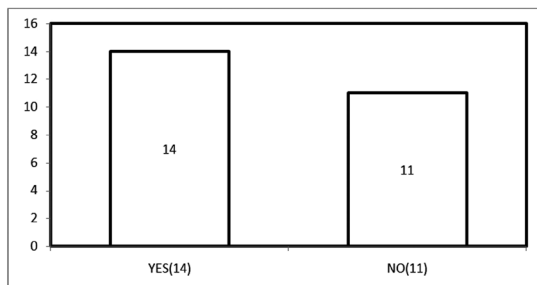
Branchwise Classification

| Sl.No | Number | Percentage |
|-------|--------|------------|
| Yes | 14 | 56% |
| No | 11 | 44% |
| Total | 25 | 100% |

Source; Primary Data

The graph below shows that about 56% of the respondents are having branches while 44% of them are not having the branches.

BRANCH WISE CLASSIFICATION



AGEWISE DISTRIBUTION

The respondents are classified in relation to their age groups. There are three class of respondents belonging to different age groups as depicted in table 3.4

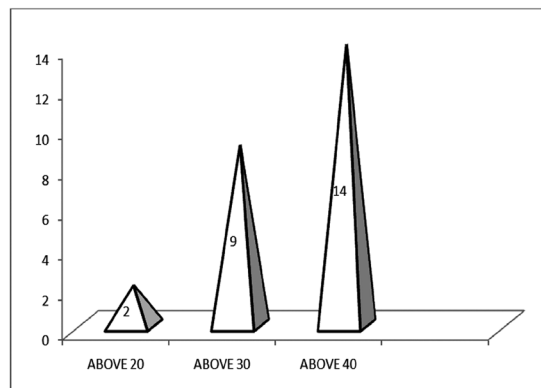
Age wise distribution

| Age | No. of Respondents | Percentage |
|----------|--------------------|------------|
| Above 20 | 2 | 8% |
| Above 30 | 9 | 36% |
| Above 40 | 14 | 56% |
| Total | 25 | 100% |

Source; Primary Data

The below graph shows that majority of the respondents are above 40 i.e. about 56% while 36% of the people are above 30. Only 8% people are above 20.

AGE WISE CLASSIFICATION



EDUCATIONAL QUALIFICATION WISE DISTRIBUTION

Educational qualification of the people is very much relevant in starting of enterprises. The following table illustrates the above fact.

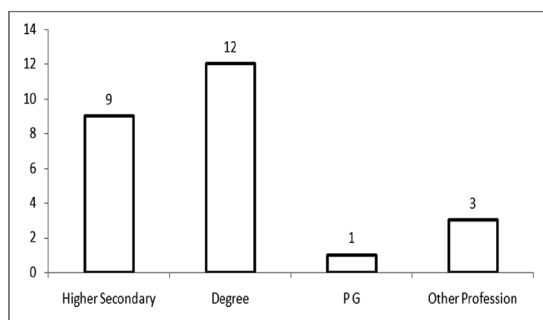
Educational Qualification Wise Distribution

| Educational Qualification | No.of Re- spondents | Per- centage |
|---------------------------|------------------------|-----------------|
| Higher Secondary | 9 | 36% |
| Degree | 12 | 48% |
| P.g | 1 | 4% |
| Other Professions | 3 | 12% |
| Total | 25 | 100% |

Source. Primary Data

The below graph shows that that 36% of the respondents have received their higher secondary education and about 48% of respondents have received their degree education.4% of the respondents has done their P.G and 12% of the people has done other professions including Nursing ,beau-
tician courses and others

EDUCATIONAL LEVEL QUALIFICATION



MONTHLY INCOME WISE DISTRIBUTION

Income is an important factor which affects the standard of living of the people. As Income raises, the standard of living increase thereby making an increase in social and mental upliftment of women. The monthly income details of the respondents are furnished as below.

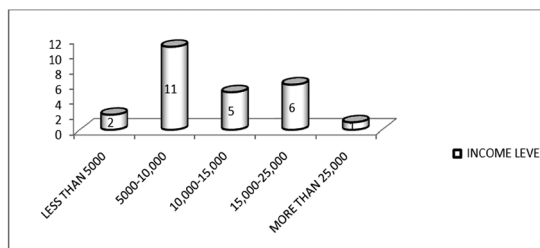
Monthly Income wise classification

| Monthly Income | No.of Re- spondents | Per- centage |
|------------------|------------------------|-----------------|
| Less Than 5000 | 2 | 8% |
| 5000-10,000 | 11 | 44% |
| 10,000-15,000 | 5 | 20% |
| 15,000-25,000 | 6 | 24% |
| More Than 25,000 | 1 | 4% |
| Total | 25 | 100% |

Source; Primary Data

The below graph shows that 8% of the respondents are receiving less than Rs.5000 per month and about 44% of the respondents are receiving incomebetween Rs 5000-10,000.20% of the respondents are receiving income between 10,000-15,000 and 24% of the respondents are receiving income between Rs.15, 000- 25,000 and 4% of the respondents are receiving more than Rs.25, 000.

MONTHLY INCOME WISE CLASSIFICATION



STANDARD OF LIVING,SOCIAL STATUS AND ROLE IN DECISION MAKING

As women take up new enterprises, their standard of living, social status and role in decision making improves. The following table shows their improvement in the social and political arena, after becoming an entrepreneur.



Standard of living, Social Status and Role in decision making

1. Standard of living

| Standard of Living | Frequency | Percentage |
|--------------------|-----------|------------|
| Increase | 25 | 100% |
| No Change | - | - |
| Total | 25 | 100% |

Source; Primary Data

2. Social Status

| Social Status | Frequency | Percentage |
|---------------|-----------|------------|
| Increase | 25 | 100% |
| No Change | - | - |
| Total | 25 | 100% |

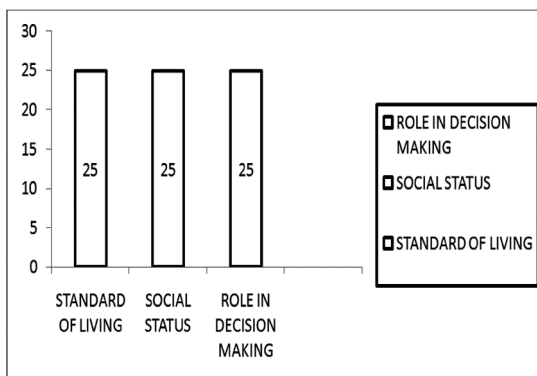
Source; Primary Data

3. Role in Decision Making

| Role In Decision Making | Frequency | Percentage |
|-------------------------|-----------|------------|
| Increase | 25 | 100% |
| No Change | - | - |
| Total | 25 | 100% |

Source; Primary Data

STANDARD OF LIVING, SOCIAL STATUS, ROLE IN DECISION MAKING



Source.Primary Data

The above figure shows that the social status, role in decision making and standard of living of the women has improved due to their enterprises. Neither of the respondents commented that there hasn't been any improvement.

PROVISION OF EMPLOYMENT OPPORTUNITIES

The starting and efficient functioning of enterprises requires labourers and employers. A study was also made to analyse the provision of employment opportunities among women entrepreneurs.

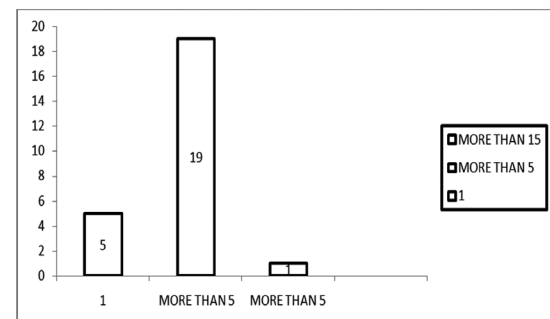
Provision of employment opportunities

| Employment Opportunities | Frequency | Percentage |
|--------------------------|-----------|------------|
| 1 | 5 | 20% |
| More Than 5 | 19 | 76% |
| More Than 15 | 1 | 4% |
| Total | 25 | 100% |

Source; Primary Data

From the graph, we can analyse that about 20% of the respondents employ one person and about 76% employ more than 5 persons. Only 4% employ more than 15 persons.

PROVISION OF EMPLOYMENT OPPORTUNITIES



Source; Primary Data

WHETHER PROBLEMS FACED FROM SOCIETY

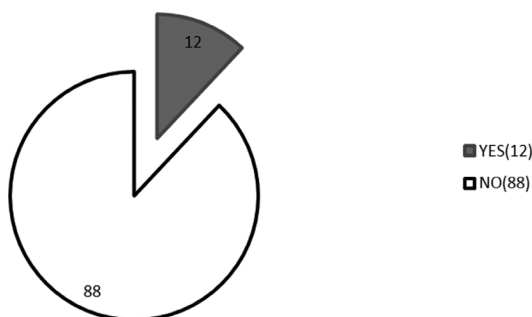
There are many factors that hinders women entrepreneurs to start their enterprises. The following table shows the above fact.

Whether problems faced

| Whether Problems Faced | Fre-quency | Percent-age |
|------------------------|------------|-------------|
| Yes | 3 | 12% |
| No | 22 | 88% |
| Total | 25 | 100% |

Source; Primary Data

WHETHER PROBLEMS FACED



Source.Primary Data

The pie diagram shows that 88% of the respondents have not faced any problems from the society while 12% of the respondents faced problems from the society including financial crisis, lack of support and lack of much knowledge in enterprise maintaining and the lack of knowledge about the funds available etc.

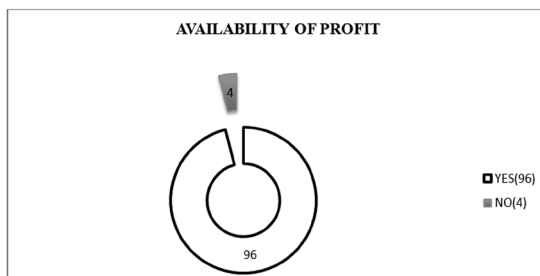
AVAILABILITY OF PROFIT

The main aim behind any enterprise is profit. If any enterprises don't receive the expected profit, it may close after some-time.

Availability of Profit

| Availability of Profit | Fre-quency | Per-centage |
|------------------------|------------|-------------|
| Yes | 24 | 96% |
| No | 1 | 4% |
| Total | 25 | 100% |

Source; Primary Data



Source.Primary Data

The above doughnut figure shows that 96% of the respondents are receiving profit and 4% of the respondents are not receiving profit.

MEANS OF WAGES

A study was conducted to analyse how the entrepreneurs pay their wages to the employees.

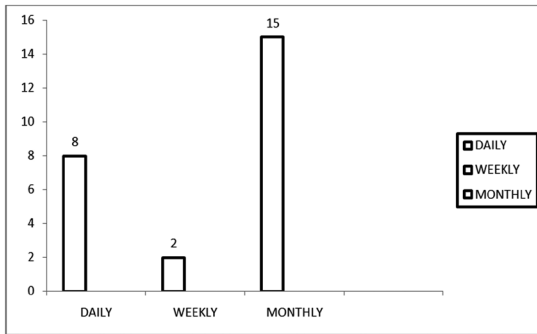
Means of wages

| Means of Wages | Frequency | Percentage |
|----------------|-----------|------------|
| Daily | 8 | 32% |
| Weekly | 2 | 8% |
| Monthly | 15 | 60% |
| Total | 25 | 100% |

Source; Primary Data

We can analyse from the graph that 32% of the women entrepreneurs provide their employees with daily wages and 8% of the women entrepreneurs provide their employees with weekly wages while 60% of women entrepreneurs provide their wage in monthly basis.

MEANS OF WAGES



Source; Primary Data

KNOWLEDGE ABOUT LOAN FACILITIES

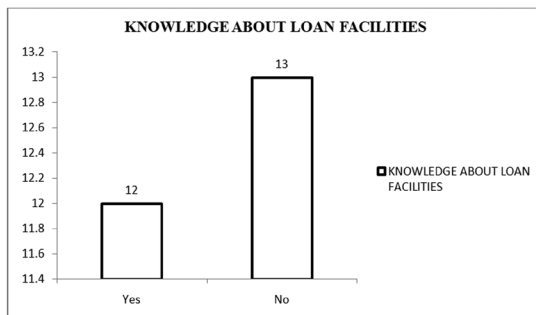
Knowledge about loan facilities provided by banks is an important factor in establishing and continuing an enterprise and in its development too.

Knowledge about loan facilities

| Knowledge About Loan Facilities | Frequency | Percentage |
|---------------------------------|-----------|------------|
| Yes | 12 | 48% |
| No | 13 | 52% |
| Total | 25 | 100% |

Source; Primary Data

From the above table, we can understand that 48% of the respondents was aware about the loan facilities and 52% of the respondents are not aware about the loan facilities.



Source.Primary Data

AWARENESS ABOUT THE SCHEME-SAVAILABLE TO WOMEN ENTREPRENEURS

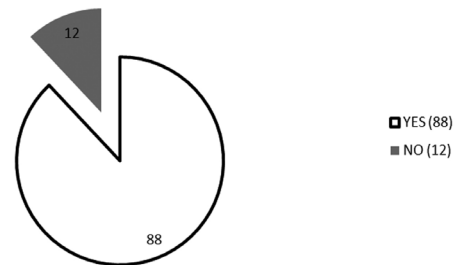
The government provides large number of schemes to promote women entrepreneurs.

Awareness about schemes to women entrepreneurs

| Awareness About The Schemes | Frequency | Percentage |
|-----------------------------|-----------|------------|
| Yes | 22 | 88% |
| No | 3 | 12% |
| Total | 25 | 100% |

Source; Primary Data

AWARENESS ABOUT THE SCHEMES AVAILABLE TO WOMEN ENTREPRENURS



Source. Primary Data

From the above pie diagram we can infer that 88% of the respondents were aware about the schemes provided by the government and 12% of the people were not aware about the schemes provided by the government.

TIME ALLOTTED FOR WORK

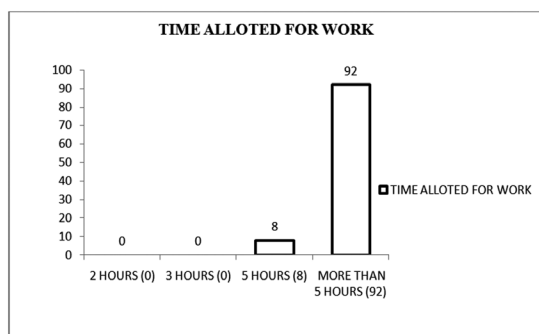
The women entrepreneurs have to adjust between her work and home to run her enterprise smoothly. With the study conducted, it was analysed that, all of them can manage both their work and home.

Time allotted for work

| Hours Allotted | Frequency | Percentage |
|----------------|-----------|------------|
| 2 Hours | - | - |
| 3 Hours | - | - |
| 5 Hours | 2 | 8% |
| More Than 5 | 23 | 92% |
| Total | 25 | 100% |

Source; Primary Data

From the above table we can analyse that 92% of the respondents spent more than 5 hours in their area of work and about 8% spend about 5 hours in their work area.



Source.Primary Data

FINDINGS AND SUGGESTIONS

The present study illustrates that most of the women ie. 32%of women were running beauty parlours among the25 respondents.In this study 56% of women are having branches so that we find that are getting profitable income.In this study we find that the majority of respondents are above the age of 40 among the 25 respondents.It is found that 48% of respondents are having degree level of education. So one of main tool of promotion of entrepreneurship is the level of education. we find that most of the women are receiving profitable income in their enterprise.This study shows that there is a huge improvement in the condition of women in the areas of standard of

living, social status and the role of decision making.Among the 25 respondents 76% women were providing employment opportunities to more than five.Among the 25 respondents 88% of women have not faced any problems from the society. The main goal of an enterprise is to obtain profit. The study found that 96% of women receiving profit from therebusiness.The majority of entrepreneurs pay the wages to the employees on monthly basis. This study inferred that 52% of respondents were not aware about the loans and concessions provided by financial institutions.The government introduced various schemes for promoting women entrepreneurship. In this study 88%of respondents were aware about the newly introduced schemes.Majority of women spend more than five hours for work daily.

Consider women as specific target group for all developmental programmes. Provide better educational facilities and also technical education to women. Vocational training should be provided Adequate training programme on management skills and leadership should be provided to women community. Skill development centres should be created to promote women entrepreneurs.Encourage women's participation in decision making.Special training should be given on achievement motivation.Making provision of marketing and sales assistance from government part by establishment of women cooperatives. Moreover proper supply of raw materials is to be ensured.Open finance cells and provide easy loans at lower interest rates. State finance corporations and financing institutions should extend purely trade related finance to women entrepreneurs. The financial institutions should provide more working capital assistance both for small



scale ventures and large scale ventures. Marketing provision of micro credit system and enterprise credit system should be given to women entrepreneurs at local level. Repeated gender sensitisation programmes should be held to train financiers to treat women with dignity.

1. Infrastructure in the form of industrial plots and sheds, to set up industries is to be provided by state run agencies. Industrial estates could also provide marketing outlets for the display and sale of products made by women.
2. A women entrepreneur's guidance cell should be setup to handle the various problems of women entrepreneurs all over the state. District industries centres and single window agencies should make use of assisting women in their trade and business guidance.
3. Involvement of nongovernmental organisation in the women entrepreneurial training programmes and counselling
4. All these remedial measures will fail unless there is a change in the social attitude. She should get support basically from her family.
5. To conduct seminars and workshops for the latest schemes that introduced by the government to support women entrepreneurship.
6. In general, women lack confidence in their strength and competence. In order to remove this family should encourage and support them.

CONCLUSION

Women constitute almost half of the total population in India. But they are not

enjoying their freedoms, equalities, privileges, on par with their male counterparts. The government of India has defined women entrepreneurs based on women participation in equity and employment of a business enterprise. Accordingly a women entrepreneur is defined as an enterprise owned and controlled by a women having minimum financial interest of 51% of the capital and giving at least 51% of the employment generated of the enterprise to a women. In this study we collected sufficient information from the Pala municipality and we conducted a sample survey among 25 women entrepreneurs. In this survey we could understand that a women enterprise or a women entrepreneur can provide employment opportunities to the society and she can change the prevailing social concepts about a women entrepreneur. It can be said that today we are in a better position where women participation in the field of entrepreneurship is increasing at a considerable rate. Women sector occupies nearly 45% of the Indian population. At this juncture, effective steps are needed to provide entrepreneurial awareness, orientation and skill development programmes to women. The role of women entrepreneur in economic development is also being recognized and steps are being taken to promote entrepreneurship. Though there are several factors contributing to the emergence of women as entrepreneurs, the sustained and coordinated effort from all dimensions would pave the way for the women moving into entrepreneurial activity thus contributing to the social and economic development of the members of the family and thereby gaining equality and equal importance for themselves.



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■

COMPARISON OF DOCKING POTENTIALS OF DIFFERENT ANTI-ALZHEIMER DRUGS ON MOLECULAR RECEPTORS

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ABSTRACT

Computational techniques have been recently evolved as an efficient medicinal tool for the identification and treatment of various diseases. With this background, a study was carried out to compare the docking potentials of different anti-alzheimer drugs on molecular receptors. In this work, 1EVE is considered as acetyl cholinesterase inhibitor and donepezil, galantamine, memantine and levodopa as drugs. The interactions between 1EVE protein and drugs were analysed using molecular docking studies. *Mucuna pruriens* is a natural herb used in Ayurvedic medicine for the treatment of Parkinson's disease. The major phytochemical present in *Mucuna pruriens* is levodopa. Among four drugs, levodopa is found most effective. The methodology can be efficiently utilized to find out novel drugs for Alzheimer's disease.

Key words- *anti-alzheimer drugs; donepezil, galantamine; memantine; and levodopa*

Introduction

Alzheimer disease (AD) is an irreversible, progressive neurodegenerative disorder or

dementia that destroys our memory and other mental functions. Dr Alois Alzheimer found out this disorder which is nowadays known as Alzheimer disease (AD). AD is most commonly affected by older adults, but it can also affect people in their 30s or 40s (early-onset form). It is a most common form of dementia, a progressive brain dysfunction, and leads to gradually increasing restriction of daily activities. Dementia is most common among the elderly population and it is a lifelong progressive neurodegenerative disease of the Brain. AD is characterized by more than just memory loss; it also results in other cognitive and Behavioral symptoms that progressively impair function in activities of daily living.

The main symptoms of AD are loss of forming new memory, speech disorder, mood swings, disruption of executive functions (decision making), memory loss, mental confusion, and eventually death is occurring. In AD, the whole brain size shrinks so that the tissue has increasingly decreased nerve cell and connection. The main reasons for AD's are the formation of senile plaques and neurofibrillary tangles in brain. Other common neurologic



presentations include changes in language ability (e.g.: anomia, progressive aphasia), impaired visuospatial skills, impaired executive function. The actual reason for Dementia is still unknown.

There are no drugs or treatments that can cure AD completely. However, medicines have been developed for an AD that can slow down their progression, or temporarily deduce symptoms. But there is much need of new drugs due to their side effect. Currently, the U.S. Food and Drug Administration approved five drugs which are used to treat AD symptoms. Donepezil, galantamine, and rivastigmine (three of available drugs) are belongs to "cholinesterase inhibitors".

Molecular Docking is a tool in computer-assisted drug design and development. It involves the interaction of two or more molecules to give a stable adduct. Molecular docking predicts the three-dimensional structure of any complex based on binding properties of ligand and target. It generates different possible adduct structures that are ranked and grouped together using scoring function in the software. Based upon total energy of the system, docking simulations predict optimized docked conformer. The main aim of molecular docking is to attain ligand-receptor complex with optimized conformation possessing less binding free energy. We can predicted binding free energy (ΔG_{bind}), there by provides additional clues about the nature of various kinds of interactions leading to the molecular docking.¹ The widely used molecular docking softwares are auto dock vina, auto dock 2.6, dockvision, gold, flexidock etc.

Molecular docking and three-

dimensional quantitative structure-activity relationship (3D-QSAR) studies on β -Secretase analogues can be performed to explore the inhibitory mechanism since β -Secretase is an important protease in the pathogenesis of Alzheimer's disease. The Lamarckian Genetic Algorithm (LGA) was applied to locate the binding orientations and conformations of the peptidomimetics with the β -secretase. A good correlation between the calculated binding free energies and the experimental inhibitory activities suggests that the identified binding conformations of these potential inhibitors are reliable.²

Fragment based QSAR and molecular docking technique can be used effectively in the development of dual inhibitors against Alzheimer's disease -amyloid cleavage enzyme (BACE-1) and acetylcholinesterase (AChE), being important for AD progression, have been considered as promising drug targets. Consideration of the lead molecules as prospective drugs for the effective dual inhibition of BACE-1 and AChE. The GQSAR model provides site-specific clues about the molecules where certain modifications can result in increased biological activity. This information could be of high value for design and development of multifunctional drugs for combating AD.³

Molecular docking programs use scoring functions to estimate the binding energetics of the predicted ligand-receptor complexes. The energy variation, due to the formation of the ligand-receptor structure, is given by the binding constant (K_d) and the Gibbs free energy (ΔG_L). Prediction of the binding energy is performed by evaluating the most important physical-



chemical phenomena involved in ligand-receptor binding, including intermolecular interactions, desolvation and entropic effect.

Auto Dock Tools (ADT) is a package of automated docking tools and excellent resource to engage biochemistry students in computational studies. It is frequently used, fast and available free of charge from the Scripps Research Institute. Aside from generating binding energies in these docking studies, the position of the ligand in the host's binding site can be visualized. And hence is considered as an efficient molecular docking technique for drug design and delivery. By ADT it is found that among the available AChE PDB entries one can find the empirical crystallographic structure of tacrine in complex with *Torpedo californica* AChE (1acj). The human and *Torpedo* sequences are 59% identical, and the global structural alignment of alpha carbons (1acj vs. 1b41) has an RMS of 1.21 Å (526 alpha carbons, Swiss PDB Viewer Magic Fit).⁴

Computer models serve as valid alternatives to experiments related to drug development which involves assessment of absorption, distribution, metabolism and excretion. SwissADME web tool gives free access to a pool of fast yet robust predictive models for physicochemical properties, pharmacokinetics, drug-likeness and medicinal chemistry friendliness, among which in-house proficient methods such as the BOILED-Egg, iLOGP and Bioavailability Radar. The iLOGP implemented in SwissADME corresponds to Model9 of the seminal publication, which was trained on 11,993 molecules ($r=0.72$, $MAE=0.89$, and $RMSE=1.14$ against experimental log P). 5-fold crossvalidation

ensured robustness ($q^2CV=0.52$, $MAE_{CV}=0.89$, and $RMSE_{CV}=1.14$) and external test benchmarks showed the excellent predictive power and extended applicability domain compared to well-established methods.⁵

The ligand-based drug design is used when the structure of the receptor is unknown, but when a series of compounds have been identified that exert the activity of interest. It is represented as a collection of functional groups in three-dimensional space that is complementary to the geometry of the receptor site.

AutoDock Vina is an open-source program for doing molecular docking. It was designed and implemented by Dr. Oleg Trott in the Molecular Graphics Lab at The Scripps Research Institute. Auto Dock Vina significantly improves the average accuracy of the binding mode predictions. AutoDock Vina has been tested against a virtual screening and was found to be a strong docking program. For its input and output, Vina uses PDBQT files format used by AutoDock. PDBQT files can be generated and viewed using MGL Tools.

Procedure

The current work was aimed to identify the best possible targets of new drug molecule for AD using auto dock vina programme. For this purpose, the databases of various ligands were prepared using **PyMol**, which is done by taken 3-D crystallographic structure of targeted protein from protein data bank in pdb format and open this protein using PyMol and remove unwanted ligands and water molecules and add hydrogens into appropriate sites of protein. Similarly, the ligand prepared by taken drug structure

from Pubchemdatabase in sdf format and is converted to pdb formate using open babel software. Then open the drug and protein using **MGL TOOLS** and add polar hydrogen atoms and saved in PDBQT format separately. In the last step, analysis of binding sites and co-ordinates of receptors are taking place by following steps are opening of receptors as pdb files in **Discovery Studio** and receptor binding sites defined and grid co-ordinates(X,Y,Z) account. Then docking process run using **Autodock vina**, once the process was complete, the binding energy of ligand binding to the receptor will be obtained and which is the best pose. Then which is saved in PDBQT format. Subsequently, the output is opened in **Discovery Studio** and identifies different non-bonded intractions. Analysis of result was carried out by differentiating binding affinity towards protein.

RESULTS AND DISCUSSION

The binding sites in the protein have the following co-ordinates:-

| Site number | X-coor-dinate | Y-coor-dinate | Z-coor-dinate |
|-------------|---------------|---------------|---------------|
| I | 1.712 | 65.376 | 65.887 |
| II | 15.212 | 49.626 | 6.637 |

1. Donepezil

3-D Structure of Donepezil is shown in Fig. 1

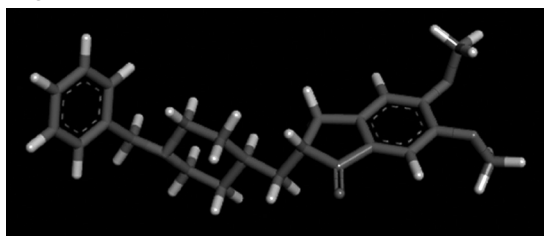


Fig. 1 The 3-D crystal structure of donepezil

The docking of the downloaded drugs in the active site of AChE showed good binding affinities which showed comparable values with already established drugs.

| Ligand | Docking score (Kcalmol ⁻¹) |
|-----------|--|
| Donepezil | -10.5 |

Lowest root mean square deviation valued (rmsd) confirmations is taken as the docking score. Smaller the value of rmsd, greater the docking power. Normally the value lower than -8 is considered as good drug. Here Donepezi has excellent binding capacity. Interactions between Donepezil with AChE receptor is shown in Fig 2.

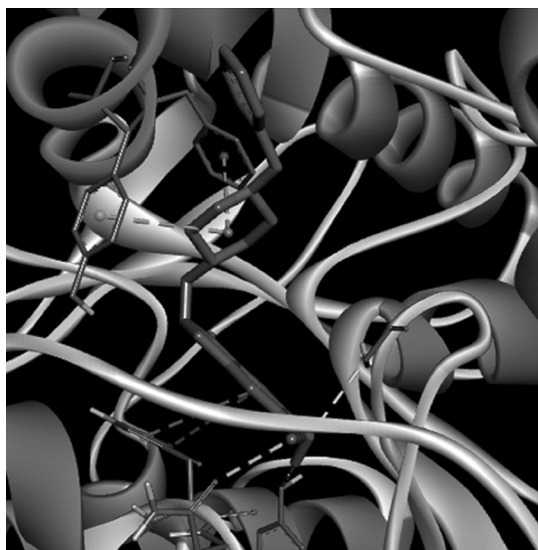


Fig. 2 3-D image showing the docking of the drug donepezil with AChE receptor.

The drug interaction with protein residues is clearly visible from the 3-D images. The 2D-images showed the types of interactions of the drug donepezil with AChE receptor (Fig. 3).The main points observed

1. The absence of green dotted line shows there is no conventional H-bonding.

2. The most common interaction is vander Waals interactions
3. π - π interactions are denoted by dark pink dotted lines
4. Light pink lines explain π -alkyl type interactions.

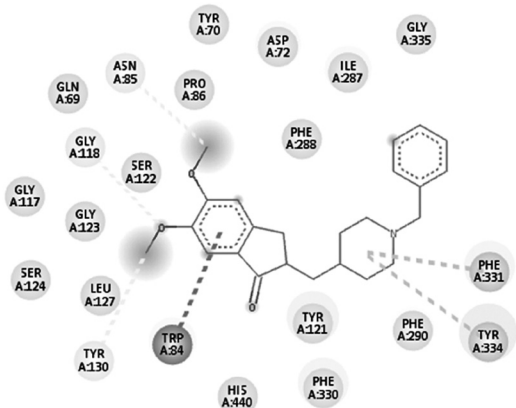


Fig.3 2-Dimensional image depicts interaction between protein-receptor moieties

2. Galantamine

3-D Structure of Galantamine is shown in Fig. 4

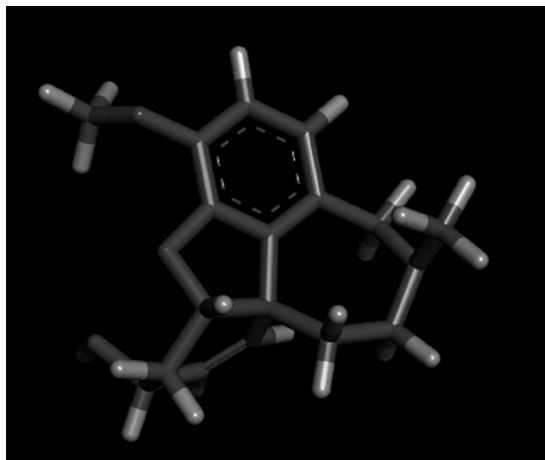


Fig. 4 3-D Structure of Galantamine

Docking score or binding energy of Protein and Galantamine is -9.7 Kcal mol⁻¹

Interactions between Galantamine and AChE receptor is shown in Fig. 5. The 2-D image depicts the interactions more clearly (Fig. 6).

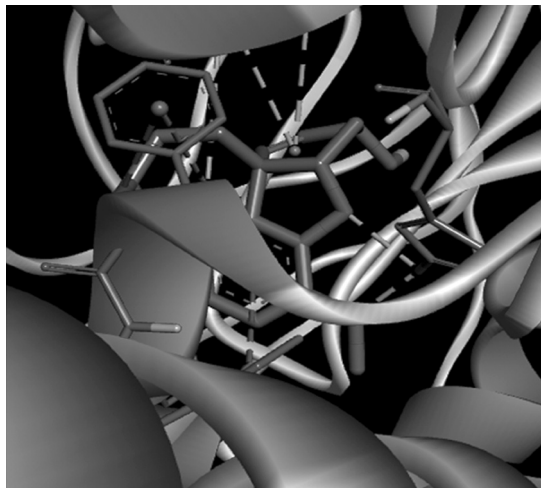


Fig. 5 Interactions between Galantamine with AChE receptor

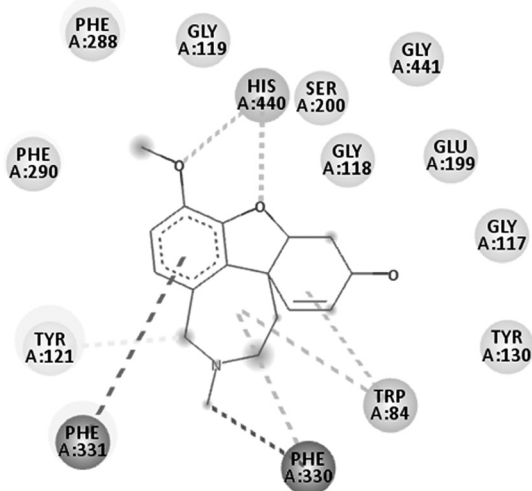


Fig. 6 2-Dimensional image depicts interaction between protein-receptor moieties (Galantamine)

The main points observed

1. The green dotted line shows there is strong H-bonding.
2. The vander Waals interactions are observed as light green centres

3. Carbon-hydrogen bond is observed.
4. π - π interactions are denoted by dark pink dotted lines
5. Light pink lines explain π -alkyl type interactions.
6. π -sigma type interactions are also observed

3. Memantamine

The docking score is -7.8 K cal mol⁻¹

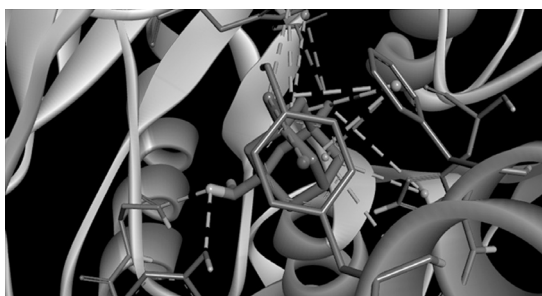


Fig. 7 Interactions between Memantamine with AChE receptor

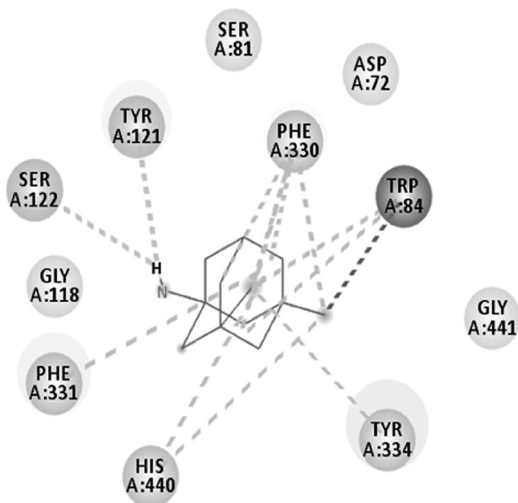


Fig. 8 2-Dimensional image depicts interaction between protein-receptor moieties (memantamine)

The main interactions

1. Strong Conventional H-bonds
2. Only four vander Waals forces

3. one π -sigma interactions
4. A number of π -alkyl interactions are observed

4. Lovodopa

Mucuna pruriens is a tropical legume native to Africa and tropical Asia and widely naturalized and cultivated. *Mucuna pruriens* is a natural herbal supplement used in Ayurvedic medicine, an ancient practice from India, that lowers stress, reduces anxiety, improves focus, boosts the libido, and elevates mood. *Mucuna* is used for the treatment of Parkinson's disease. One of the major chemical constituent of *Mucuna pruriens* is lovodopa. The crystal structure of lovodopa is given in Fig.9

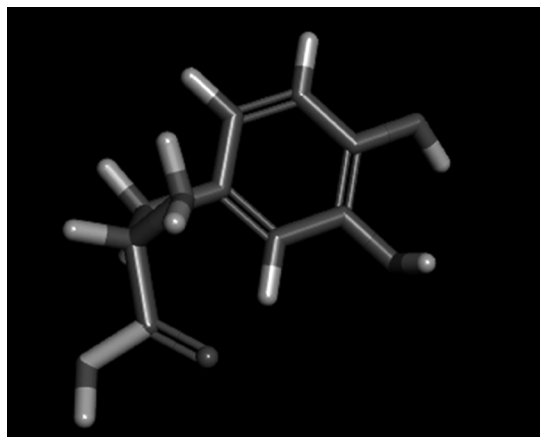


Fig. 9 The crystal structure of lovodopa

Docking score=-7.1

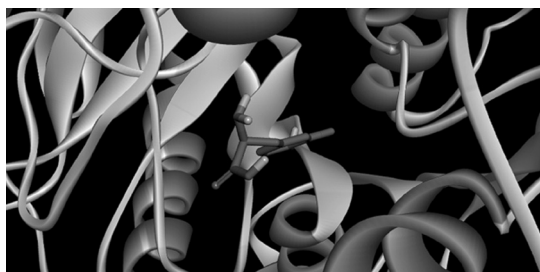


Fig. 10 Interactions between lovodopa with AChE receptor

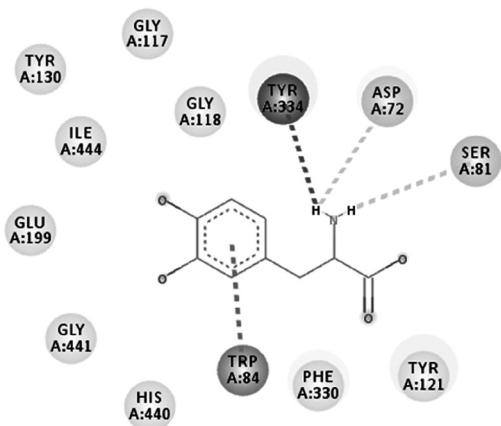


Fig. 11 2-D image showing the interactions between lovodopa with AChE receptor

The interactions are mainly vander Waals interactions, convensional H-bonding, π - π interactions. There also found some unfavourable interactions

Comparison of docking effect

| Ligand | Docking score (Kcalmol ⁻¹) |
|-------------|--|
| Donepezil | -10.5 |
| Galantamine | -9.7 |
| Memantamine | -7.8 |
| Lovodopa | -7.1 |

The docking score shows the efficiency of the drug. Here we can found that lovodopa has excellent efficiency.

Conclusions

The docking of the active site of acetyl cholinesterase with drug Donepezil is established using computational tools. Computational methods were found to be efficient in rational drug designing considering the number and strength of non-covalent interactions involved. The analysis of the interactions between protein residues and drug molecule shows a vander Waals type attractions. The methodology

can be utilized efficiently to find out novel drugs for Alzheimer's disease.

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MORPHOLOGICAL AND MECHANICAL DEPICTION OF SEMI- INTERPENETRATING POLYMER NETWORKS OF SBR -PMMA SYSTEMS

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Abstract

A classic set of Semi-Interpenetrating polymer networks (S-IPNs) has been fabricated using the judicious selection of a pair of thermoplastics and an elastomer with effective interpenetration between them. S-IPNs based on styrene butadiene rubber (SBR) and poly [methyl methacrylate]-(PMMA) have been synthesized by sequential polymerisation technique. This synthesized low cost S- IPN can be promisingly employed as a toughened plastic with co-continuous morphological pattern. The different mechanical properties of S-IPNs are investigated in detail. Morphological analysis of S-IPNs through SEM provides clear insight of their component distribution in it. This protocol of characterization in S- IPN can definitely act as a platform for designing of new toughened plastic with low cost and facile fabrication protocol.

2.1. Introduction

Multi polymeric systems have explicit role in the broad canvas of material science.¹ Interpenetrating polymer networks (IPNs) are a special type of polymer blend with specific features and potential applications.² IPNs are defined

as networks where two components are cross-linked but not to each other.³ Sequential polymerization, simultaneous polymerization and latex blending methods are the common protocols⁴ employed in the manufacture of IPNs. The path for blending of two cross-linked polymers can be effectively achieved through IPN synthesis.⁵ The dual cross-linked nature⁶ of both the components in IPN performs their own specific features over the morphological features. Blend ratio, crosslink density of each network, size, shape and distribution of phase, domain sizes of components, overall composition and interfacial tension are the major factors in engineering the ultimate properties of IPN.⁷ Both the components of IPN are in cross-linked fashion, it is represented as full-IPN.⁸ If one component exists in linear style, the resultant system is called semi-IPN.⁹ The cross-linked phase of semi-IPN usually exists as continuous phase.¹⁰

A number of articles had been present in the literature dealing mechanical analysis^{11, 12} as the central theme in blend characterization.¹³ Articles of IPNs with mechanical properties ¹⁴



as the primary subject are limited in number.¹⁵ Mathew *et al.*¹⁶ successfully explained the morphology, mechanical properties and failure-topography of semi-interpenetrating polymer networks based on natural rubber and polystyrene.

In this chapter, a novel set of semi-IPN membranes have been prepared from poly methyl methacrylate (PMMA) and styrene butadiene rubber (SBR) by adopting sequential polymerization protocol. PMMA is a transparent thermoplastic with low cost and is widely employed for different applications. SBR is a very important all-purpose, low cost synthetic rubber. By the judicious interpenetration of SBR and PMMA by sequential polymerization technique, we have prepared a series of low-cost semi-IPN based membranes.¹⁷ The properties and morphology of S-IPNs can be tuned and engineered by changing the composition and crosslink density of the SBR and PMMA phases.

The morphology of the S-IPNs was analyzed with transmission electron microscopy, scanning electron microscopy, atomic force microscopy and confocal Raman imaging. The detailed interpretation of mechanical behavior of S-IPNs supported with morphological results and theoretical predictions are the key highlight and novelty of this chapter.

2.2. Materials and Methods

2.2.1. Styrene butadiene rubber (SBR)

Styrene butadiene rubber (SBR) is one of the chief and cheap synthetic general-purpose elastomers. SBR has wide range of applications in tyre and non-tyre fields. Styrene butadiene rubber (Synaprene 1502) with 23.5% styrene content was used for this study had been supplied by Indian

Synthetic Rubber Limited (ISRL) through Appollo Tyres, Chalakudy. Cold emulsion polymerized SBR has been employed for this study.

2.2.2. Methyl methacrylate (MMA) monomer

Methyl methacrylate (MMA-99%) monomer used in the experiment was purchased from Sigma-Aldrich, India contains ≤ 30 ppm methyl Ether of Hydroquinone (MEHQ) as inhibitor. The monomer was made inhibitor free by washing it with 2% sodium hydroxide (NaOH) followed by distilled water and was dried using anhydrous calcium chloride (CaCl_2) before carrying out the experiment.

2.2.3. Preparation of semi-IPNs

Cured SBR sheets of definite weight and of thickness (2mm) with specific density values (0.950 g/cc for $^1\text{S}_{100}$, 0.953 for $^2\text{S}_{100}$ and 0.956 for $^3\text{S}_{100}$) were immersed in a homogeneous mixture of MMA (with density 0.936 g/cc), BPO and DVB (the inhibitor free MMA monomer containing 1% BPO as initiator and 0, 2, 4 and 6% of DVB based on the MMA content) for different time intervals. SBR/PMMA semi-IPNs have been prepared by without using DVB. Here polymerization was carried out in the absence of cross linker for PMMA. SBR strip of 10×3cm dimension is immersed in MMA mixture taken a glass petri dish. To get an equilibrium distribution of MMA monomer in the matrix, swollen samples were kept at 273 K for three hours. These SBR sheet was kept in between two stainless steel plates inside an oven at 353K for 16 h for polymerization. Afterwards, the rubber sheet was vacuum dried to constant weight.

2.2.4. Representation of IPNs and semi-IPNs

The IPNs and semi-IPNs can be represented as $^{\text{a}}\text{SBP}_c\text{D}_d$. (a indicates weight of DCP per 100 grams of SBR rubber, S indicates SBR rubber, B stands for BPO as the initiator for polymerization of

PMMA, P represents PMMA, c indicates weight percentage of PMMA, D stands for Divinyl benzene [DVB], d corresponds to wt. % of DVB content). The composition of different IPNs and semi-IPNs employed for different characterization can be summarized as follows.

Table 2.1: Composition of IPNs and Semi-IPNs

| Representation | DCP (Phr) | PMMA: SBR (Wt. %) in IPN | DVB(wt.%) | Type of semi-IPN |
|----------------|-----------|--------------------------|-----------|------------------|
| 1SBP30D0 | 1 | 30:70 | 0 | Semi-IPN |
| 1SBP50D0 | 1 | 50:50 | 0 | Semi-IPN |
| 1SBP70D0 | 1 | 70:30 | 0 | Semi-IPN |

2.3. Characterization methods for semi-IPNs

2.3.1. Tensile properties

The mechanical properties of the samples Tensile strength (TS) and elongation at break (EB %) were studied using universal testing machine in accordance with ASTM D 412-16 and with ASTM D 638. The instrument used was Tinius Olsen HT50kT UTM. The experiments were conducted for dumbbell shaped samples with gauge length of 25 mm at a cross head speed of 50mm/min at room temperature to rupture by an electro mechanical machine equipped with a 5 kg load cell.

2.3.2. Hardness

The Shore A hardness was measured using a Durometer for the semi-IPNs and IPNs according to ASTM D-2240 test method.

2.3.3. Density

The density of the samples was measured

at room temperature using the hydrostatic technique according to ASTM D-792.

2.3.4. Scanning electron microscopy (SEM)

The morphology of IPNs, composites and IPN composites were studied using JOEL-JEM 2010 model scanning electron microscope. The samples were cryogenically fractured, sputtered with gold and examined under microscope.

2.4. Results and discussion

2.4.1. Mechanical properties

Mechanical analysis is one of the important tools in S-IPN characterization. The various factors affecting the tensile properties of S-IPNs can be summarized as follows.

2.4.1.1. Effect of blend ratio

The blend ratio in S-IPN has major role in engineering the mechanical properties. The stress-strain curves for IPNs are shown in the Figure 2.1.

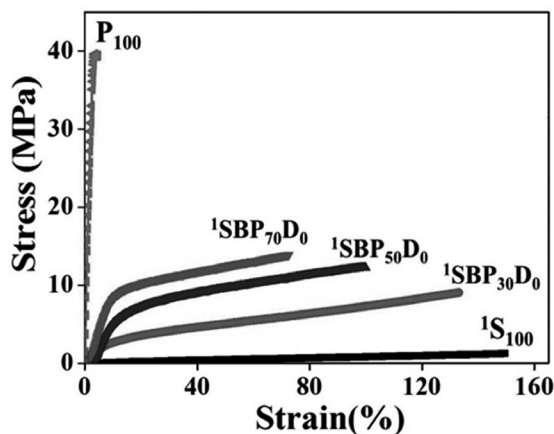


Figure 2.1: Stress-strain curves for S-IPNs.

The deformation pattern of each S-IPN under an applied stress is clear from the above figure. The deformation tendency of SBR ($^1S_{100}$) is of typical elastomer in nature. On the addition of PMMA, the deformation pattern changes. The gradual change from

the rubbery to the plastic nature can be clearly visualized, as we moving from 30 to 70 wt. % of PMMA in the stress-strain curve. S-IPN with 70% PMMA ($^1SBP_{70}D_0$) shows the typical plastic nature and the IPN with 70% SBR ($^1SBP_{30}D_0$) shows a rubbery nature. For samples where the PMMA content is greater than or equal to 50%, a yield point was observed.

When the PMMA content goes above 50%, the stress-strain curves show distinct elastic and inelastic regions. In the elastic region, yielding was observed. On increasing the plastic content, the rubbery nature decreases and a necking tendency characteristic of plastics appears. The brittle type behavior was shown by pure PMMA (P_{100}). The effect of blend ratio on mechanical properties of IPN can be summarized in the Table 2.2.

Table 2.2: Effect of composition on mechanical properties semi-IPNs (D0 series)

| Composition | Density (g/CC) | TS (MPa) | EB (%) | Young's Modulus (MPa) | Hardness Shore A (± 3) |
|-----------------|-----------------|-----------------|---------------|-----------------------|------------------------------|
| $^1S_{100}$ | 0.95 ± 0.01 | 1.24 ± 0.3 | 149 ± 12 | 1.74 ± 0.1 | 42 |
| $^1SBP_{30}D_0$ | 1.01 ± 0.02 | 7.06 ± 0.5 | 133 ± 11 | 3.50 ± 0.2 | 76 |
| $^1SBP_{50}D_0$ | 1.04 ± 0.02 | 12.25 ± 0.6 | 99 ± 6 | 15.16 ± 0.25 | 80 |
| $^1SBP_{70}D_0$ | 1.09 ± 0.02 | 13.85 ± 0.7 | 74 ± 4 | 22.34 ± 0.85 | 83 |
| P_{100} | 1.19 ± 0.04 | 39.6 ± 1.3 | 3.5 ± 0.6 | 2166.12 ± 8.34 | - |

2.4.2. Morphological characterization

There are various protocols and factors in morphological characterization of IPNs and semi-IPNs. They had been explored in detail and are summarized here. In this report, we present the analysis of a series of full IPNs and semi-IPNs with different compositions, cross-link densities and attempt has been made to correlate these morphological observations with mechanical performance.

2.4.2.1. Effect of blend ratio in S-IPN

The effect of blend ratio on behavior of S-IPN can be explained by the following SEM images. Figure 2.2 (A-F) shows SEM images of semi-IPNs with same cross-link density for both components and having different PMMA concentrations ranging from 0 to 70 wt.%. All the six samples show phase separation with different morphologies clearly depicting the quantitative influence of second

component on the morphology developed during S-IPN synthesis. Fig. 2.2(A) depicts the SEM images of neat SBR ($^1S_{100}$) and 2.2(B) narrates the S-IPN (with 30 wt. % of PMMA). It shows sea-island like morphology, i.e. PMMA phase is dispersed in the continuous SBR matrix. Here PMMA exists as small domains but SBR and PMMA phases are separated. Figure 2.2 (C) represents S-IPN with 40% PMMA content. Here the number and size of PMMA domains are increased while keeping the two phases separated and follows dispersed morphology. Figure 2.2 (D) depicts S-IPN with 50:50 blend ratio with tendency of PMMA domain to undergo distended phase. As further enhancement in PMMA concentration

occurs, they show gradual gradation from dispersed system morphology to co-continuous morphology (with 70 wt. % of PMMA) through more or less dual phase morphology (with 60 wt. % of PMMA).

In S-IPNs, the first synthesized phase (here cross-linked SBR) forms more continuous phase. The second component in S-IPN has an important role in designing the morphology of resultant system.¹⁸ It is crystal clear from Figure 2.2. At 70 wt. % PMMA content, both phases become co-continuous. This can be clearly visualized from Figure 2.2(F). The enhancement in tensile strength and in storage modulus of IPN with increase in PMMA content is well supported by this SEM analysis.

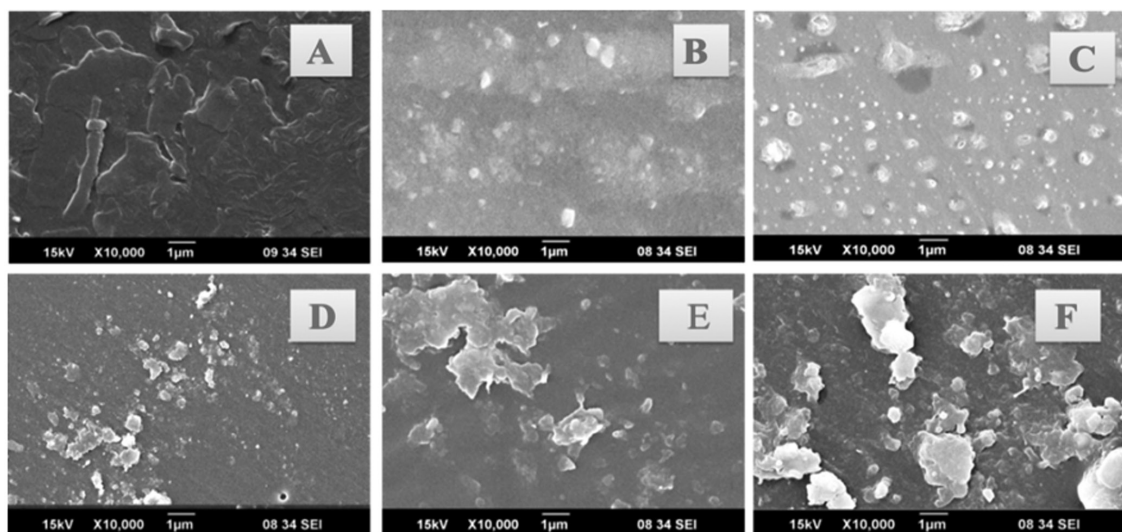


Figure 2.2: Scanning Electron micrographs of (A) Neat SBR($^1S_{100}$) (B) $^1SBP_{30}D_0$ (C) $^1SBP_{40}D_0$ (D) $^1SBP_{50}D_0$ (E) $^1SBP_{60}D_0$ and (F) $^1SBP_{70}D_0$

According to a theory developed by Sperling, "in the case of sequential S-IPN, polymer II which is formed in a swollen network I, constitutes a spherical core and is in a contracted state, while polymer I surrounds the core and is in

an expanded state. This clearly depends on the concentration of the second component and when it increases and reaches a certain limit, polymer II also becomes continuous as polymer I".¹⁹ This situation of co-continuous morphology

is also established in our S-IPN system with 70wt. % of PMMA. This fact was supported by Figure 2.2 C. In this stage, PMMA domains undergo interlinking and lead to larger domain size while maintaining co-continuous features. In S-IPNs, the phase synthesized first forms the more continuous phase and control the morphology. S-IPN with 30% PMMA shows a fine structure with PMMA domains dispersed all over SBR matrix. As the concentration of PMMA rises, the size of PMMA domains also increases and found to form clusters of large domains surrounded by very small domains. S-IPN with PMMA concentration 50% or above ($^{1}\text{SBP}_{50/0}$ and $^{1}\text{SBP}_{70/0}$) showed higher miscibility when compared to S-IPNs with PMMA concentration < 50%. These effects can be visualized in the following scheme.



Figure 2.3: Schematic representation showing the effect of concentration of second component in morphology of resultant S-IPN, (A) S-IPN with low PMMA content, (B) moderate PMMA content and (C) high PMMA content

24. Conclusion

New classes of semi-IPN multi component polymeric systems were developed from SBR and the methyl methacrylate monomer by the sequential method via in-situ polymerization. These specialized blends have a very ordered and compact arrangement of the two phases. The effective and low-cost polymer blend formed from SBR and PMMA by the interpenetration technique having a wide range of mechanical properties starting

from reinforced rubber to toughened plastic. It is found that in all cases as the PMMA content increases the tensile strength, density, modulus and hardness increase. The EB % values decrease due to decrease in the elasticity of the material with a decreasing SBR content. It is also concluded that the system shows a continuous morphology above 50% PMMA with enhancement of properties. As the PMMA content in S-IPN enhances, the distance between two adjacent PMMA distribution decreases and resulted in more homogenous, close packed morphology.

The effects of blend ratio and cross-linking in SBR and PMMA phase were analyzed by different morphological techniques like SEM. Morphological analysis confirmed that as the % of PMMA content in IPN enhances system show gradual gradation from dispersed island morphology to co-continuous morphology. Morphological characterization protocols provide an efficient route for the differentiation of IPNs from semi-IPN. These studies prove that component I and II have their own roles for tuning the morphology of resultant IPNs. Cross-linker content of SBR and PMMA phases have prominent role in ultimate properties of S-IPN. There is no chemical interaction between SBR and PMMA in S-IPN.

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■

COMPACT HMSIW BANDSTOP FILTER WITH COUPLED VERTICAL LOOPS

Anju P Mathews, Praveen Joseph

Introduction

The vertical loop with slit is a new approach to the conventional resonator structures [3] in connection with SIW. In order to limit the loop size [4], conductor strip separated by a nonconductor region with vias on either side is placed vertically in the top and bottom surface of the Half Mode Substrate Integrated Waveguide (HMSIW). The bandpass filter design topologies of the embedded vertical loops are studied in the previous section.

The bandstop filter using HMSIW coupled vertical loop is studied in this section. The filter is fabricated on Rogers RT 5880 laminate ($\epsilon_r=2.2$, $h=0.79$ mm) with 33×13 mm² overall dimension. A narrow stop-band is realized in the proposed structure. The structure is fabricated using standard photolithography process.

Geometry

The HMSIW loop filter is fed using microstrip line with a tapering for impedance transformation. The HMSIW section is edge coupled to vertical loop with slit. The top and bottom structure topology is shown in Fig. 5.24 (a) and (b) respectively. The geometry of the slitted loop is shown

in Fig. 5.24 (c). The filter parameters and the loop parameters are shown in Tables 5.7 and 5.8 respectively.

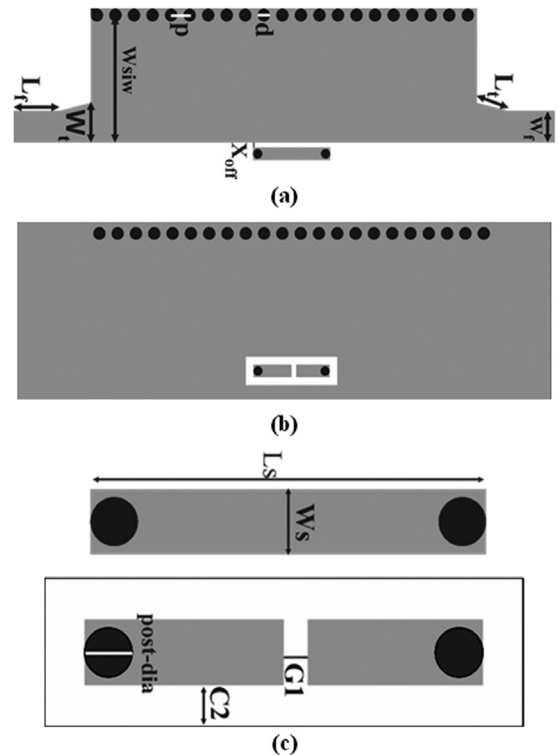


Fig. 5.24. (a) HMSIW Bandstop Filter with Vertical Loop with slit (top) (b) HMSIW Bandstop Filter with Vertical Loop with slit (bottom) (c) Enlarged View of Vertical Loop with slit

Table 5.7. Filter Parameters
Filter Parameters (mm)

| Lt | Wt | Lf | Wf | Wsiw | p | d | Xoff |
|----|----|----|----|------|-----|-----|------|
| 2 | 3 | 3 | 2 | 8.4 | 1.2 | 0.8 | 0.2 |

Table 5.8. Loop Parameters
Loop Parameters (mm)

| Ls | Ws | C2 | G1 | Post dia |
|----|-----|-----|-----|----------|
| 5 | 0.8 | 0.5 | 0.3 | 0.8 |

Design Evolution

The HMSIW coupled with vertical loops are designed and simulated. A loop without slit is placed near the magnetic wall of HMSIW and no remarkable excitation is found as shown in Fig. 5.25. A slit introduced at the ground portion of the loop affects the loop excitation and a narrow stopband is observed as shown in Fig. 5.26. The stopband bandwidth can be increased by increasing the number of loops involved in the design as given in Fig. 5.27.

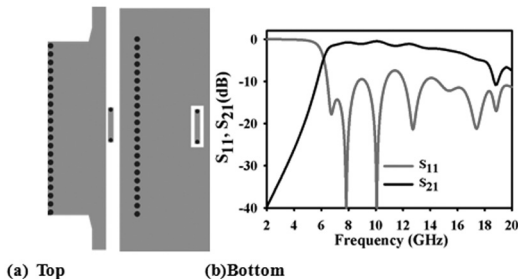


Fig. 5.25. (a) Loop Orientation (b) S-Parameters

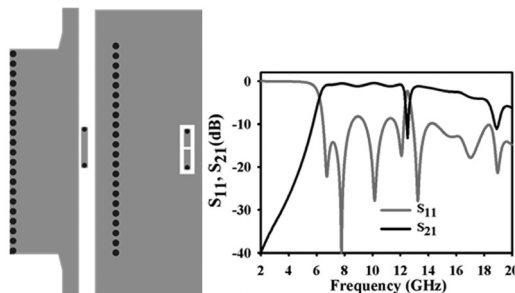


Fig. 5.26. (a) Loop with slit at the bottom plane (b) S-Parameters

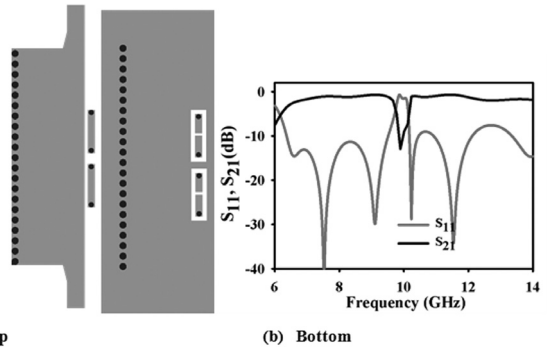


Fig. 5.27. (a) HMSIW with two loops (b) S-Parameters

5.3.3 Simulation and Analysis

The frequency dependence of various loop parameters are studied in this section. The loop parameters such as loop width (Ws), gap (C2) and slit separation (G1) shifts the frequency to higher range with the increase in the parameter as shown in Fig. 5.28 (c), (d), (e), (f), (i) and (j) respectively. An increase in parameters like loop length (Ls) and Xoff shifts the frequency to the lower range as given Fig. 5.28 (a), (b), (g) and (h).

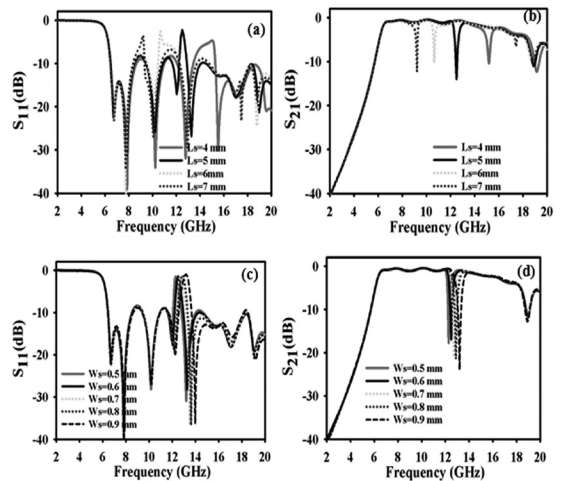


Fig. 5.28. Parametric Simulations of (a) Loop Length (Ls) - S_{11} (b) Loop Length (Ls) - S_{21} (c) Loop width (Ws) - S_{11} (d) Loop width (Ws) - S_{21}

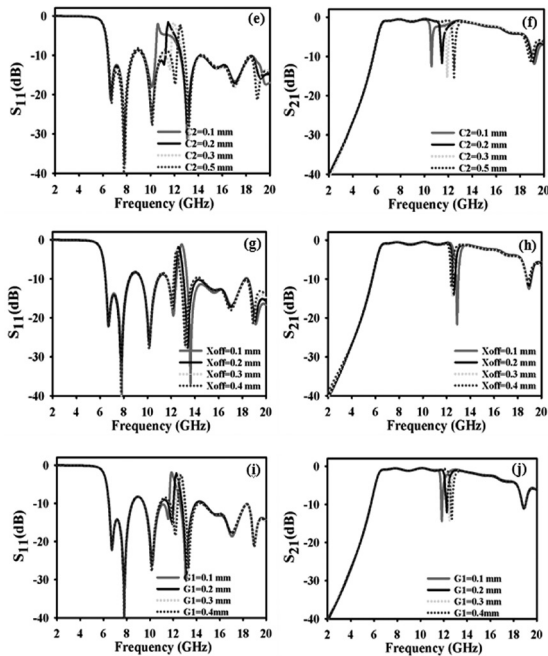


Fig. 5.28. Parametric Simulations of (e) Gap(C2)- S_{11} (f) Gap(C2)- S_{21} (g) Xoff- S_{11} (h) Xoff- S_{21} (i) Slit Width (G1)- S_{11} (j) Slit Width (G1)- S_{21}

Fabrication and Measurement

The Fig. 5.29 shows the photograph of the fabricated filter with the SMA connectors. Standard photolithography is used for the fabrication process and the S parameter measurements are taken using Rohde & Schwarz ZVB20 vector network analyzer. The measured result in comparison with the simulated results are shown in Fig. 5.30. A small frequency shift is observed in the measurement result, which may be caused due to the fabrication inaccuracies of the tiny featured loop in the filter structure.



Fig. 5.29. Photograph of Fabricated Filter (a) Top (b) Bottom

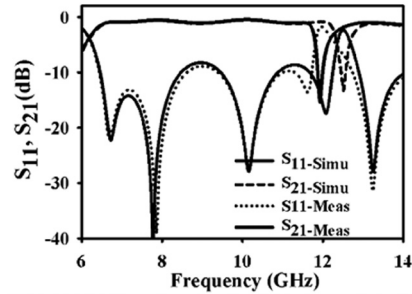


Fig. 5.30. Insertion and Return Loss Characteristics

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TERPOLYMERIZATION OF ANHYDRIDES AND LACTIDE WITH PROPYLENE OXIDE AND CARBON DIOXIDE USING COBALT SALEN CATALYST AND DOUBLE METAL CYANIDE CATALYST

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Abstract

One pot terpolymerization of CO₂, PO and cyclic anhydrides or lactide were performed using salen cobalt complex and double metal cyanide catalyst. Glass transition temperature (T_g) was found to be higher by incorporating phthalic anhydride to poly propylene carbonate back bone. The added amount of PA was fully incorporated on polymer chain. Improved thermal property prevents the agglomeration of polymer resin during summer season. Aliphatic polyesters found various applications because of biodegradability and bio compatibility. A new DMC catalyst prepared using H₃Co(CN)₆ giving consistent carbonate fraction and activity were used for terpolymerization for incorporating third monomer. Cyclic anhydrides and lactide were employed to incorporate as third monomer on poly(propylene carbonate-co-propylene oxide). Resulting polymer were characterized using ¹H NMR, ¹³CNMR, GPC and DSC.

Introduction

The increasing concentration of carbon dioxide in atmosphere, influences climate

changes resulting in global warming is currently a discussing subject in media, politics and science¹. Carbon dioxide can be utilized to prepare biodegradable polycarbonate by coupling with epoxides. The pioneer work for this alternating copolymerization of CO₂/propylene oxide was introduced by Inoue in 1969². A highly active and efficient catalyst was discovered which shows high turnover frequency (TOF, 16000 h⁻¹), molecular weight (Mn 300000) and high selectivity (>99%)³. A continuous process pilot plant was constructed for the commercial production of polypropylene carbonate⁴. The main demerit of resulting polypropylene carbonate (PPC) is its low glass transition temperature (T_g). The T_g of 40°C is too low to use for commercial utilization⁵. In summer at more than 40°C PPC pellets agglomerates to form a cluster and retracts commercialization of this attractive polymer. In order to improve thermal and mechanical properties of copolymer researchers are putting third monomer in CO₂ and PO or CHO copolymerization⁶. Terpolymerization of CO₂, epoxides and anhydrides results in terpolymers having improved thermal



and mechanical properties⁷. In this work we were able to increase the T_g of PPC by incorporating phthalic anhydride in to the polymer back bone.

Double metal cyanide (DMC) catalysts reported in early 1960s for the ring opening polymerization (ROP) of epoxide were inexpensive, easily prepared and superior to base catalysts⁸. For the past decades several improvement were observed on DMC catalysts⁹. However the catalyst performance fluctuates due to washing with *t*BuOH, water and it is sensitive to preparation process. Washing was carried out to remove K^+ ions since it substantially affects catalysts activity¹⁰. Carbonate fraction (f_{CO_2}) using conventional DMC catalyst was found to be low in the range of 10- 40 mol%¹¹. Combining both Catalysts DMC and salen Co(III) complex we were able to achieve a carbonate fraction up to 64 % 5a. We reported a highly active new DMC catalyst prepared using $H_3Co(CN)_6$ which gives carbonate fraction consistently 60-65 % and do not fluctuates on its performance¹².

Aliphatic polyesters find biomedical application in drug delivery vesicles, bone screws, suture wire because of biocompatibility and biodegradability¹³. Polyesters can be synthesized by terpolymerizaion of CO_2 , epoxides and lactones or anhydrides^{6-7, 14}. Terpolymerizations using CO_2 , Cyclohexane oxide (CHO) and lactide were reported with zinc complexes¹⁵. One pot solution terpolymerization using CO_2 , CHO and maleic anhydride (MA) with heterogeneous double metal cyanide catalyst was also reported^{14a}. A polymer supported double metal cyanide catalyst was also employed for incorporating

third monomer in CO_2 epoxide terpolymerization^{7, 16}. Here in this report we used our highly active new double metal cyanide catalyst to incorporate third monomer like lactide and other anhydrides by terpolymerization.

Experimental

General Remarks. CO_2 gas (99.999% purity) was dried through storage in a column of molecular sieves 3A at a pressure of 30 bar. Propylene oxide (PO) was dried by stirring over CaH_2 and then vacuum-transferred to reservoir. All reagents were purchased from Aldrich and purified by recrystillization before use. 1H NMR (400 MHz) and $^{13}C\{^1H\}$ NMR (100 MHz) spectra were recorded on a Varian Mercury Plus 400 instrument. The gel permeation chromatograms (GPC) were obtained in $CHCl_3$ at 35 °C using a Waters Millennium apparatus with polystyrene standards. The T_g data were determined from a second heating at a heating rate of 10 °C/min with DSC (Differential Scanning Calorimetry) using Thermal Analysis Q10.

A typical procedure for CO_2 /PO/PA terpolymerization using Salen Co(III) complex. A bomb reactor (~50 mL) was assembled inside a glove box after charging with a magnetic bar, catalyst 1 (3.0 mg, 1.8 μ mol), PO (10.4g, 179 mmol), phthalic anhydride (1.0 g, 6.75 mmol) and 4 mg ethanol. The CO_2 gas was pressurized (23 bar) at room temperature, and the reactor was then immersed to touch the bottom of oil bath maintained at the temperature of 70 °C. After induction time (1 hour) the pressure started to decrease. The polymerization was performed until the pressure drop was 5-6 bar for full conversion. Because of stirring problem, the maximum pressure drop was ~6 bar

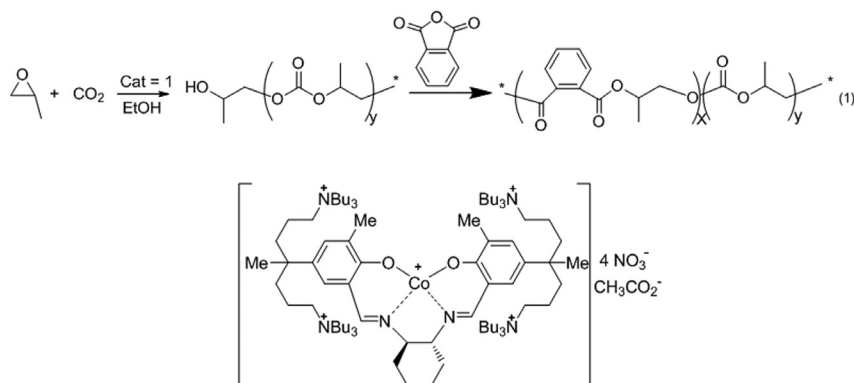
at which ~7-8 g of polymer were isolated. After the polymerization, the reactor was cooled to room temperature using an ice bath, and CO₂ gas was released. All volatiles were removed by rotary evaporation, and the isolated polymer was stored in a vacuum oven at 120 °C to completely remove propylene carbonate.

A typical procedure for CO₂/PO terpolymerization using DMC Catalyst and lactide or anhydride. A bomb reactor (~50 mL) was assembled inside a glove box after charging with a magnetic stirring bar, PO (10.0 g, 170 mmol), DMC catalyst (5.0 mg), and an optional monomer anhydride or lactide. The CO₂ gas was pressurized at room temperature, and the reactor was then immersed with out touching the bottom of oil bath maintained at the desired temperature of 90 °C. After induction time, the pressure started to decrease. The polymerization was performed until the pressure drop was 5-6 bar. Because of stirring problem, the maximum pressure drop was ~6 bar at which ~7-8 g of polymer were isolated. After the polymerization, the reactor was cooled to room temperature using an ice bath, and CO₂ gas was released. All volatiles were removed by rotary evaporation, and the isolated polymer was stored in a vacuum oven at 120 °C to completely

remove propylene carbonate.

Results and Discussion

Terpolymerization of CO₂, PO, PA using salen Co(III) complex. Terpolymerization with anhydrides is an attractive way to improve thermal and mechanical properties of polypropylene carbonate. We have demonstrated preparation di and triblock polymers through immortal polymerization using salen Co(III) complex^{4a}. Phthalicanhydride is the suitable third monomer in this terpolymerization as aromatic ring in the polymer back bone enhances the Tg of resulting polymer. 500mg of PA in polymerization increases the Tg by 2°C (Entry 3 Table 1). But on increasing the amount of PA to 1g could not increase the Tg further (Entry 4 Table 1). But on adding small amount of ethanol raises the Tg up to 5°C With 1g PA which indicates that a small amount ethanol is necessary as chain transfer agent for the full incorporation of PA. The key of terpolymerization mechanism includes the chain transfer or chain terminating ethanol enables the formation narrow distributed polypropylene carbonate end capped with hydroxyl group. The hydroxyl end group of polypropylene carbonate ring opens the cyclic anhydride and results in PA incorporated terpolymer.



**Table 1 CO₂/PO terpolymerization results by catalyst 1 using phthalic anhydride.^a**

| Entry | PA (g) | Ethanol (mg) | Yield ^b (g) | Selectivity ^c | T _g ^d (°C) | M _n ^e | M _w /M _n ^e | f _{CO₂} ^c | f _{PA} ^c | Wt of PA from NMR (g) ^c |
|-------|--------|--------------|------------------------|--------------------------|----------------------------------|-----------------------------|---|--|------------------------------|------------------------------------|
| 1 | - | 0 | 6.5 | 0.96 | 39.6 | 288900 | 1.47 | 1.00 | 0 | 0 |
| 2 | 0.25 | 0 | 6.5 | 0.96 | 39.7 | 258600 | 1.45 | 0.98 | 0.02 | 0.16 |
| 3 | 0.50 | 0 | 6.5 | 0.97 | 41.8 | 452200 | 1.38 | 0.97 | 0.03 | 0.24 |
| 4 | 1.00 | 0 | 6.0 | 0.96 | 41.2 | 303700 | 1.48 | 0.93 | 0.07 | 0.62 |
| 5 | 0.50 | 4.0 | 5.0 | 0.97 | 42.5 | 10600 | 1.14 | 0.95 | 0.05 | 0.35 |
| 6 | 0.80 | 4.0 | 5.5 | 0.96 | 44.1 | 216000 | 1.46 | 0.92 | 0.08 | 0.60 |
| 7 | 0.90 | 4.0 | 5.7 | 0.96 | 45.0 | 146300 | 1.21 | 0.92 | 0.08 | 0.63 |
| 8 | 1.00 | 4.0 | 6.5 | 0.96 | 44.8 | 85000 | 1.12 | 0.92 | 0.08 | 0.73 |
| 9 | 1.25 | 4.0 | 7.0 | 0.96 | 45.9 | 139500 | 1.25 | 0.90 | 0.10 | 0.97 |
| 10 | 1.50 | 4.0 | 7.0 | 0.96 | 44.1 | 92800 | 1.20 | 0.87 | 0.13 | 1.24 |

^aPolymerization conditions: PO (10.4 g, 170 mmol), Catalyst 1 (3.0 mg), CO₂ (30 bar), Temperature (70 °C), Induction time (1.0 h), Polymerization time (2.5 h). ^bYield after removal of propylene carbonate. ^cSelectivity, Weight of PA, carbonate and polyester fraction determined by ¹H NMR spectroscopy. ^dDetermined on DSC. ^eDetermined on GPC using a polystyrene standard.

The terpolymerizations were carried out at 70°C by touching the bottom of bomb reactor in oil bath. Phthalic anhydride and catalyst are highly soluble in PO and PO acts as both solvent and monomer for this polymerization. CO₂/PO copolymerization is strictly alternating copolymerization using salen cobalt catalyst. Most of the metal salen catalyst gave high activities and selectivities for CO₂/PO copolymerization. To get an insight of incorporation terpolymerization were carried out with varying amount of PA. From ¹H NMR it was clear that all added PA monomer were incorporated with reasonable discrepancies. Similar experiments conducted with lactide, caprolactone, maleic anhydride and other

cyclic anhydrides were not found to be working even in the presence of ethanol.

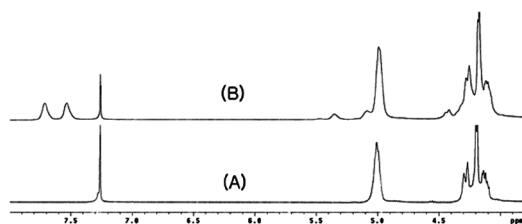


Figure 1 The ¹H NMR spectrum of (A) PPC (Entry 1 of Table 1), (B) (Entry 8 of Table 1)

Polymer Characterization: The terpolymer were characterized by ¹H NMR, ¹³C NMR, GPC and DSC. The polymerizations were carried out to reach full conversion by giving 2.5 hour reaction time except the CO₂/PO Copolymerization (Entry 1



of Table 1). The peak at 7.5 and 7.7 ppm represents 4 aromatic protons of PA. The peak at 5.3 ppm and a shoulder close to 5 ppm and 4.4 ppm indicates insertion of PA into polymer back bone. The percentage of PA incorporated can be calculated from NMR justifies the added amount during polymerization and can be calculated from NMR by the following way.

$$\text{PA (polyester) \%} = [(A_{7.4-7.8}/4)]/[(A_{5.2-5.5} + A_{4.8-5.2})/3]$$

$$\text{PC(polycarbonate) \%} = 100\% - \text{PA\%}$$

^{13}C NMR peaks at 166 ppm, 132 ppm, 131 ppm and 128 ppm also supports the incorporation of phthalic groups on PPC back bone. As the amount PA increases incorporation also increases as PA solubility is pretty high in PO. DSC gives single T_g and GPC data also supports genuine terpolymer.

Preparation of low-molecular-weight PA/PO/CO₂ terpolymer using varying

amount of ethanol. It is clear from our studies that small amount of ethanol is necessary to ring open the phthalic anhydride for insertion into polymer back bone. Darensbourg used small amount of water to make triblock copolymer from PO, CO₂ and lactide¹⁷. Ethanol is used as a traditional chain transfer agent in our polymerization as water kills our catalyst and blocks polymerization, even small amount of water increases the induction time. Initially we tried the polymerization in the absence of ethanol but we could not find considerable increase in T_g as the amount of PA increases. The slight amount of increase in T_g in the absence of ethanol is attributed to moisture content in our polymerization condition. As the amount of ethanol increases the Molecular weight decreases from 85000 (Entry 1 of Table 2) to 18700 (Entry 5 of Table 2). The decrease in T_g from 44.9°C to 42.7°C is due to the lowering of molecular weight.

Table 2 CO₂/PO/PA terpolymerization results by Salen Cobalt complex in presence of varying amount of ethanol.a

| Entry | Ethanol (mg) | Yield ^b (g) | Selectivity ^c | T _g ^d (°C) | M _n ^e | M _w /M _n ^e | f _{CO₂} ^c | f _{PA} ^c | Wt of PA from NMR (g) ^c |
|-------|-----------------|---------------------------|--------------------------|-------------------------------------|-----------------------------|---|--|------------------------------|---------------------------------------|
| 1 | 4.00 | 6.5 | 0.96 | 44.8 | 85000 | 1.12 | 0.91 | 0.09 | 0.78 |
| 2 | 10.0 | 5.3 | 0.96 | 44.3 | 40000 | 1.09 | 0.90 | 0.10 | 0.73 |
| 3 | 14.0 | 6.2 | 0.96 | 45.0 | 37100 | 1.11 | 0.90 | 0.10 | 0.86 |
| 4 | 18.0 | 7.7 | 0.96 | 43.7 | 30500 | 1.01 | 0.93 | 0.07 | 0.77 |
| 5 | 24.0 | 6.0 | 0.96 | 42.7 | 18700 | 1.07 | 0.90 | 0.10 | 0.83 |

^aPolymerization conditions: PO (10.4 g, 170 mmol), Phthalic anhydride (1 g, 6.75 mmol), Catalyst 1 (3.0 mg), CO₂ (30 bar), Temperature (70 °C), Induction time (1.0 h), Polymerization time (2.5 h). ^bYield after removal of propylene carbonate. ^cSelectivity, Weight of PA, carbonate and polyester fraction determined by ¹H NMR spectroscopy.

^dDetermined on DSC. ^eDetermined on GPC using a polystyrene standard.



The thermal property of polymer increases due to incorporation of phthalic groups. The terpolymer shows better Tg the CO₂/PO copolymer. The Tg of terpolmer is 5°C higher than the copolymer (Entry 8 of Table 1). Thus the agglomeration of PPC pellets can be prevented and which enhance the commercialization of this attractive polymer.

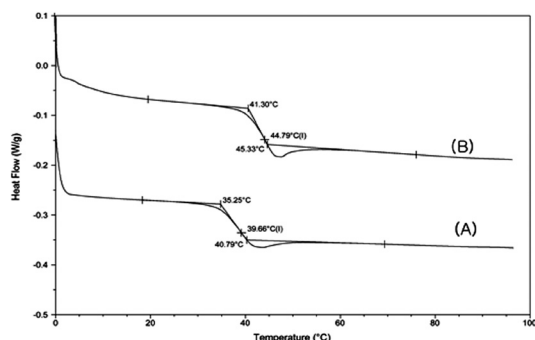
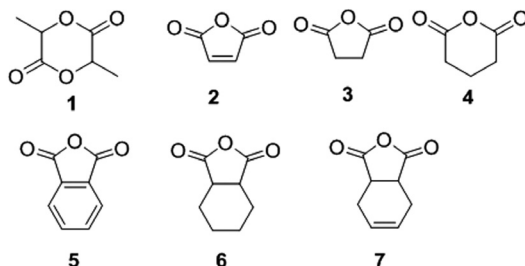


Figure 2 DSC Curves (A) PPC (Entry 1 of Table 1), (B) (Entry 8 of Table 1)

Terpolymerization using double metal cyanide catalyst by the addition of lactide and various cyclic anhydrides as third monomer.

Double metal cyanide catalysts for the copolymerization of PO and CO₂ to produce poly(propylene carbonate-co-propylene oxide) has been thoroughly investigated¹⁸. It has also been reported for the copolymerization of CS₂/epoxides¹⁹ and cyclic anhydrides/epoxides²⁰. Recently we reported a new DMC catalyst

[ZnCl]⁺² [HCo(CN)₆]²⁻•[CH₃OH] prepared using H³Co(CN)₆ which is superior to conventional DMC catalyst in terms of carbonate linkage and activity¹². Here we report terpolymerization using new DMC catalyst, CO₂ and PO with



lactide (3,6-dimethyl-1,4-dioxane-2,5-dione (1) and various anhydrides like maleic anhydride (MA) (2), succinic anhydride (SA) (3), glutaric anhydride (GA) (4), phthalic anhydride (PA) (5), 1,2-cyclohexane dicarboxylic anhydride (CDA) (6) and cis-1,2,3,6-tetrahydrophthalic anhydride (TPA) (7).

The polymers having random structures with ether linkages are obtained by this terpolymerization and shows relatively broad molecular weight distribution. The new DMC catalyst is a hydrogenated form and it contain proton play key role for giving high catalyst performance without fluctuation. It is a cationic coordination catalyst and the mechanism of this reaction is considered to be cationic coordination mechanism.

Table 3. CO₂/PO terpolymerization results by [ZnCl]⁺² [HCo(CN)₆]²⁻•[CH₃OH] in the feeding of third monomer^a

| ent ry | DMC Catalyst (mg) | mono mer (0.01 mol) | Yield ^b (g) | Select ivity ^c | T _g ^d (°C) | M _n ^e | M _w /M _n ^e | f _{CO₂} ^c | f _{ester} ^c | f _{ether} ^c |
|-----------|-------------------------|------------------------------|---------------------------|------------------------------|-------------------------------------|-----------------------------|---|--|---------------------------------|---------------------------------|
| 1 | 5 | - | 7.0 | 0.93 | 9 | 41000 | 2.1 | 0.62 | - | 0.38 |



| | | | | | | | | | | |
|---|----|---|-----|------|----|-------|-----|------|------|------|
| 2 | 5 | 1 | 8.0 | 0.93 | 15 | 17800 | 2.0 | 0.60 | 0.10 | 0.30 |
| 3 | 5 | 2 | 6.7 | 0.90 | 8 | 10900 | 3.0 | 0.53 | 0.09 | 0.38 |
| 4 | 10 | 3 | 9.9 | 0.93 | 5 | 32500 | 2.3 | 0.55 | 0.13 | 0.32 |
| 5 | 10 | 4 | 7.7 | 0.95 | -3 | 9300 | 1.7 | 0.52 | 0.15 | 0.33 |
| 6 | 10 | 5 | 9.0 | 0.93 | 13 | 18000 | 1.9 | 0.53 | 0.11 | 0.36 |
| 7 | 10 | 6 | 9.6 | 0.97 | 14 | 19800 | 1.9 | 0.62 | 0.10 | 0.28 |
| 8 | 10 | 7 | 8.8 | 0.96 | 16 | 28600 | 2.4 | 0.60 | 0.10 | 0.30 |

^aPolymerization conditions: PO (10.0 g, 170 mmol), Temperature (90 °C), Induction time (1.0 h), Reaction time 2h, CO₂ pressure (30 bar). ^bYield after removing propylene carbonate. ^cSelectivity, carbonate, ether and polyester fraction determined by ¹H NMR spectroscopy. ^dDetermined on DSC. ^eDetermined on GPC using a polystyrene standard.

Characterization of polymers. The terpolymers obtained are characterized by ¹H NMR, ¹³C NMR, GPC and Tg. The ¹H NMR spectrum of terpolymer (Entry 2 of Table 3) shows characteristic peaks of lactide incorporation at 5.18 ppm and 1.5 ppm and could not find lactide homopolymerization peaks. The ¹³C NMR spectra shows peak at 169 ppm is the CO₂ peak of lactide unit, CH-O peak near to CO₂ and other lactide related peak were observed between 70-73 ppm. DSC gives single Tg 15°C. From NMR 10 mol % of lactide was found to be incorporated.

An extra absorption peak of ¹H NMR spectrum at 6.2 ppm (-CH=CH-) shows the presence of MA unit in terpolymer (Entry 3 of Table 3). A peak at 5.2 ppm supports its incorporation. Other characteristic peak includes 1.3 ppm, 3.5 ppm, 4.2 ppm and 4.9 ppm. The ¹³C NMR peaks at 129 ppm and 164 ppm also indicates that MA terpolymerize or insert into terpolymer backbone. GPC and DSC data also supports it is a genuine terpolymer. The peaks at 2.6

ppm and 5.1 ppm indicates the presence of succinic anhydride incorporation in ¹H NMR spectrum (Entry 4 of Table 3). The ¹³C NMR peaks at 171 ppm and 29 ppm also ensures SA incorporation. DSC and GPC data also supports these terpolymers are genuine terpolymer not mixtures.

The ¹H NMR peaks at 5.1 ppm, 2.3 ppm and 1.9 ppm supports the terpolymerization of glutaric acid in the terpolymer (Entry 5 of Table 3) whereas ¹³C NMR peaks at 172 ppm, 33 ppm and 19 ppm also supports the GA incorporation. The glass transition temperature is low -3°C because of CH₂ groups in polymer backbone. Molecular weight also low (Mn 93000). The aromatic hydrogens of Phthalic anhydride were observed at 7.7 ppm and 7.4 ppm of ¹H NMR spectrum of terpolymer (Entry 6 of Table 3). The peak at 5.2-5.4 ppm also ensures the terpolymerization of phthalic groups. The ¹³C NMR peaks at 166 ppm, 131 and 128 ppm also ensures PA incorporation.



The ^1H NMR peaks at 5.1 ppm, 2.8 ppm, 1.9 ppm and 1.7 ppm shows CDA incorporation (Entry 7 of Table 3). The ^{13}C NMR peaks at 172 ppm, 42.5 ppm, 26.2 ppm and 23.7 ppm also ensures CDA incorporation. The ^1H NMR peaks at 5.6 ppm, 5.1 ppm, 3.0 ppm, 2.5 ppm and 2.3 ppm supports the incorporation of TPA in terpolymer back bone (Entry 8 of Table 3). The ^{13}C NMR peaks at 172 ppm, 124 ppm, 39.3 and 25.4 ppm shows TPA incorporation.

The carbonate fraction was not found to be altered much during terpolymerization. Caprolactone gives poor selectivity for terpolymerization (0.78) for terpolymerization with DMC catalyst. The Tg of terpolymers depends on ether linkage and molecular weight. Glutaric anhydride gives lowest Tg among all terpolymers due to flexible aliphatic unit. Single Tg and DSC curve also supports these terpolymers are genuine not a mixture of copolymers or terpolymers. CO_2 and third monomer could not homopolymerize nor copolymerize under the reaction conditions. So the terpolymerization is competitive alternating of PO with CO_2 and PO with third monomer.

Conclusion. Incorporating phthalic groups improves thermal property of polypropylene carbonate. A rise in Tg of 5°C is enough to prevent agglomeration PPC pellets and enhance commercialization of this attractive polymer. A small amount of ethanol is used to ring open phthalic anhydride and influences incorporation. The new DMC catalyst identified as $[\text{ZnCl}]^{+2}[\text{HCo}(\text{CN})_6]^{2-} \cdot [\text{CH}_3\text{OH}]$ shows good catalytic performance towards the terpolymerization of third monomer like lactide and various anhydrides. The cationic

coordination catalyst results in polymer having random structure and relatively broad molecular weight distribution. The glass transition temperature depends on ether linkage and molecular weight

Acknowledgments

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THEORETICAL INVESTIGATIONS ON MOLECULAR GEOMETRY AND CHARGE TRANSFER INTERACTIONS ANALYSIS IN A $[H_2PIP]CdCl_6(H_2O)_2$

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Abstract

Theoretical characterizations of piperazine attached chlorocadmate complex are carried out using geometrical optimization and natural bond orbital analysis. The charge transfer from the metal atom to the amine group of the molecule is evident from the natural bond orbital analysis. The intermolecular interactions such as N-H...Cl, O-H...Cl, C-H...Cl give stability in the molecule.

Keywords: Density Functional Theory, Normal Coordinate analysis.

Introduction

Piperazine derivatives such as 1-Amino 4-methylpiperazine [1], 1-(m-(trifluoromethyl)phenyl) piperazine [2], monohydrate piperazine hydrogen phosphate [3] have nonlinear optical activity. Piperazine is an organic compound which consists of a six-membered ring containing two nitrogen atoms at opposite positions in the ring. Piperazine conformations are differ as chair, half-chair, boat, twist boat and envelope forms. Above these conformations, Hendrickson proposed that chair is most stable and chair-chair inter link have the most stable transition state [4],[5]. The center metal exhibits a variety of coordi-

nation numbers in the Cd(II) complexes. The coordination of Cd²⁺ cation is basically present only in polymeric chlorocadmate (II), although a variety of stoichiometry's are possible to form chains by face, edge, or vertex sharing in CdCl₆ octahedra [6],[7]. Piperazine categorized as building blocks in drug discovery due to its pharmacological properties [8],[9]. It have a broad range of applications in pharmaceuticals as antimicrobial, anti-tubercular, anticonvulsant, antidepressant, anti-inflammatory, cytotoxic, anti-malarial, antirhythmic, antioxidant and antiviral activities etc.

In the present crystal, the investigations on optimized geometry, orbital charge transfer interaction, intra and inter molecular interactions are used by theoretical methods.

Computational Details

The DFT study has been carried out with a new hybrid exchange correlation functional level using the B3LYP [17] with the standard basis set 3-21G(d,p) level [18] through Gaussian 09W software package [19]. The appraisal of intra, inter molecular interactions, donor - acceptor energy relations of the complex were adopted from the NBO analysis using the

NBO 5.0 program in Gaussian 09W software package [21].

Result and Discussion

Optimized Geometry of the complex $[H_2pip]Cd_2Cl_6(H_2O)_2$

The optimized structure of monomer is given in figure 1 and its parameters are tabulated in table 1. The bonds N_6-H_{17} , $O_{21}-Cd_{22}$, $Cl_{25}-Cd_{27}$, and $Cd_{27}-O_{30}$ have difference in bond length above 0.05\AA between monomer and observed XRD data. Also, due to this change in bond length, there arises slight deviation at its corresponding bond angle and dihedral angle. The dimer structure shows deviation in bond N_6-H_{17} (elongate), $Cd_{22}-Cl_{24}$, $Cd_{27}-Cl_{29}$ (shorten) with difference in bond length $\sim 0.06\text{\AA}$. Comparing with monomer, the dimer structure is more close to the experimental single crystal XRD data. The C-C-N ring angles of the piperazine are varied as 111° and 109° . This reveals that piperazine

of the present compound shows the most stable chair confirmation. The hydrogen bonded distance of the intra and inter molecular interactions in this complex which expands ($N_3-H_{12}\cdots Cl_{57}$, $O_{21}-H_{19}\cdots Cl_{55}$, $C_{36}-H_{45}\cdots Cl_{24}$) and compress ($N_{35}-H_{43}\cdots Cl_{29}$, $C_5-H_{16}\cdots Cl_{55}$, $C_{34}-H_{42}\cdots Cl_{24}$, $N_{35}-H_{43}\cdots Cl_{28}$, $C_{34}-H_{41}\cdots Cl_{29}$, $N_6-H_{17}\cdots O_{21}$, $N_{38}-H_{49}\cdots O_{53}$) within the Van der Waal radii (3.06\AA) in reference with observed data are entered in table 4. These interactions describe the coordination and sharing of edges of five Cl^- ions and one water molecule in the octahedral zigzag infinite extension of the $Cd(II)$. All the above interactions confirm that the dimer molecule has more structural stability than monomer molecule. The nitrogen atom of piperazine ($C_4N_2H_{12}$) act as acceptor forms hydrogen bonds to the terminal Cl atom. Most of the bond parameters of dimer structure using basis set B3LYP/ 3-21G is matched with its experimental bond parameters.

Table 1: Optimized bond lengths, bond angles and dihedral angles of $[H_2pip][Cd_2Cl_6(H_2O)_2]$ by using B3LYP/ 3-21G(d,p) in comparison with the XRD data.

| Bond length | Monomer | Expt | Bond angle | Monomer | Expt | Dihedral angle | Monomer | Expt |
|------------------|------------------|--------------|--------------|--------------|--------------|-----------------|--------------|--------------|
| (\AA) | (\AA) | ($^\circ$) | ($^\circ$) | ($^\circ$) | ($^\circ$) | ($^\circ$) | ($^\circ$) | ($^\circ$) |
| C1 -C2 | 1.53 | 1.52 | C2 -C1 -N6 | 109.30 | 111.38 | N6 -C1 -C2 -N3 | -57.52 | -53.92 |
| C1 -N6 | 1.51 | 1.51 | C2 -C1 -H7 | 112.49 | 109.94 | N6 -C1 -C2 -H9 | -177.41 | -172.26 |
| C1 -H7 | 1.09 | 1.08 | C2 -C1 -H8 | 108.80 | 111.93 | N6 -C1 -C2 -H10 | 58.39 | 64.68 |
| C1 -H8 | 1.09 | 1.08 | N6 -C1 -H7 | 108.53 | 106.73 | H7 -C1 -C2 -N3 | 63.09 | 64.17 |
| C2 -N3 | 1.54 | 1.51 | N6 -C1 -H8 | 108.40 | 107.16 | H7 -C1 -C2 -H9 | -56.79 | -54.17 |
| C2 -H9 | 1.09 | 1.08 | H7 -C1 -H8 | 109.25 | 109.53 | H7 -C1 -C2 -H10 | 179.00 | -177.23 |
| C2 -H10 | 1.09 | 1.08 | C1 -C2 -N3 | 109.64 | 108.34 | H8 -C1 -C2 -N3 | -175.72 | -173.86 |
| N3 -C4 | 1.56 | 1.52 | C1 -C2 -H9 | 111.97 | 109.94 | H8 -C1 -C2 -H9 | 64.39 | 67.81 |
| N3 -H11 | 1.03 | 1.02 | C1 -C2 -H10 | 109.57 | 112.50 | H8 -C1 -C2 -H10 | -59.81 | -55.26 |
| N3 -H12 | 1.03 | 1.02 | N3 -C2 -H9 | 108.03 | 108.44 | C2 -C1 -N6 -C5 | 61.58 | 47.91 |
| C4 -C5 | 1.52 | 1.52 | N3 -C2 -H10 | 105.97 | 107.42 | C2 -C1 -N6 -H17 | -170.16 | 164.44 |
| C4 -H13 | 1.09 | 1.08 | H9 -C2 -H10 | 111.47 | 110.08 | C2 -C1 -N6 -H18 | -54.98 | -80.97 |

| | | | | | | | | |
|------------|------|------|--------------|--------|--------|------------------|---------|---------|
| C4 -H14 | 1.09 | 1.08 | C2 -N3 -C4 | 111.56 | 110.79 | H7 -C1 -N6 -C5 | -61.43 | -72.10 |
| C5 -N6 | 1.52 | 1.52 | C2 -N3 -H11 | 109.13 | 113.33 | H7 -C1 -N6 -H17 | 66.84 | 44.43 |
| C5 -H15 | 1.09 | 1.08 | C2 -N3 -H12 | 110.18 | 110.30 | H7 -C1 -N6 -H18 | -177.99 | 159.02 |
| C5 -H16 | 1.09 | 1.08 | C4 -N3 -H11 | 108.31 | 109.38 | H8 -C1 -N6 -C5 | -179.97 | 170.63 |
| N6 -H17 | 1.17 | 1.05 | C4 -N3 -H12 | 109.55 | 108.47 | H8 -C1 -N6 -H17 | -51.71 | -72.84 |
| N6 -H18 | 1.06 | 1.02 | H11 -N3 -H12 | 108.02 | 104.29 | H8 -C1 -N6 -H18 | 63.47 | 41.75 |
| H17 -O21 | 1.38 | 1.59 | N3 -C4 -C5 | 109.02 | 108.16 | C1 -C2 -N3 -C4 | 55.79 | 63.91 |
| H19 -O21 | 1.00 | 0.97 | N3 -C4 -H13 | 106.54 | 107.27 | C1 -C2 -N3 -H11 | 175.43 | -172.71 |
| H20 -O21 | 1.01 | 0.97 | N3 -C4 -H14 | 108.45 | 106.99 | C1 -C2 -N3 -H12 | -66.12 | -56.21 |
| O21 -Cd22 | 3.95 | 2.56 | C5 -C4 -H13 | 110.70 | 112.74 | H9 -C2 -N3 -C4 | 178.05 | -176.81 |
| Cd22 -Cl23 | 2.53 | 2.59 | C5 -C4 -H14 | 112.05 | 110.70 | H9 -C2 -N3 -H11 | -62.30 | -53.42 |
| Cd22 -Cl24 | 2.67 | 2.78 | H13 -C4 -H14 | 109.89 | 110.72 | H9 -C2 -N3 -H12 | 56.14 | 63.07 |
| Cd22 -Cl25 | 2.54 | 2.66 | C4 -C5 -N6 | 109.55 | 111.48 | H10 -C2 -N3 -C4 | -62.38 | -57.86 |
| Cd22 -Cl26 | 2.62 | 2.58 | C4 -C5 -H15 | 107.50 | 111.67 | H10 -C2 -N3 -H11 | 57.26 | 65.52 |
| Cl24 -Cd27 | 2.80 | 2.75 | C4 -C5 -H16 | 113.09 | 110.73 | H10 -C2 -N3 -H12 | 175.71 | -177.98 |
| Cl25 -Cd27 | 2.85 | 2.71 | N6 -C5 -H15 | 107.79 | 106.54 | C2 -N3 -C4 -C5 | -55.91 | -64.02 |
| Cd27 -Cl28 | 2.54 | 2.68 | N6 -C5 -H16 | 108.42 | 107.19 | C2 -N3 -C4 -H13 | 63.59 | 57.85 |
| Cd27 -Cl29 | 2.54 | 2.57 | H15 -C5 -H16 | 110.37 | 109.03 | C2 -N3 -C4 -H14 | -178.17 | 176.70 |
| Cd27 -O30 | 2.29 | 2.22 | C1 -N6 -C5 | 111.37 | 115.85 | H11 -N3 -C4 -C5 | -176.04 | 170.35 |
| O30 -H31 | 1.01 | 0.97 | C1 -N6 -H17 | 113.13 | 106.21 | H11 -N3 -C4 -H13 | -56.55 | -67.78 |
| O30 -H32 | 1.00 | 0.96 | C1 -N6 -H18 | 106.80 | 113.16 | H11 -N3 -C4 -H14 | 61.70 | 51.07 |

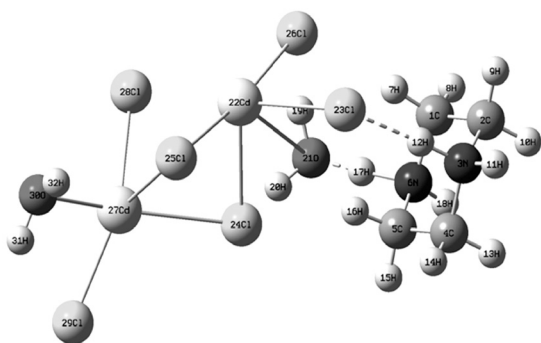


Fig.1. Atomic number scheme used in optimized geometry of $[H_2pip]Cd_2Cl_6(H_2O)_2$ monomer molecule.

Natural Bond Orbital Analysis

The natural bond orbital analyses describe the intra and inter molecular charge transfer (ICT) interaction causing stabi-

lization of the molecule (Table 2). The $\sigma^* \rightarrow \sigma^*$ orbital interaction observed between donor $Cd_{54}-Cl_{56}$ and acceptor $O_{53}-Cd_{54}$ bond is occurs with highest stabilization energy 1846.30 KJ/mol. The lone pair (LP) interaction $LP(2) O_{21} \rightarrow \sigma^*(N_6-H_{17})$ and the $\sigma \rightarrow \sigma^*$ orbital interaction $\sigma(O_{53}-Cd_{54}) \rightarrow \sigma^*(N_3-H_{49})$ confirms the presence of $N-H \dots O$ intermolecular interaction with energy 314.47 and 198.50 KJ/mol respectively. The $LP(2) Cl_{28} \rightarrow \sigma^*(N_3-H_{43})$ and $LP(2) Cl_{61} \rightarrow \sigma^*(N_3-H_{11})$ confirms the contribution of the $N-H \dots Cl$ interactions 180.70 and 104.46 KJ/mol. The electron charge transfer from $\pi(Cd_{59}-Cl_{60})$ to $\sigma^*(H_{52}-O_{53})$ bond orbital reveals the evidence of the occurrence of $O-H \dots Cl$ interaction. The crystal chemistry of chlorocadmates

(II) is confirmed through the $\sigma \rightarrow \sigma^*$ orbital mutual interactions of Cd-Cl bonds. The simple tetrahedral anions CdCl_4^{2-} is formed by the $\sigma \rightarrow \sigma^*$ orbital interactions which is mutually with four bonds such as, $(\text{Cd}_{27}-\text{Cl}_{24})$, $(\text{Cd}_{27}-\text{Cl}_{25})$, $(\text{Cd}_{22}-\text{Cl}_{24})$, $(\text{Cd}_{22}-\text{Cl}_{25})$ and are serves as the backbone of chain polymers. These hydrogen bonding network involving organic cations together with chlorocadmates (II) forms panoply

of the columnar stacks of chains which stabilizes the whole crystal with great stabilization energy. The overall natural bond orbital analysis reveals that the $\text{H} \dots \text{Cl}$ hydrogen bonded intermolecular interaction has more contribution in the present complex than other hydrogen bonded intermolecular interactions to maintain its stability.

Table 2: Second order perturbation theory analysis of Fock matrix in NBO basis of $[\text{H}_2\text{pip}][\text{Cd}_2\text{Cl}_6(\text{H}_2\text{O})_2]$.

| Donor (i) | ED(i) (e) | Acceptor (j) | ED(j) (e) | E(2) KJ/ mol | E(j)-E(i) a.u. | F(i,j) a.u. |
|---|--------------|---|--------------|-----------------|-------------------|----------------|
| $\sigma^*(\text{Cd } 54 - \text{Cl } 56)$ | 0.1106 | $\sigma^*(\text{O } 53 - \text{Cd } 54)$ | 0.1238 | 1846.30 | 0.03 | 0.32 |
| $\sigma^*(\text{Cd } 54 - \text{Cl } 57)$ | 0.1039 | $\sigma^*(\text{Cd } 54 - \text{Cl } 56)$ | 0.1106 | 359.69 | 0.10 | 0.26 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | 343.19 | 0.01 | 0.09 |
| LP (2) O 21 | 1.8418 | $\sigma^*(\text{N } 6 - \text{H } 17)$ | 0.1476 | 314.47 | 0.82 | 0.22 |
| $\sigma(\text{O } 53 - \text{Cd } 54)$ | 1.8899 | $\sigma^*(\text{N } 38 - \text{H } 49)$ | 0.1217 | 198.50 | 0.92 | 0.19 |
| $\sigma^*(\text{Cd } 54 - \text{Cl } 57)$ | 0.1039 | $\sigma^*(\text{O } 53 - \text{Cd } 54)$ | 0.1238 | 197.37 | 0.14 | 0.21 |
| LP (3) Cl 28 | 1.8512 | $\sigma^*(\text{N } 35 - \text{H } 43)$ | 0.1303 | 180.70 | 0.56 | 0.14 |
| $\pi(\text{Cd } 59 - \text{Cl } 60)$ | 1.9004 | $\sigma^*(\text{H } 52 - \text{O } 53)$ | 0.0797 | 112.96 | 0.61 | 0.12 |
| LP (3) Cl 61 | 1.9003 | $\sigma^*(\text{N } 3 - \text{H } 11)$ | 0.0831 | 104.46 | 0.61 | 0.11 |
| $\sigma(\text{C } 1 - \text{H } 8)$ | 1.9808 | $\sigma^*(\text{C } 2 - \text{N } 3)$ | 0.0222 | 16.58 | 0.74 | 0.05 |
| $\sigma(\text{C } 1 - \text{H } 8)$ | 1.9808 | $\sigma^*(\text{C } 5 - \text{N } 6)$ | 0.0218 | 10.30 | 0.76 | 0.04 |
| $\sigma(\text{C } 2 - \text{H } 9)$ | 1.9812 | $\sigma^*(\text{C } 1 - \text{N } 6)$ | 0.0229 | 17.21 | 0.77 | 0.05 |
| $\sigma(\text{C } 4 - \text{H } 14)$ | 1.9802 | $\sigma^*(\text{C } 2 - \text{N } 3)$ | 0.0222 | 10.05 | 0.73 | 0.04 |
| $\sigma(\text{C } 4 - \text{H } 14)$ | 1.9802 | $\sigma^*(\text{C } 5 - \text{N } 6)$ | 0.0218 | 17.71 | 0.76 | 0.05 |
| $\sigma(\text{C } 5 - \text{H } 15)$ | 1.9775 | $\sigma^*(\text{C } 1 - \text{N } 6)$ | 0.0229 | 10.89 | 0.74 | 0.04 |
| $\sigma(\text{C } 5 - \text{H } 15)$ | 1.9775 | $\sigma^*(\text{N } 3 - \text{C } 4)$ | 0.0237 | 17.29 | 0.72 | 0.05 |
| $\sigma(\text{N } 6 - \text{H } 17)$ | 1.9799 | $\sigma^*(\text{C } 1 - \text{C } 2)$ | 0.0135 | 10.26 | 0.94 | 0.04 |
| $\sigma(\text{H } 19 - \text{O } 21)$ | 1.9970 | $\sigma^*(\text{N } 6 - \text{H } 17)$ | 0.1476 | 15.41 | 1.05 | 0.06 |
| $\sigma(\text{H } 20 - \text{O } 21)$ | 1.9959 | $\sigma^*(\text{N } 6 - \text{H } 17)$ | 0.1476 | 10.59 | 1.07 | 0.05 |
| LP (2) O 21 | 1.8418 | $\sigma^*(\text{N } 6 - \text{H } 17)$ | 0.1476 | 314.47 | 0.82 | 0.22 |
| LP (2) O 21 | 1.8418 | $\sigma^*(\text{H } 20 - \text{O } 21)$ | 0.0814 | 13.52 | 0.82 | 0.05 |
| LP (1) O 21 | 1.9228 | $\sigma^*(\text{Cd } 22 - \text{Cl } 23)$ | 0.0808 | 27.30 | 0.45 | 0.05 |
| LP (1) O 21 | 1.9228 | $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | 48.27 | 0.44 | 0.06 |



| | | | | | | |
|---|--------|---|--------|--------|------|------|
| LP (1) O 21 | 1.9228 | $\sigma^*(\text{Cd } 22 - \text{Cl } 25)$ | 0.0862 | 13.36 | 0.46 | 0.03 |
| LP (1) O 21 | 1.9228 | $\sigma^*(\text{Cd } 22 - \text{Cl } 26)$ | 0.0836 | 13.94 | 0.44 | 0.03 |
| LP (2) O 21 | 1.8418 | $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | 10.47 | 0.64 | 0.04 |
| LP (2) O 21 | 1.8418 | $\sigma^*(\text{Cd } 22 - \text{Cl } 25)$ | 0.0862 | 10.76 | 0.67 | 0.04 |
| LP (3) Cl 26 | 1.9185 | $\sigma^*(\text{N } 6 - \text{H } 18)$ | 0.0674 | 70.25 | 0.61 | 0.09 |
| $\sigma^*(\text{Cd } 22 - \text{Cl } 23)$ | 0.0808 | $\sigma^*(\text{H } 20 - \text{O } 21)$ | 0.0814 | 22.27 | 0.74 | 0.06 |
| LP (3) Cl 23 | 1.9072 | $\sigma^*(\text{H } 20 - \text{O } 21)$ | 0.0814 | 87.09 | 0.52 | 0.09 |
| $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | $\sigma^*(\text{Cd } 22 - \text{Cl } 25)$ | 0.0862 | 12.14 | 0.57 | 0.04 |
| $\sigma^*(\text{Cd } 22 - \text{Cl } 25)$ | 0.0862 | $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | 14.57 | 0.57 | 0.04 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | 31.40 | 0.65 | 0.06 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | 27.21 | 0.63 | 0.06 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cd } 27 - \text{Cl } 29)$ | 0.0618 | 13.57 | 0.60 | 0.04 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | 16.24 | 0.77 | 0.05 |
| $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 40.82 | 0.64 | 0.07 |
| $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | 56.73 | 0.77 | 0.09 |
| $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 30.86 | 0.62 | 0.06 |
| $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | 42.91 | 0.76 | 0.08 |
| $\sigma^*(\text{Cd } 27 - \text{Cl } 29)$ | 0.0618 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 30.77 | 0.64 | 0.06 |
| $\sigma^*(\text{Cd } 27 - \text{Cl } 29)$ | 0.0618 | $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | 21.39 | 0.77 | 0.06 |
| $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 15.70 | 0.73 | 0.05 |
| $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | 51.67 | 0.74 | 0.09 |
| $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | 50.49 | 0.72 | 0.08 |
| $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | $\sigma^*(\text{Cd } 27 - \text{Cl } 29)$ | 0.0618 | 14.44 | 0.69 | 0.04 |
| $\sigma(\text{O } 30 - \text{H } 31)$ | 0.0151 | $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | 11.22 | 0.90 | 0.05 |
| LP (2) Cl 23 | 1.9682 | $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | 11.30 | 0.33 | 0.03 |
| LP (2) Cl 23 | 1.9682 | $\sigma^*(\text{Cd } 22 - \text{Cl } 26)$ | 0.0836 | 13.86 | 0.34 | 0.03 |
| LP (3) Cl 23 | 1.9072 | $\sigma^*(\text{Cd } 22 - \text{Cl } 25)$ | 0.0862 | 12.31 | 0.37 | 0.03 |
| LP (2) Cl 26 | 1.9691 | $\sigma^*(\text{Cd } 22 - \text{Cl } 23)$ | 0.0808 | 10.47 | 0.36 | 0.03 |
| LP (2) Cl 29 | 1.9693 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 13.36 | 0.41 | 0.03 |
| LP (3) Cl 29 | 1.9588 | $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | 11.60 | 0.45 | 0.03 |
| LP (3) Cl 29 | 1.9588 | $\sigma^*(\text{Cd } 27 - \text{Cl } 28)$ | 0.0834 | 10.13 | 0.43 | 0.03 |
| LP (1) O 30 | 1.9755 | $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | 18.46 | 0.61 | 0.05 |
| $\sigma^*(\text{Cd } 22 - \text{Cl } 24)$ | 0.1195 | $\sigma^*(\text{Cd } 22 - \text{Cl } 23)$ | 0.0808 | 29.10 | 0.02 | 0.03 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cl } 25 - \text{Cd } 27)$ | 0.0736 | 343.19 | 0.01 | 0.09 |
| $\sigma^*(\text{Cl } 24 - \text{Cd } 27)$ | 0.1116 | $\sigma^*(\text{Cd } 27 - \text{O } 30)$ | 0.0751 | 16.91 | 0.13 | 0.07 |
| LP (1) Cl 24 | 1.9727 | $\sigma^*(\text{C } 34 - \text{H } 42)$ | 0.0264 | 11.64 | 1.20 | 0.05 |
| LP (1) Cl 28 | 1.9910 | $\sigma^*(\text{N } 35 - \text{H } 43)$ | 0.1303 | 14.24 | 1.01 | 0.05 |

| | | | | | | |
|--------------|--------|---------------------------|---------|--------|------|-------|
| LP (3)Cl 28 | 1.8512 | $\sigma^*(N\ 35 - H\ 43)$ | 0.1303 | 180.70 | 0.56 | 0.14 |
| LP (1)Cl 56 | 1.9784 | $\pi^*(Cd\ 59 - Cl\ 60)$ | 0.10245 | 20.43 | 0.96 | 0.06 |
| LP (3)Cl 56 | 1.8523 | $\pi^*(Cd\ 59 - Cl\ 60)$ | 0.10245 | 51.00 | 0.6 | 0.077 |
| LP (1)Cl 61 | 1.9861 | $\pi^*(Cd\ 59 - Cl\ 60)$ | 0.10245 | 10.84 | 0.99 | 0.046 |
| LP (1)O 62 | 1.9698 | $\pi^*(Cd\ 59 - Cl\ 60)$ | 0.10245 | 24.07 | 0.52 | 0.05 |

Conclusion

Semi-organic molecule $[H_2pip]Cd_2Cl_6(H_2O)_2$ is optimized by B3LYP/3-21++G(d,p) basis set. From this geometry, it is found that the molecular model recovered from B3LYP/3-21++G(d,p) in this study being the best representation of the actual molecular structure. Theoretical studies using optimized geometry and NBO gives information mainly about the interatomic properties, intermolecular interactions and charge transfer.

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FABRICATION OF REDUCED GRAPHENE OXIDE- β -CYCLODEXTRIN-COPPER OXIDE COMPOSITE MODIFIED ELECTRODE FOR TYRAMINE DETECTION

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Abstract

A simple and novel electrochemical sensor was developed to determine tyramine based on the reduced graphene oxide- β -cyclodextrin-copper oxide composite modified gold electrode (rGO- β -CD- $\text{Cu}_2\text{O}/\text{AuE}$). The reduced graphene oxide provide stable matrix and a large surface area for the fabrication of the sensing interface while the Cu_2O nanoclusters dramatically promoted the current of tyramine on the electrode. β -cyclodextrin can form inclusion complexes with tyramine molecule via non-covalent interactions. FTIR, XRD, scanning electron microscopy and electrochemical methods were used to characterize the rGO- β -CD- Cu_2O composite.

1. Introduction

Tyramine is a naturally occurring trace amines derived from the amino acid tyrosine (Fig 1.1). Tyramine act as a catecholamine releasing agent. Notably, it is unable to cross the blood – brain barrier, resulting in only non-psychoactive peripheral sympathomimetic effects following ingestion. Tyramine occurs widely in plants and animals and is

metabolized by various enzymes including monoamine oxidases [1]. In foods it is often produced by the decarboxylation of tyrosine during fermentation. Evidence for the presence of tyramine in the human brain has been confirmed by postmortem analysis.

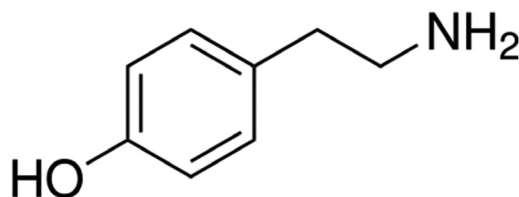


Fig 1.1 Structure of tyramine

Electrochemical sensors and biosensors have recently found extensive applications in diverse industries. Many analytical instruments used in environmental, food, pharmaceutical, or clinical laboratories and also most of the commercial point-of-care devices work using chemical sensors or biosensors, as a whole or a basic part. Graphene is one of the most promising materials that holds great promise for potential applications in many technological fields because of its high surface area, low cost, and high conductivity.

Cyclodextrin (CDs) with their largely hydrophobic cavities of variable size and numerous ways of chemical modification are the subject of intensive electrochemical research including both their behavior in homogeneous solutions and in thin films attached to the electrode surfaces. Therefore, CDs are employed in electrochemical sensing devices for the determination of selected analytes. Macrocyclic host such as β -cyclodextrin (β -CD) as functional molecule not only can effectively disperse graphene and meanwhile can bring in new and enhanced functions. Therefore, various macrocyclic hosts modified graphene organic-inorganic nanohybrids have attracted considerable attention recently in electrochemical sensing field. Cuprous oxide (Cu_2O) has been considered as a promising candidate for electrochemical sensors due to their low cost and significant catalytic activities [2]. Here we developed an electrochemical sensor for the detection of tyramine using rGO- β -CD- Cu_2O modified gold electrode.

2. EXPERIMENTAL

2.1 Materials and methods

Monosodiumphosphate and disodiumphosphate were obtained from SRL. β -CD purchased from Sigma Aldrich.

Several techniques were used to characterize rGO- β -CD- Cu_2O composites and they include Fourier Transform Infra Red (FT-IR), scanning electron microscopy (SEM), X-ray Diffractometry (XRD) and cyclic voltammetry (CV). In the present work Perkin Elmer FT-IR was used with a frequency range of 400-4000 cm^{-1} . Scanning electron microscopy (SEM) images were obtained with a JEOL-JSM-6390A SEM. Bruker AXS D8 Advance for

X-ray diffraction studies. Electrochemical measurements were performed using a SP300 electrochemical workstation, Bio-Logic Science Instruments SAS (Germany).

2.2. Synthesis of copper oxide nanoclusters

Microwave assisted treatment of Fehling's solution and plant extract used to synthesize Cu_2O nanoclusters. The obtained Cu_2O nanoclusters were characterized by various techniques. [3]

2.3 Synthesis of graphene oxide from pristine graphene

Graphite oxide was synthesized from graphite powder by modified Hummer's method [4]. 2.0 g of graphite powder was added into 100 mL concentrated H_2SO_4 at room temperature. Under stirring, the mixture was cooled to 5°C using an ice bath, and the temperature of the mixture was kept to below 5°C for 30 min. KMnO_4 (8.0 g) was added gradually under stirring and cooled, so that the temperature of the mixture was not allowed to reach 10°C . 100 mL distilled water was added into the mixture, stirred for 1 hr and further diluted to approximately 300 mL with distilled water. 20 mL of 30% H_2O_2 was added to the mixture to reduce the residual KMnO_4 . The solid was filtered, washed with 5% HCl aqueous solution (800 mL) to remove metal ions and with distilled water until the pH was 6. The resulting graphite oxide (GO) was dried at 45°C for 24 hr [32].

2.4 Synthesis of Exfoliated Graphite Oxide (ExGO)

Aqueous colloids of ExGO were prepared by dispersing 1.0 g GO into 500 mL of distilled water by ultrasonication

and centrifugation for 2 hr to remove any unexfoliated GO. The ExGO was dried at 45°C for 24 hr.

2.5 Preparation of reduced graphene oxide and β -cyclodextrin composite (rGO- β -CD)

About 0.01 g rGO and 0.32 g β -cyclodextrin were mixed with 100 mL water and sonicated for 1 hr. After that 1 mL hydrazine and 7 mL ammonia solution were added to the above solution and kept in water bath for about 4 hr with constant stirring. It was washed with double distilled water until it became neutral. Then it placed in hot air oven for 12 hr.

2.6 Synthesis of rGO- β -cyclodextrin- Cu_2O composite

0.75 g of rGO- β -CD nanocomposite and 0.75 g of Cu_2O nanoclusters were mixed in 100 mL water and it was kept in water bath for about 10 hr with constant stirring. It kept in a hot air oven at 80°C for 24 hr.

2.7 Electrochemical measurements

A platinum wire and an Ag/AgCl (saturated KCl solution) electrode were used as auxiliary and reference electrodes, respectively. Modified gold electrode used as the working electrode. CV measurements were carried out in 100 mM PBS at 100 mV s⁻¹. Nyquist plots of faradic impedance were carried out in the same electrolyte.

2.8 Fabrication of the electrochemical sensor

Gold electrode (AuE) with diameter of 3 mm was treated sequentially with 0.3 and 0.05-mm alumina powder and chamois leather. AuE was cleaned by ultrasonication in ethanol and double-distilled water for 5 min. Finally, the

electrode was washed with Milli-Q water. A 0.7 mL portion of the solution of rGO- β -CD- Cu_2O , was mixed with 60 μL of 5 wt% Nafion solution by ultrasonication for a few seconds. 3 mL of the ink was dropped on the surface of the clean gold electrode with a micropipette and then dried at room temperature. Similarly rGO/ β -CD/AuE was fabricated. All electrochemical experiments were carried out at 25°C.

3. RESULTS AND DISCUSSION

3.1 Characterization of rGO- β -CD- Cu_2O nanocomposites

3.1.1 FT-IR spectroscopy

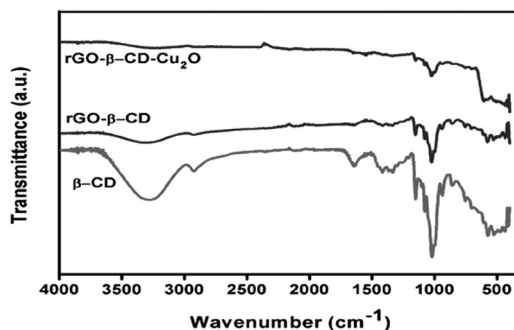


Fig. 3.1 FTIR spectrum of β -CD, rGO- β -CD, rGO- β -CD- Cu_2O

The structural evaluation of the nanocomposite was performed using FT-IR. Figure 3.1 shows that GO and rGO- β -CD samples possess hydrophilic O-H group (3010–3650 cm⁻¹) on their surfaces, thus ensuring their good dispersibility in water. A stretching vibration of CH between 2830 and 2950 cm⁻¹ was obtained in the spectra. Furthermore, aromatic C=C stretching modes at 1630, 1671 and 1642 cm⁻¹ belongs to rGO and rGO- β -CD. The characteristic stretching vibrational modes of C=O (1731 cm⁻¹), C-O (1219 cm⁻¹) and C-O (1051 cm⁻¹) bonds were observed in rGO- β CD spectrum. After modification

with Cu_2O , the other characteristic peaks were shifted in position [2]. The Cu-O bond which is nearly at 615 cm^{-1} shifted to 610 cm^{-1} due to the presence of rGO- β -CD.

3.1.2 X-ray diffraction studies

The crystalline nature and structure of the synthesized nanocomposites were investigated with XRD analysis.

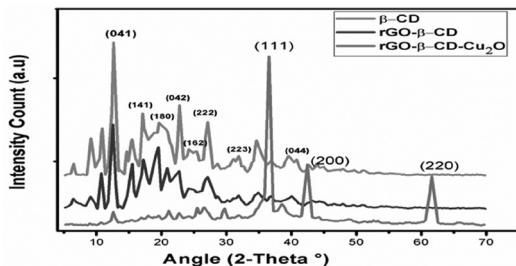


Fig. 3.2 XRD pattern of β -CD, rGO- β -CD, rGO- β -CD- Cu_2O

The XRD pattern of cyclodextrin indicates high crystallinity in cyclodextrin due to the characteristic sharp peaks at (041), (141), (180), (042), (162), (222), (223), and (044) (Fig. 3.2). The characteristic peaks of β -cyclodextrin reduced in the presence of reduced graphene oxide. The sharp peak at 37° of rGO- β -CD- Cu_2O indicated the (111) plane of Cu_2O nanoclusters. The peaks at 42.73 and 61.62° were representing the planes of Cu_2O at (200) and (220) respectively.

3.1.3. Scanning Electron Microscopy (SEM)

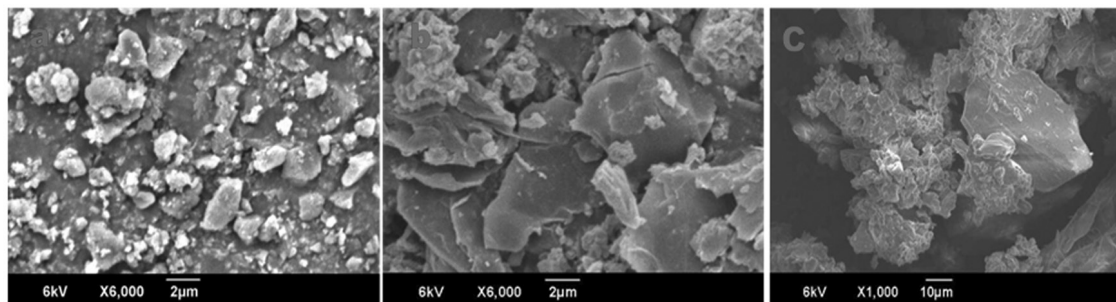


Fig. 3.3 Scanning electron micrograph of (a) β -CD, (b) rGO- β -CD, (c) rGO- β -CD- Cu_2O .

Other peaks were merged with the peaks of rGO- β -CD. These XRD patterns confirm the formation of rGO- β -CD- Cu_2O composite.

From the SEM images it was clear that β -cyclodextrin appeared as irregular-shaped crystals (Fig 3.3a). In Fig. 3.3b, graphene oxide sheets strongly attached with small fragments of β -cyclodextrin randomly gave rGO- β -CD. The β -cyclodextrin crystals appeared as it was grow on the graphene oxide sheets. The Cu_2O nanoclusters- adhered on β -CD-rGO composite displayed in Fig. 3.3c. Morphological characteristic of synthesized composite was affirmed by SEM.

3.2 Electrochemical detection studies

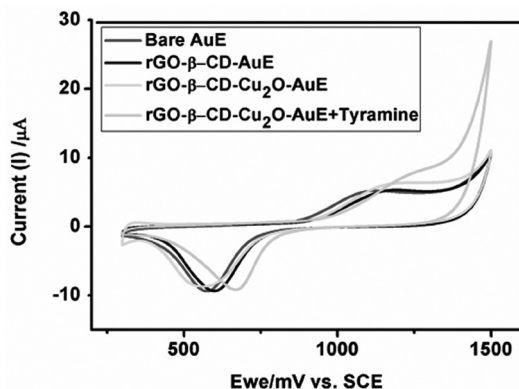


Fig. 3.4 Cyclic voltammogram behavior of tyramine, phosphate buffer (pH 4.0) bare gold electrode, rGO- β -CD-AuE, rGO- β -CD- Cu_2O -AuE in the absence and presence of tyramine $1.0 \times 10^{-3}\text{ M}$; scan rate: 100 mVs^{-1} .

The electrochemical behavior of 1 mM tyramine in a 100 mM pH 4.0 phosphate buffer solution was investigated using cyclic voltammetry at a scan rate of 100 mV s^{-1} exhibits a well-defined irreversible anodic peak. The results are shown in Fig. 3.4. The voltammogram of bare gold electrode exhibit small amount of current due to slow electrodic process. rGO- β -CD modified electrode shown slightly increased both oxidation and reduction current owing to the high conductivity and large surface to volume ratio of rGO and β -CD. rGO- β -CD- Cu_2O brought up a shift in redox peaks. The reason for the better performance of the rGO- β -CD- Cu_2O could be attributed to the high conducting property of Cu_2O and electronic structure. In the presence of tyramine, the modified electrode have improved redox current. Here, reduced graphene oxide sheets and Cu_2O provide high conductivity and β -CD enables the formation of inclusion complex with tyramine molecules.

3.2.1 Effect of pH

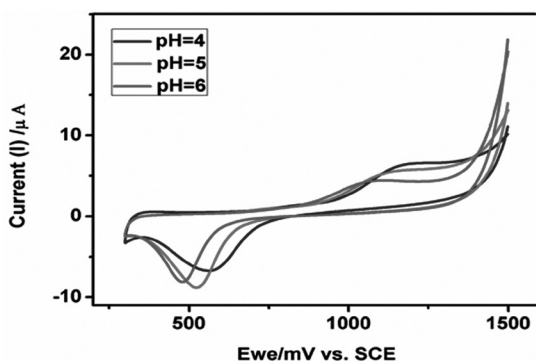


Fig. 3.5 Cyclic voltammogram obtained for 1.0 mM tyramine in buffer solution at different with potential scan rate: 100 mVs^{-1}

The electrochemical responses of tyramine in 100 mM PBS with different pH values at a scan rate of 100 mVs^{-1} were studied. The peak current was highest at

pH 4, as seen in (Fig. 3.5). Thus, pH 4 PBS was used for the determination of tyramine and for further experiments. However, with increase in the solution pH, the peak potentials shifted to less positive values upto pH 7.0. Gold electrodes are very weak chemisorbers due to filled d-orbitals, yet display a higher electroactivity towards drugs oxidation. The electrocatalytic behavior of gold is highly complex. The catalytic component of gold electrode is believed to be hydrous gold oxide, AuOH , which is formed by the chemisorption of hydroxide anions to the gold surface. This effect is more pronounced at higher pHs, and occurs in the region of premonolayer oxidation of the gold surface.

3.2.2 Effect of scan rate

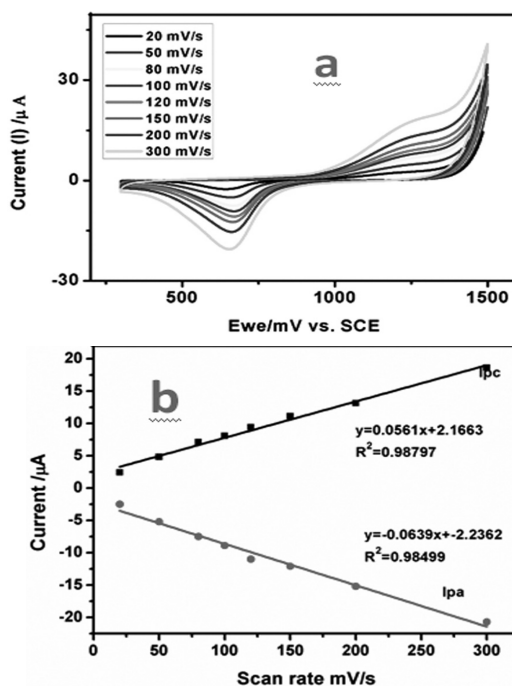


Fig. 3.6 a) Cyclic voltammograms of 1.0 mM tyramine in buffer solution at pH 4 at different scan rates (20, 50, 80, 100, 120, 150, 200, 300) mVs^{-1} , b) dependence of the peak current on the scan rate

The electrochemical behaviours of tyramine at different scan rates were studied at pH 4 by CV (Fig.3.6 a). The dependence of the peak intensity I_p (μA) upon the scan rate (v) (Fig. 3.6 b) were carried out to assess whether the process on gold electrode was under diffusion or adsorption-controlled. The influence of the square root of the scan rate on the peak current showed a linear relationship between 20 to 300 mVs^{-1} and the equation can be expressed as follows:

$$I_p = 0.056 v^{1/2} + 2.166; R^2=0.987$$

$$I_{pc} = -0.063 v^{1/2} - 2.236; R^2=0.984$$

Suggesting that the oxidation of tyramine at rGO- β -CD- Cu_2O is an adsorption-controlled process.

3.3 Electrochemical impedance spectroscopy (EIS) characterization

The electron-transfer kinetics and diffusion characteristics can be determined from the shape of the impedance spectrum. The semicircular portion obtained at higher frequencies corresponds to an electron transfer-limited process. The electron transfer characteristics were interpreted by using the Randle's equivalent circuit.

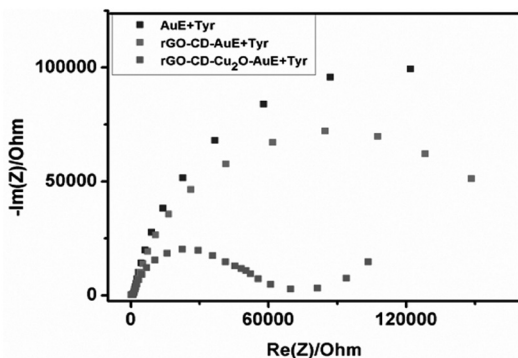


Fig. 3.7 Electrochemical impedance spectroscopy of modified electrodes. (a) Bare AuE, (b) rGO- β -CD-AuE/Tyr, (c) rGO- β -CD- Cu_2O AuE/Tyr in 100mM pH 4.0 PBS.

As shown in Fig. 3.7, the Nyquist plot of the bare gold electrode displays a well-defined, enlarged semicircle with an electron transfer resistance (R_{ct}). Compared with the bare gold electrode, the diameter of the semicircle in the Nyquist plot of the rGO- β -CD decreases dramatically (magenta curve). The electrode modified by rGO- β -CD- Cu_2O film exhibits a much lower resistance and the Nyquist plot of the electrode shows a nearly straight line. It is consistent with previous study, which indicates that the Cu_2O nanoclusters are an excellent conducting material and could act as tiny conduction centers to promote the electron transfer. The results of the impedance change during the electrode modification, provide an evidence for the successful immobilization of the rGO- β -CD- Cu_2O composite on the electrodes. These results also prove that the rGO- β -CD- Cu_2O could improve the electron transfer rate between the electrode and tyramine, which is consistent with the CV results shown in Fig 3.7.

4. Conclusion

A novel, sensitive and effective electrochemical sensor for the sensing of tyramine was developed using rGO- β -CD- Cu_2O composite. The tailored rGO- β -CD- Cu_2O composite was characterized by using FT-IR, SEM, XRD techniques and its electrocatalytic nature were studied using CV and EIS. The rGO- β -CD- Cu_2O composite modified gold electrode was an excellent platform for the detection of tyramine. The electrochemical behavior of tyramine was detected using cyclic voltammetry and electrochemical impedance spectra. Electrochemical responses of tyramine at different pH values



are also calculated. It is found that at pH 4.0 tyramine gives high electrochemical responses. This method can be applied for real samples also.

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GREEN AND GENTLE SYNTHESIS OF CUO NANOPARTICLES USING *PIMENTA DIOICA* UNDER OPTIMISED CONDITIONS

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Abstract

The scientific community is in search for new methods for the synthesis of metallic nanoparticles. Green synthesis has become a vast developing area of new research groups. These days biogenic methods are considered to be a safer alternative to usual physical and chemical methods for nanosynthesis due to their environment friendly nature. Here we adopt a plant mediated green synthesis of CuO nanoparticles using the fruit extract of maluspumila an easily available fruit. This is an eco-friendly and low cost method. The formation of CuO nanoparticles were confirmed by their change of colour to light green due to the phenomenon of Surface Plasmon Resonance. The green synthesized nanoparticles were characterized by UV-visible spectroscopy IR spectroscopy.

1. Introduction

Nanotechnology is a brainchild of modern fundamental science. It is a very complicated professional area, uniting the efforts of professionally qualified chemists, physicists, mathematicians, material scientists, computer scientists, and so on. Nanotechnology is manipulation

of matter on an atomic, molecular, and supramolecular scale. The earliest widespread to the particular technological goal of precisely manipulating atoms and molecules for fabrication of macro scale products, also now referred to as molecular nanotechnology. In nanotechnology, a particle is defined as a small object that behaves as a whole unit with respect to its transport and properties. A nanoparticle is an ultrafine particle with at least one dimension between 1-100 nanometers. Within this size all the properties (chemical, physical and biological) changes in fundamental ways of both individual atoms/molecules and their corresponding bulk. Nanotechnology has the potential to create many new materials and devices with a vast range of applications, such as in medicine, electronics, energy and environment. Tremendous growth in these expanding technologies had opened applied frontiers and novel fundamentals.

Nanoparticles are of great scientific interest as they are in effect, a bridge between bulk materials and atomic or molecular structures. A bulk material should have constant physical properties regardless of its size, but at the Nano-



scale size-dependent properties are often observed. Thus, the properties of materials change as their size approaches the Nano scale. For bulk materials larger than one micrometer (or micron), the percentage of the surface is insignificant in relation to the volume in the bulk of the material. Nano sized particles are quite unique in nature because Nano size increase surface to volume ratio and also its physical, chemical, and biological properties are different from bulk material. Nanoparticles show different properties such as quantum confinement, surface plasma resonance (SPR), decrease in melting temperature which are directly related to the crystal lattice of the nanomaterial.

There are several methods of creating nanoparticles, including gas condensation, attribution, chemical precipitation, ion implantation, pyrolysis and hydrothermal synthesis. In attribution, macro and micro scale particles are ground in ball mill, a planetary in a ball mill, or other size reducing mechanism. The resulting particles are classified to recover nanoparticles. The biological synthesis of nanoparticle is a challenging concept which is very well known as green synthesis. The biological synthesis of nanomaterial can solve environmental challenges like solar energy conservation, agricultural production, catalysis, electronic, optics, and biotechnological area. Green synthesis of nanoparticles are cost effective, easy, eco - friendly, nontoxic, large scale when compared to the chemical methods which are costly as well as emit hazardous by-products which can have some deleterious effect on the environment.

In this work, leaf extracts of *Pimenta dioica* were used for the generation of

copper oxide nanoparticles. The leaf extracts generated from *Pimenta dioica* have strong fungicidal and bactericidal properties. In addition it also has acaricidal, nematicidal, anticancer, antioxidant and deodorizing properties. All these properties make the leaf extracts generated highly resistant to spoilage and they can be stored for up to three months even in contaminated areas quite safely. However not all leaf extracts from other plant sources stay for so long. This property of *Pimenta dioica* makes it extremely useful for industrial nanoparticle synthesis where long term storage of leaf extract is possible. Besides its use as a spice and flavor, allspice has been used for various gastrointestinal illness, rheumatism, and neuralgia. The leaf extracts also have antiseptic, anesthetic, and several other medical properties. In order to exploit all the above mentioned benefits of bioinspired synthesis along with those provided by nanotechnology, CuO nanoparticles were generated from the leaf extracts of *Pimenta dioica*. The rate of nanoparticle synthesis was very high, which justifies the use of plants over microorganisms in the biosynthesis of metal nanoparticles through greener and safer methods [22].

2. Experimental

2.1 Materials

Cupric acetate solution, Leaves of *Pimenta Dioica*, All aqueous solutions were prepared using distilled water.

2.2 Preparation Of *Pimenta Dioica* Leaves Extracts

Pimenta Dioica leaves were collected from the local region and are displayed in figure 3.1. They were washed and cleaned with distilled water and dried with water

absorbent paper. Then it was crushed with mortar. It is dispensed in 100 ml of distilled water and heated in a water bath for 15 minutes at 70-80°C. The extract was then filtered using Whatman No.1 filter paper. The filtrate was collected in a clean and dried beaker and was stored.

2.3 Synthesis Of Copper Oxide Nanoparticle

During the synthesis of Copper oxide nanoparticles both the precursor and the reducing agent were mixed in a clean beaker in 1:1 proportion. For the reduction of Cu^{2+} , 4 ml of leaf extract was mixed to 4 ml of freshly prepared 0.01M $\text{Cu}(\text{CH}_3\text{COO})_2$ solution with constant stirring at 70-80°C. Within a particular time there is a change in colour was observed by nanoparticles so prepared.

3. Results And Discussions

3.1 Colour Change

In this study, *Pimenta Dioica* leaf extract was used to produce copper oxide nanoparticles. The colour of the reaction solution changed from light brown to dark brown when the extract is mixed with 0.01M copper acetate solution in 1:1 ratio, which indicated the formation of CuO nanoparticles (Figure 4.1). This colour change was obviously due to the excitation of surface Plasmon resonance in the metal nanoparticles, indicating the formation of CuO nanoparticles. *Pimenta dioica* leaves contain proteins, lipids, vitamins A, B1, B2 and C. Moreover, *Pimenta dioica* leaf is rich in chemicals such as eugenol, β -caryophyllene, α -humulene, 1,8-cineone. Most of these compounds are polyphenolic bioactive constituents called eugenol that contribute substantially to its unique colour and flavour and are

responsible for the formation of CuO nanoparticles.

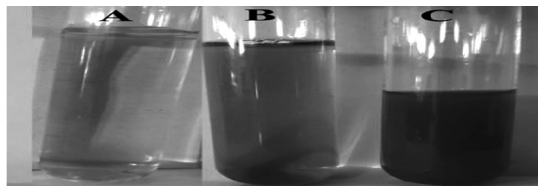


Figure 4.1. Tube A - Copper acetate solution, Tube B - *Pimenta Dioica* leaf extract, Tube C - Copper oxide nanoparticle synthesized solution.

3.1 Characterization of Copper Oxide Nanoparticles

UV-Vis spectroscopy was used to confirm the formation of CuO nanoparticles from *Pimenta Dioica* leaf extract. Figure 4.2 shows the UV-visible spectra of the synthesised CuO nanoparticles. The dispersion of CuO nanoparticles displays intense colours due to the SPR absorption. The surface of a metal is like plasma having free electrons in the conduction band near the surface of the nanoparticles. Electrons are limited to specific vibration modes by the particles' size and shape. Therefore metallic nanoparticles have characteristic absorption spectrum in UV-Vis region. The Plasmon band in the absorption spectrum at 273 nm is due to the CuO nanoparticles prepared by green method. The presence of a peak in the region indicated the formation of CuO nanoparticles as reported earlier in another study.

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dispersion of CuO nanoparticles displays intense colours due to the SPR absorption. The surface of a metal is like plasma having free electrons in the conduction band near the surface of the nanoparticles. Electrons are limited to specific vibration modes by the particles' size and shape.

Therefore metallic nanoparticles have characteristic absorption spectrum in UV-Vis region. The Plasmon band in the absorption spectrum at 273 nm is due to the CuO nanoparticles prepared by green method. The presence of a peak in the region indicated the formation of CuO nanoparticles as reported earlier in another study.

The characteristic IR spectrum of copper oxide Nano-particles is illustrated in figure 4.3. The FTIR spectrum of plant-mediated CuO nanoparticle shows that the absorption band at 3280 cm^{-1} corresponds to the hydroxyl (OH) functional group in alcohols and phenolic compounds. The sharp absorption peaks were observed in the range of 1700–1000 cm^{-1} . The IR band around 1611.2 cm^{-1} can be assigned to aromatic bending of alkene group ($\text{C}=\text{C}$). Sharp peak at 1342.3 cm^{-1} is attributed to the deformation vibration of the C–H band of alkane (CH_3 and CH_2) group. Absorption peak at 1038.0 cm^{-1} corresponds to the stretching vibration of C–O group of primary and secondary alcohols (C–O). These different bands arise from the capping materials in the plant extract that are responsible for the reduction of copper ions to copper oxide nanoparticles. Appearance of the peak at 1639 cm^{-1} indicates the stretching vibration of the Cu–O bond of copper (II) oxide nanoparticles. The present IR spectrum is well consistent with that of CuO reported in earlier studies.

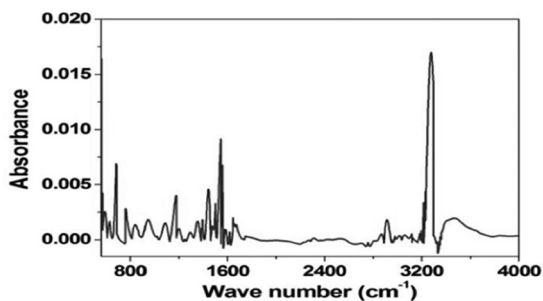


Figure 4.3. FTIR spectrum of the CuO nanoparticles.

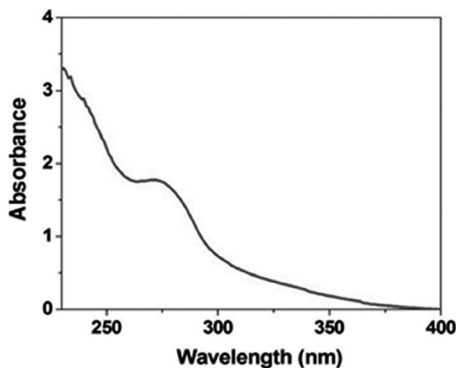


Figure 4.2. UV-visible spectrum of the CuO Nanoparticles.

Copper Oxide Nanoparticle Formation At Different Experimental Conditions.

Volume Ratio Of Extract And Copper Acetate

The formation of copper oxide nanoparticles depends on the ratio of extract/copper acetate (v/v). The UV-Visible spectrum of copper oxide nanoparticles at different extract/copper acetate ratios are displayed in figure 4.4. The maximum absorption was observed at 1:1 ratio, but by increasing the ratio to 1:2 and 1:3 v/v, the absorption decreased. A red shift was observed on increasing the volume of the copper acetate from 1:1 to 1:4. The accurate position of SPR band could differ depending on the size, shape

and capping agent, among other individual properties of the nanoparticles.

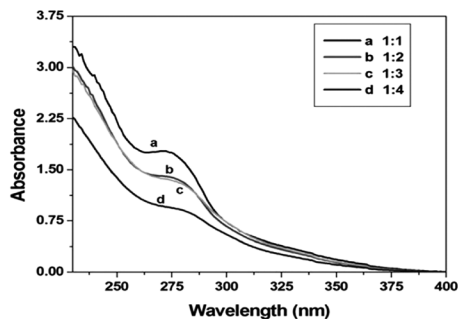


Figure 4.5. UV-visible spectra showing the effects of *Pimenta dioica* leaf extract concentration on the formation of CuO nanoparticles.

Effect Of Concentration Of The Extract

The effect of concentration on the formation of CuO nanoparticles was studied by varying the concentration of extract from 2 % to 8 %. Figure 4.5 displays the formation of CuO nanoparticles on varying the *Pimenta Dioica* leaf extract concentration. Maximum absorption was found for a concentration of 6%. Further increase in concentration did not have much impact on absorption. So the concentration of extract should be kept at the maximum value of 6 % for synthesis.

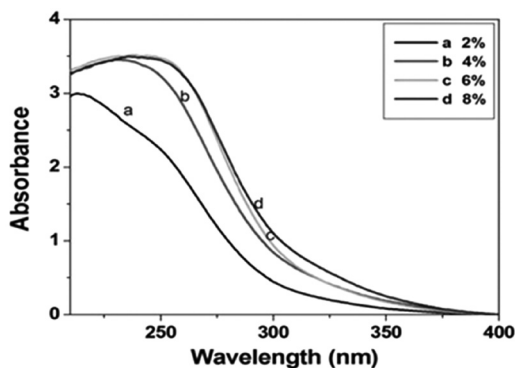


Figure 4.5. UV-visible spectra showing the effects of *Pimenta dioica* leaf extract concentration on the formation of CuO nanoparticles.

Effect of Temperature

Temperature is one of the important physical parameter affecting on the synthesis of CuO nanoparticles. Figure 4.6 shows the UV-Visible spectra of CuO nanoparticles prepared at different temperatures (400C, 500C, 600C and 700C). It was observed that the absorbance increases with increasing temperature. Increased reaction temperature led to a rapid reduction rate of the copper ions and the subsequent homogeneous nucleation of copper nuclei allowing for the formation of copper oxide nanoparticles with small size.

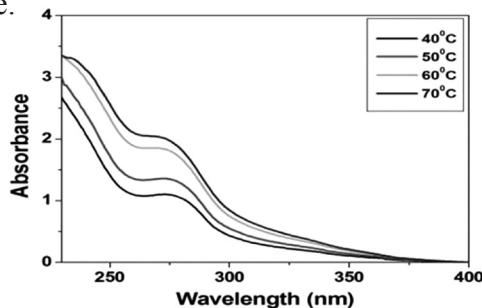


Figure 4. 6. UV-visible spectra showing the effect of temperature on the formation of CuO nanoparticles.

In this study we have synthesized copper oxide nanoparticles using plant extracts. It is the simplest, rapid, eco-friendly, non-pathogenic, economical protocol and providing a single step technique for the biosynthesis process. The nanoparticles are stable in aqueous medium for a long time without any aggregation. The characterization of nanoparticles was conducted using UV-Visible and FTIR spectroscopic techniques. Colour changes occurs due to surface plasmon resonance during the reaction within the ingredients present in the *Pimenta dioica* leaf extract, results in the formation of copper oxide Nano particles which is confirmed by



UV-Visible spectrum. The reactions were carried out at different conditions were optimized in order to get the CuO nanoparticles.

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GREEN SYNTHESIS OF CITRIC ACID FOR THE STUDY OF SURFACE DIRECTING PROPERTY OF CITRIC ACID ON ZnO; Cu²⁺ NANOPHOSPHORS AND HYDROXYLATION OF BENZOPHENONE WITH MODIFIED ZnO; Cu²⁺

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Abstract

The search for new sources of biosurfactants has been attracted the interest of many researchers. In this background a study was carried out to synthesize citric acid from lemon peel by green method. Pure citric acid is obtained from lemon peel using alkali extraction, acid precipitation and is followed by evaporation of filtrate. Citric acid is used as surface directing agent in the synthesis of ZnO:Cu²⁺ nanophosphors by chemical technique based on coprecipitation method. The use of citric as SDA produce surface modified ZnO:Cu²⁺ nanophosphors. The hydroxylation of benzophenone by modified ZnO:Cu²⁺ nanophosphors as photocatalyst to 2-hydroxybenzophenone is examined. This work aims at synthesizing citric acid from natural source to use it as an SDA on nanophosphors and to study the photocatalytic activity of nanophosphors using an eco friendly and low cost approach.

Keywords : Citric acid, SDA, ZnO:Cu²⁺ nanophosphors, Hydroxylation

1. Introduction

Surfactants are the most versatile products of the chemical industry. They

are utilized in every industrial area ranging from household detergents to drilling muds and food items to pharmaceuticals. They are amphiphilic molecules and are thus absorbed in the air, water interface. At the interface, they align themselves so that the hydrophobic part is in the air and hydrophilic part is in water. This will cause the decrease in surface or interfacial tensions. The substances that shows surface activity is called by several names-surface active agents, surface active compounds and surface active agent (surfactant). Surface active substance and surface active compounds are almost identical. They are substances affecting the surface or interfacial properties in the widest sense. Surfactant is the compound that dramatically lowers the surface tension of water and forms aggregates like micelles in aqueous media.

Exciting characteristic features of nanomaterials in contrast to their bulk phase require shape control of morphologies at the nanometre scale. Surfactants, a unique class of surface active molecules, possess remarkable ability to control crystal growth and direct it in shape and size controlled manner. The fine tuning of the



desired morphologies can be achieved by controlling the surfactant architecture as well as its self-assembly behaviour. Since the advancement in nanotechnology, the nanometallic surface with clear atomic packing in different crystal lattice planes has become tremendously important in terms of surface adsorption, surface passivation, shape control effects and surface plasmon effects. All these properties are dramatically affected in the event of surface adsorption. Surfactants have proven to be the best shape directing agents in the synthesis of nanomaterials, which is primarily related to the surface adsorption of surface active molecules on different crystal planes of nucleating centres, thus controlling the overall shape.

In this work, $\text{ZnO}:\text{Cu}^{2+}$ nanophosphors are prepared by using citric acid as SDA by coprecipitation method. Various distinct morphologies of the nanostructures can be obtained by varying the composition of citric acid.

2. Experimental

2.1 Preparation of citric acid

Lemon peel washed thoroughly with water to remove the soluble particles. Transferred to a R.B flask and refluxed for 2 hour using distilled water. Collect the extract from it. Add 0.1M NaOH solution until the pH become 9. Filter the solution. Add 100 ml 0.25 M CaCl_2 solution to the above filtrate and boil for 10-15 minutes. Filter the solution and wash the precipitate with hot water. Add 15% H_2SO_4 solution to the obtained precipitate, Stir well the mixture. Again filter the solution. Collect the filtrate and make evaporate it to 80 °C until the volume is reduced to 60ml. Filter the final solution. The remaining

filtrate were evaporated to 80°C. After the evaporation the remaining white crude crystalline precipitate were collected and dried.

2.2 Synthesis of $\text{ZnO}:\text{Cu}^{2+}$ using citric acid as SDA

Synthesizing of uncapped $\text{ZnO}:\text{Cu}^{2+}$: 0.5 M zinc acetate and 0.01 M copper acetate were taken in 100 ml of methanol and dissolved while continuous stirring for 2 hour at room temperature (solution A). Simultaneously 0.14 M KOH solution was prepared in 100 mL of methanol with refluxing through water condenser with constant stirring for 2 hour at 50 °C (solution B).

Then the solution A and B were mixed with constant stirring for 2 hour. Final solution was allowed to cool at room temperature and aged overnight. This solution was centrifuged and washed several times to remove unnecessary impurities. The obtained precipitate was placed in a vacuum oven for 24 hour at 50°C to get white powders of $\text{ZnO}:\text{Cu}^{2+}$. Similar procedure was followed for synthesis of citric acid capped $\text{ZnO}:\text{Cu}^{2+}$ samples. Prepare different samples by varying the concentration(0.5M, 1M, 2M and 3M) of citric acid in the solution. The synthesized nanophosphores were further calcinated at 100 °C for 4 hour.

2.3 Hydroxylation of benzophenone using modified $\text{ZnO}:\text{Cu}^{2+}$ nanophosphors

0.25 g of benzophenone, 1mL of isopropyl alcohol and 0.5 g of modified (0.3M citric acid treated) $\text{ZnO}:\text{Cu}^{2+}$ were mixed together. The slurry in a petridish was dried in air and dry mass was kept under UV light, 15W (at a distance 3 cm from light source) for 12 h of

photoactivation (high-power UV light removed the adsorbed moisture and hence water splitting was not observed and no hydroxylation of benzophenone took place). The photoproduct was separated by centrifugation with 5 mL ethanol. The residue was washed and dried to obtain 2-hydroxybenzophenone. The photoproduct was characterised using UV-Vis. spectroscopy.

3. Result & Discussion

- Citric acid extraction from lemon peel
- Synthesised $\text{ZnO}:\text{Cu}^{2+}$ by co-precipitation method using citric acid as surface directing agent.
- characterized $\text{ZnO}:\text{Cu}^{2+}$ using , uv-visible spectroscopy, XRD, FTIR and TGA.
- The photocatalytic activity of $\text{ZnO}:\text{Cu}^{2+}$ were studies by using it in the reduction of benzophenone

3.1 Characterization Techniques

3.1.1 FTIR studies

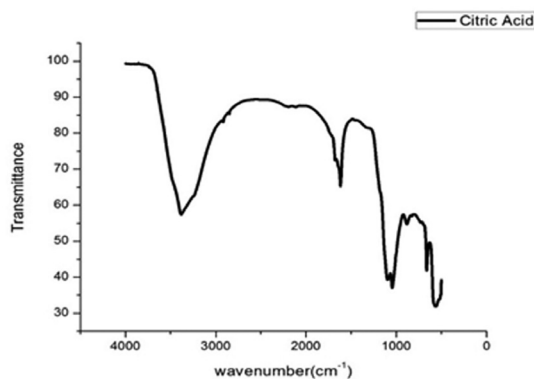


Fig 1.

The synthesised citric acid were characterised by FT-IR spectroscopy (Fig 1). There is a broad peak at 3380 and 3040 cm^{-1} corresponds to the stretching vibration

O-H and C-H bond respectively. The peaks at 1210 and 1620 cm^{-1} corresponds to the symmetric and anti-symmetric stretches of the carboxylate group of citric acid.

FTIR is also used for the characterisation of $\text{ZnO}:\text{Cu}^{2+}$ with different concentration of citric acid (Fig 3).

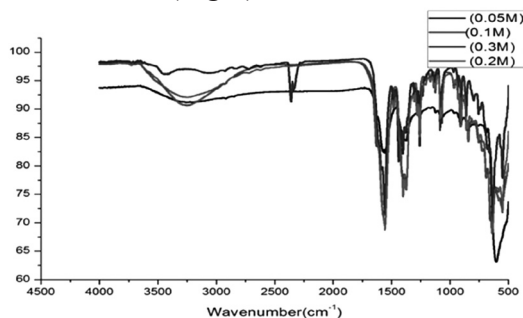


Fig 3

The peak at 547 cm^{-1} is assigned to the stretching frequency of Zn-O bond. The broad absorption peaks around 3455 cm^{-1} and 1150 cm^{-1} are attributed to the normal polymeric O-H stretching vibration of H_2O in Cu-ZnO lattice which may due to the moisture in sample. Another sharp peak at 1597 cm^{-1} is attributed to H-O-H bending vibration, which is assigned to small amount of H_2O in ZnO nanocrystals.

3.1.2 X-ray diffraction studies

The synthesised $\text{ZnO}:\text{Cu}^{2+}$ by coprecipitation method using citric acid as SDA is characterised by XRD analysis. The figure(2) below shows the XRD peaks of the nanophosphors.

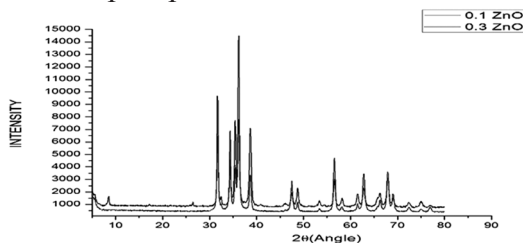
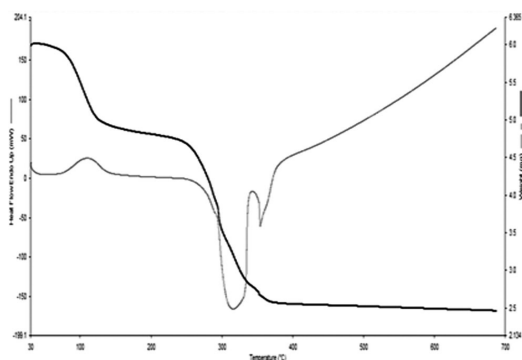


Fig 2.

The fig 2. for ZnO:Cu²⁺ nanophosphors synthesized at room temperature show broad peaks at the positions 32.21°, 34.50°, 36.55°, 47.50°, 56.50°, 63.10°, 66.37° and 67.90°, which are in excellent agreement with standard JCPDS file for ZnO (JCPDS 36-1451, a=b= 3.249Å and c=5.206Å) and can be indexed as the hexagonal wurtzite structure of ZnO. The intensity of peaks is higher for 0.3 M concentration of citric acid when compared to 0.1 concentration.

3.1.3 Thermogravimetric Analysis

Thermal stability of the nanophosphor



was carried out using TGA and was performed using Perkin Elmer, Diamond TG/DTA instrument. All the measurement were performed under inert atmosphere. The sample was heated from room temperature at a heating of 20 °C. From the TGA analysis of (Fig:12a) ZnO:Cu²⁺ 0.1M CA, it is seen that the decomposition temperature at 90 to 100°C corresponds to decomposition of water. The decomposition temperature of CA range is 250-300 °C and the compound become stable at 380 °C. The weight loss is 60.77 % as seen in the fig:12a.

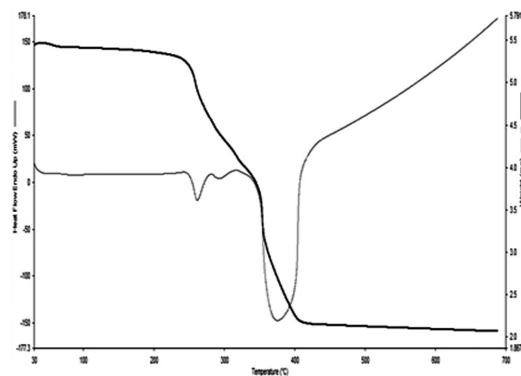


fig:12a Analysis of 0.1M citric acid (as SDA) ZnO:Cu²⁺ nanophosphor, 0.3 M citric acid (as SDA) ZnO:Cu²⁺ nanophosphor

In fig:12b, the decomposition temperature of 240-300°C corresponds to the decomposition of citric acid and become stable at 400 °C. The weight loss is 65.46% as calculated from the TGA analysis (fig:12b).

3.1.4 Hydroxylation of benzophenone

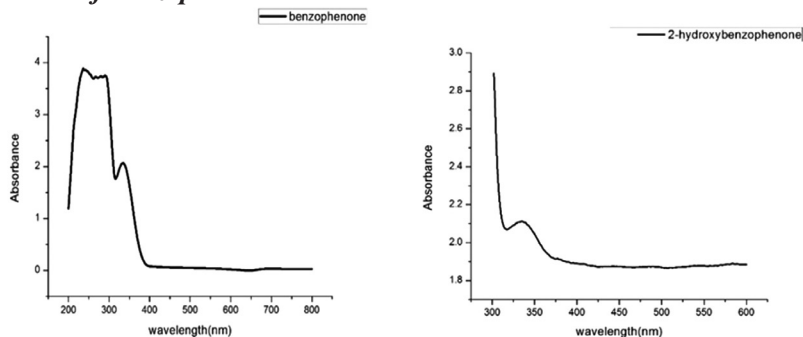


Fig. 4 a) UV-vis. spectroscopy of benzophenone b) 2-hydroxybenzophenone

The photocatalytic activity of modified ZnO;Cu²⁺ nanophosphors is examined by UV-Vis spectroscopy (Fig.4a). Benzophenone shows absorption peak at 236 nm in isopropyl alcohol before the reaction, and after the reaction a new peak appeared at 337 nm. Explicitly, 2-hydroxybenzophenone shows absorption maxima at 337 and 260 nm (Fig. 4b). These wavelengths are in good agreement with the absorption maxima of authentic 2-hydroxybenzophenone.

4. Conclusion

The low-cost coprecipitation method was used to synthesize ZnO;Cu²⁺ with varying the composition of citric acid as SDA. Citric acid is synthesised by green method from natural source lemon peel. The best surface modified ZnO;Cu²⁺ nanophosphors is obtained at 0.3 M concentration of citric acid which is the SDA. The hydroxylation of benzophenone is tested with the modified catalyst and the formation of 2-hydroxybenzophenone is confirmed from the UV-Vis. absorption spectrum. Hydroxylation of benzophenone using modified ZnO;Cu²⁺ catalyst is an effective, low cost and an eco-friendly approach. This work explore the possibilities for using citric acid as Surface Directing Agent for producing modified ZnO:Cu²⁺. The surface modified ZnO:Cu²⁺ improves its photocatalyst activity for the hydroxylation of benzophenone.

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DERIVATISATION OF CARBOXYLIC ACIDS : PHTHALIMIDOMETHYL ESTERS

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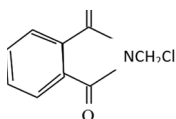
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Abstract

Quantitative organic analysis and identification of an unknown compound is an integral part of most organic chemistry laboratory courses. On chemical basis, the final step in the confirmation of a specific compound requires the preparation of one or two crystalline derivatives. For organic carboxylic acids, the main options are amides, anilides and the ester derivatives (4-nitrobenzyl and 4-bromophenacyl esters). The first two derivatives normally involve the preparation of acid chloride followed by reaction with appropriate amine. Improved procedure for the preparation of esters of type mentioned above has been reported. One of the drawback of 4-nitrobenzyl bromides and 4-bromophenacyl bromides is that they are expensive and therefore not routinely used in laboratories. In addition, the reagent may be undergoing partial hydrolysis during esterification.

Here, used another reagent for the esterification of carboxylic acids. The reagent used for esterification was an N-(chloromethyl)phthalimide(NCP).



Key Words: NHP, NCP

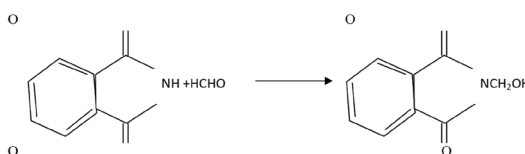
Introduction

Related to the carboxylic acid and to each other are a number of chemical families known as functional derivatives of carboxylic acids: acid chlorides, anhydrides, amides and esters. These compounds in which the -OH of a carboxyl group has been replaced by -Cl, -OOCR, -NH₂ or -OR. Like the acid to which it is related, an acid derivative may aromatic or aliphatic, substituted or unsubstituted; whatever the structure of the rest of the molecule, the properties of the functional group remain essentially the same.

Here we used the reagent for the esterification of carboxylic acid is N-(chloromethyl)phthalimide(NCP).

Experimental Methods

1. Preparation of N- (Hydroxymethyl), Phthalimide (Nhp)



Procedure

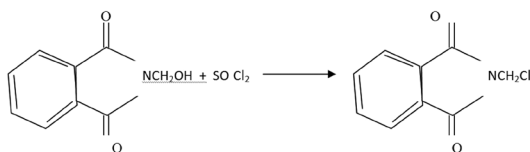
Add finely powered phthalimide (2.0g) to a solution of formalin (37-40%) in a round



bottom flask. Attach a water condenser and reflux the mixture for four hours. Filter the solid and washed with cold water. Crystallize the product from hot benzene. Yield of crystallized sample is 2g (84%). Melting point is 148°C. Solubility – Sparingly soluble in CCl_4 . Moderately soluble in ether, highly soluble in most other solvents.

II. Preparation of N - (Chloromethyl) Phthalimide (Ncp)

N-(chloromethyl) phthalimide is made by as following equation.



1. NHP 2. Thionyl chloride 3. Benzene

Procedure

Heat a mixture of N- (Hydroxy methyl) phthalimide (1.2 g) and little excess of freshly distilled thionyl chloride (5-6ml) under reflux using water condenser for 30 minutes. Remove the excess thionyl chloride with addition of benzene and distillation (thionyl chloride co distilled with benzene). Crystallise the residue from benzene.

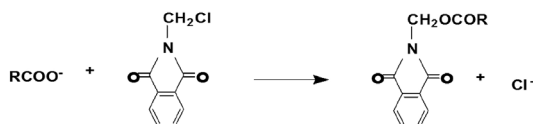
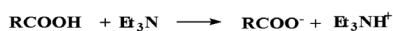
Yield of the crystallised sample = 0.8g (62%)

Melting point = 132 °C

Solubility - freely soluble in chloroform, acetone, ethanol etc and insoluble in water.

III. Preparation of Phthalimide Methyl Esters of Carboxylic Acid

The esters are obtained as follows.



Reagents

Benzoic acid, NCP, triethyl amine, acetone

Procedure

Phthalimidomethyl benzoate

Dissolve benzoic acid (0.05g), NCP (0.100 G) in acetone (10 ml) and add triethyl amine (1ml). Reflux the solution for an hour. Distill the solvent, preferably under reduced pressure and add water to the residue. Collect the solid product by filtration, wash with aqueous sodium carbonate followed by cold water. Dry the residue and crystallize from acetone-hexane.

Melting point -108° C

Similar procedure is used for the preparation of ester of following acids

(A) Phthalimidomethyl orthochlorobenzoic acid

Melting point = 145°C

(B) Phthalimidomethyl cinnamate

Melting point = 151°

Representative sets of acids were subjected to esterification and the results are presented in the table

| Sl. No | Acid | Melting point | Derivative melting point |
|--------|----------------------|---------------|--------------------------|
| 1 | Benzoic acid | 121 | 108 |
| 2 | O-Chlorobenzoic acid | 155 | 145 |
| 3 | Cinnamic acid | 133 | 151 |

RESULTS AND DISCUSSION

The esterification reaction occurs under simple conditions using acetone as solvent and triethylamine reagent. Reflux one hour in a water bath. The yields of esters are in the range of 70-80%. The phthalimidomethyl esters are



white crystalline solids, stable at room temperature and drying conditions (100°C). They melt sharply and do not decompose at their melting points. They are readily soluble in benzene, chloroform, acetone, ether and alcohol and insoluble in water and hexane. The best way to crystallise these is to dissolve them in an organic solvent and add hexane or petroleum ether. Laboratory reagent grade acetone and triethylamine can be used, though conversions are lower as compared to the purified and dry solvent. The presence of water in the acid also decreases the yield of the esters. A noteworthy observation is that the phenols and alcohols do not react under the condition used here, to form phthalimido methyl esters, however, amines form N-alkyl derivatives. For example, piperidine forms (N-phthalimidomethyl) piperidine. Results of this work indicate that NCP is useful reagent for derivatisation of carboxylic acids. The reagent offers many advantages over other alkylating agents.

(1) It is easily obtained from phthalimide in high yields. (2) It is a stable substance and can be stored without any special precautions (3) All carboxylic acids give solid esters in good yield (4) The esterification reaction is straight forward and no byproducts are formed. A little excess of acid is used into ensure that all NCP is used up. We have not investigated the mechanism esterification

IR Spectra

a. Imides are part of five membered rings such as phthalimide have $\text{C}=\text{O}$ band at $1790\text{--}1735$ and $1745\text{--}1680\text{ cm}^{-1}$. The lower frequency band is more intense.

The cyclic imides do not have the 1505 cm^{-1} , C-N-H band.

b. Carboxylic acids: Carboxylic acids show a very strong band for the $\text{C}=\text{O}$ group that appears in the range of $1730\text{--}1700\text{ cm}^{-1}$, simple aliphatic acids in the dimeric form. This band is shifted to lower frequencies with conjugation to a $\text{C}=\text{C}$ or phenyl group. The O-H stretch appears in the spectrum as a very broad band extending from 3400 to 2400 cm^{-1} . This broad band centres on about 3000 cm^{-1} and partially obscures the C-H stretching bands if this very broad O-H stretch band is seen, along with the $\text{C}=\text{O}$ peak, it almost certainly indicates the compound is a carboxylic acid.

c. Esters (Phthalimidomethyl Esters): Esters show a very strong band for the $\text{C}=\text{O}$ group that appears in the range of $1750\text{--}1735\text{ cm}^{-1}$ for simple aliphatic esters when it is conjugated to a $\text{C}=\text{C}$ or phenyl group. On the other hand, conjugation of a $\text{C}=\text{C}$ or phenyl group with the single bond oxygen of an ester leads to an increased frequency from the range $1300\text{--}1000\text{ cm}^{-1}$. Ring strain moves the $\text{C}=\text{O}$ absorption to a higher frequency in cyclic esters. In phthalimido methyl esters an additional phthalimido group with ester group.

Analysis of IR spectra

A. N-(chloromethyl)phthalimide
The peak at 1750 cm^{-1} due to the presence of a carbonyl group

1. The peak at 1398.30 cm^{-1} due to the presence of C-N bond stretching vibration
2. The peak at 553.53 cm^{-1} due to the presence of C-Cl stretching vibrations
3. The peak at 943.13 cm^{-1} due to the aromatic C-H out of plane bending



B. Carboxylic acids

(a). Cinnamic acid (b). Benzoic acid (c). O-Chloro benzoic acid

1. The peaks at 1685.67cm^{-1} , 1755.1cm^{-1} and 1697.24cm^{-1} , are due carboxylic acid C=O stretching
2. The peaks at 921.12cm^{-1} , 916.12cm^{-1} , 912.27cm^{-1} are due to O-H out of plane bending
3. The peaks at the range $2677-3818.79\text{cm}^{-1}$ due to OH stretching vibration, strong H – bonding. Also it overlaps with C-H stretching absorption
4. The peaks at range 1315cm^{-1} C-O stretching vibrations

C. Phthalimido methyl Esters

(a). Phthalimido methyl cinnamate
(b) Phthalimido methyl benzoate (c). Phthalimido methyl O-chloro benzoate

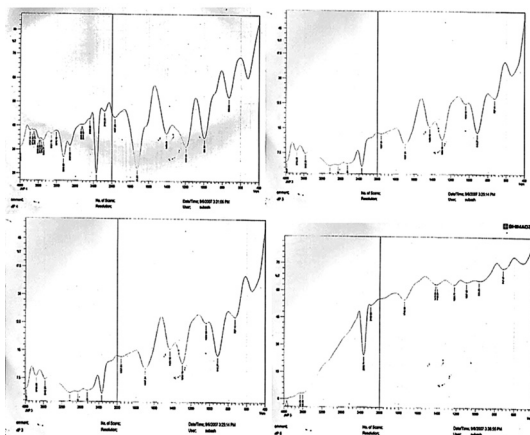
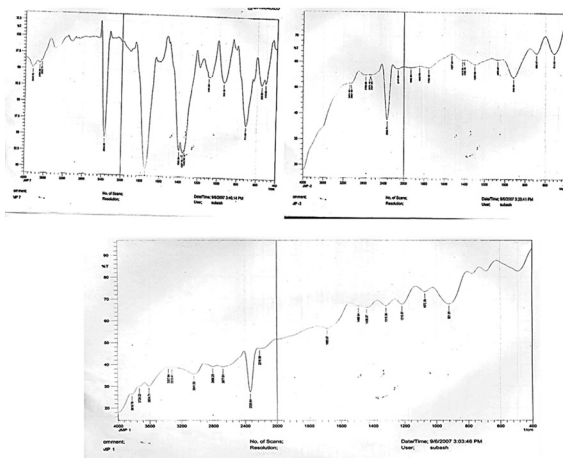
1. The peaks at 1724.24cm^{-1} , 1743.53cm^{-1} and 1755.10cm^{-1} are due to the presence of C=O, stretching vibrations in ester.
2. The peak at 1190cm^{-1} range due to the presence of C-O stretching vibration.

3. The peaks at 1400cm^{-1} range due to the presence of N-C bond stretching.
4. The peaks at range $2800-3200\text{cm}^{-1}$ C-H stretching vibrations.

CONCLUSION

The result of this work indicate

1. NCP is a reagent for derivatisation of carboxylic acids
2. The experiments described here offer an opportunity to reinforce a few concepts in organic chemistry course, namely nucleophilic addition of an amine to carbonyl is phthalimide + formaline –N-(Hydroxymethyl) phthalimide an important reaction to form C-N bonds and nucleophilic substitution. N –(Hydroxymethyl) phthalimide + thionyl chloride =NCP, ie the conversion of alcohol to chloride. The sequence, phthalic anhydride –phthalimide –N(hydroxyl ethyl) phthalimide –N-(chloromethyl) phthalimide –phthalimido methyl ester will form a good multi step synthesis. The products in each step are crystalline solids and are obtained in high yields.





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THE INCONCLUSIVE BINARY TUSSLE BETWEEN THE CREATURE AND THE CREATOR: THE ECOSOPHY IN HERMAN MELVILLE'S NAUTICAL FICTION

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Nature with its various terrains occupies the background of literature where human actions, expected and unexpected are foregrounded. Herman Melville, who spent part of his youth as a whaler in whaleships, preferred to place his characters in the background of the ocean, but the actions he scripted are expected. When Captain Ahab is drowned into the unfathomable bottom of the sea as a vanquished hero in spite of his indomitable will and mastery and Ishmael the sole survivor of the crew in the ship *Pequod*, the reader is intrigued by the defeat of the protagonist at the end and the survival of the white whale. But Melville scripts down the unceasing human sagas of struggle for dominion. Who is mightier: man, or nature? Or man or God? Even when the protagonists in *Typee* and *Omoo* the prequels to *Moby Dick*, speak volumes on the heaven like landscape and simplicity of life in the exotic islands, and even resolved to settle down in such islands, they feel an invisible tie pulling them towards a capitalist environment where 'live with what you have' is discarded and 'live for more' is embraced. The locale of the nautical fiction is as expansive as the ocean to include the islands and the bizarre existence of

the natives. The ecological exploitation of the savages by the civilized occupies the subtext of many of Melville's novels. The white whale through whom nature holds her sovereignty over the creatures is identical with the *Aswamedha*, the horse ritual which was prevalent in ancient India. It is no wonder that the ecosophy of Melville is perceptible in attributing the sovereignty to nature rather than to man, but the tussle is perpetuated between Ishmael and the white whale.

Key words: foregrounding, ecosophy, ecology, autonomy

Being born with a silver spoon in his mouth in 1819 in New York, Herman Melville experienced the comfort, luxury and safety of a well to do family. But the comfort lasted only for a short period of time which eclipsed with the death of his father who was a prosperous merchant. The demise of his father shook him violently that he had to do away with his formal education and took to sea as a sailor at the age of twenty on a merchant ship and later on a whaler named *Acushnet* of which he rightly remarked in *Moby Dick*, his magnum opus as, "A whale ship was my Yale College and my



Harvard" (Melville 93). His harrowing experience on whaling ships and voyage in the unchartered seas accounted for his novels which became posthumous success and made him the forerunner of American fiction. In fictional works too there are hidden facts which account to one's social and religious upbringing, ideology, cultural underpinnings, familial relationship, expressed and suppressed desires, political leniency, racial prejudice and economic status.

Nautical fiction is literally described as a genre of literature which focuses on the relationship between human beings and the sea with the setting in the sea or near the sea. Though nautical fiction was in vogue in various parts of the world, the American nautical fiction had its forerunner as James Fenimore Cooper with his *The Pilot* (1824) followed by Frederick Marryat with his *Frank Mildmay* (1829). The genre of nautical fiction got inflated with the advent of subsequent writers and their works like Herman Melville's *Moby Dick* (1851), Joseph Conrad's *Lord Jim* (1899), C.S Foster's *Hornblower Series* (1937-67) and the like. The popular acceptance of this genre is evident in the volley of books on life in the sea that hit the market. The English writer Ian McGuire with his *The North Water* (2016) revitalized this genre with its resemblance to *Moby Dick*.

In the surface of *Moby Dick*, which foregrounds the tale of revenge: the revenge between Captain Ahab and the white whale entails the revenge between human beings and nature. With the white whale sinking the ship in the sea along with the crew and their leader Ahab, the writer connotes the invincible stature of the nature. Herman Melville who spent his

youth in the sea as a whaler felt at home in the sea and either he or his characters identified the animals on land with the marine creatures and the crew in the ship. Ahab identifies the harpooners as leopards, Stubb as shark and Ahab is often identified as tiger. Ahab's crew is also identified with tigers. This nomenclature sheds light on the predatory nature of humans and other creatures. To Ahab the sea which forms two third of the earth is the darker side of the earth. Thus, he declares eternal vengeance with the sea.

Melville's initial works are inconclusive, as they offer the protagonists to resume the narrative in sequels. In addition to that, the inconclusiveness heralds the spirit of American capitalist dream. In *Typee* Tommo is transfixed by the beauty and simplicity of the island and admires the island as inhabitable save the fear of cannibalism, but he leaves the island for good. In *Omoo* which is sequel to *Typee* the narrator recounts the beauty and peaceful existence in the islands, but towards the end he leaves the island for America. In *Moby Dick* Captain Ahab who is maddened by the rage to avenge the white whale perished in the end, but Melville leaves one character intact to continue the zest for a capitalist world, which is not lulled by the simplicity of primitivism, but the ever-propelling capitalism.

The white whale has to remain unconquered at the end of *Moby Dick*, for the death of the white whale and the triumph of Captain Ahab will certainly position human beings at the center of ecology and the power to rule the world will be vested with them. Carl G. Jung in his popular book *Modern Man in Search of a Soul* justifies the ecocentric perspective



of archaic man quoting the belief of the primitive man in Africa. He narrates the belief as:

Primitive man, in Africa for instance, is still far from the glorification of human powers. He does not dream of regarding himself as the lord of creation. His zoological classification does not culminate in homo sapiens, but in the elephant. Next comes the lion, then the python or the crocodile, then man and the lesser beings. It never occurs to him that he might be able to rule nature; it is civilized man who strives to dominate nature (Jung 165).

The intriguing question that may disturb the reader towards the end of *Moby Dick* is: Why didn't Melville make Captain Ahab a victor? Captain Ahab is cast in the mould of a vanquished hero whose meticulous planning, hard gained expertise and thorough knowledge of the sea and the technical expertise went futile before the fury of nature. The ecological reason for casting Ahab as a vanquished hero might be that the fatal hubris which steered Ahab may rule the world leading to greater perils. Taxonomically, *Moby Dick* is a sperm whale which is the largest of the toothed whales and the largest toothed predator. If Captain Ahab could avenge the white whale, then human beings will occupy the center of the ecological discourse. As the initial novels of Melville portray the voyage of whale ships across the globe, the mastery of man in conquering the watery part of the world and capturing whales, the biggest mammals on earth, whereby imposing superiority on earth. Hence, the advent of a white whale is quite imperative to check the ascendancy of man on to the throne of the ultimate ruler.

Whaling was not just a lucrative economic activity. Along with finding a living in the sea, it was an adventurous feat to conquer the watery part of the world. In the chapter titled 'Nantucket' in *Moby Dick* Melville adds, "and at last, launching a navy of great ships on the sea, explored this watery world: put an incessant belt of circumnavigations round it; peeped in at Behring's Straits; and in all seasons and all oceans declared everlasting war with the mightiest animated mass that has survived the flood;" (54). The sailors set sail to the faraway places and islands from where they brought home stories of adventurous escapades, sighting strange sea creatures and strange tribes which often fascinated the Nantucketers. The prequels to *Moby Dick* namely *Typee* and *Omoo* are narratives of that vogue which fascinated the people. *Typee* narrates the protagonist and his companions being captured and imprisoned by a set of cannibals and *Omoo* narrates his wandering across the islands after his flight from the Typees. When he attempts to pen down the narratives of whaling and expeditions to far-flung islands, Melville pieces together the ecological practices of the locale, which often are associated with the religious exercises.

The locale of Melville's stories is either sea or islands surrounded by the sea. Of numerous nautical writers, D.H Lawrence found certain distinctiveness in Melville, as he comments in his essay titled 'Herman Melville's *Typee* and *Omoo*':

The greatest seer and poet of the sea for me is Melville. His vision is more real than Swinburne's, because he doesn't personify the sea, and far sounder than Joseph Conrad's, because Melville doesn't



sentimentalize the ocean and the sea's unfortunes...He was half a water animal, like those terrible yellow-bearded Vikings who broke out of the waves in beaked ships. (Lawrence 11)

It is the presence of this sea which is the backdrop of all the vengeance and masculinity which often foreshadows the ecological concerns. It is this watery world which is a realm of insecurity. When Ahab introspects in 'The Great Armada', "and when he glanced upon the green walls of the watery defile in which the ship was then sailing, and bethought him that through the gate lay the route to his vengeance, and beheld, how that through that same gate he was now both chasing and being chased to his deadly end;" (317). Ahab imagines his end through these lines. It is this world in which the position of the subject and object may flip at any moment. The ideology of the mastery of nature over culture is reiterated towards the end of *Moby Dick* as he concludes the rolling of the same sea which did so five thousand years ago.

The sea also offers another possibility of exploitation through sea routes. Ishmael notes, "they not a little correspond to the central gate way opening into some vast walled empire: and considering the inexhaustible wealth of spices, and silks, and jewels, and gold, and ivory with which the thousand islands of that oriental sea are enriched" (314) The sea which fashioned human imagination and life centuries ago has a perennial existent in human psyche as mighty, prepossessing, unpredictable and perilous. It has a flourishing existence in world literature. The horizon of human imagination found invincible creatures in this unfathomable mass of water as

Leviathan³ in the Bible, Craken in Norse mythology and the white whale in *Moby Dick*. In classical works the sea often forms a background in which one proves one's prowess and masculinity. The female characters are seldom found as sailors in the ships rather they form the destinations as Faway in *Typee* and Yillah in *Mardi*.

The Book of Job in the Old Testament in the Bible reverberates the rhetorical questions shot at Job by God to remind him of the incomprehensible Universe which he deems to rule in and the indestructibility of the Universe. The following rhetorical questions shot at Job by God at the moment of Job's disillusionment when he questions God:

- ¹ "Can you pull in Leviathan with a fishhook or tie down its tongue with a rope?
- ² Can you put a cord through its nose or pierce its jaw with a hook?
- ³ Will it keep begging you for mercy? Will it speak to you with gentle words?
- ⁴ Will it make an agreement with you for you to take it as your slave for life?
- ⁵ Can you make a pet of it like a bird or put it on a leash for the young women in your house?
- ⁶ Will traders barter for it? Will they divide it up among the merchants?
- ⁷ Can you fill its hide with harpoons or its head with fishing spears?
- ⁸ If you lay a hand on it, you will remember the struggle and never do it again!
- ⁹ Any hope of subduing it is false; the mere sight of it is overpowering. (Job 41: 1-9)



What God asks Job in the Bible is ventured in *Moby Dick* by Captain Ahab in his diehard pursuit for the white whale. Leviathan in the Bible is deemed to be the mightiest creature of God's creation. The rhetorical questions magnify the might of the animal. In the parlance of ecology the Leviathan is analogical to the environment which exists unintelligible to human mind. This passage echoes the *Aswametham* ritual prevalent in ancient India where the horse is set free to wander through out the kingdom and the one who attempts to bridle the horse challenges the king's sovereignty. In *Moby Dick*, Captain Ahab risks his life to annihilate the white whale to claim his sovereignty, but the attempts go futile which entails the ascription of sovereignty to the Creator.

In a similar fashion *Moby Dick* is construed to be an allegory of a monomaniac hero's pursuit to conquer the indefinite world with the definite means which ultimately culminates in the destruction of the captain and the crew along with the ship. *Pequod*, the ship in which they set sail for the three-year expedition is named after the native American tribes Pequot, a set of people who became extinct in the unfurling of centuries. It definitely foreshadows the inevitable extinction of the transnational cosmopolitan crew who go in search of the white whale.

When determined to capture whales, the sea becomes a battlefield. Melville is an adept in using analogies to vivify the chase and the catch. He describes, "The compact material columns in which they had been hitherto rapidly and steadily swimming, were now broken up in one measureless rout; and like King Porus' elephants in

the Indian battle with Alexander," (318). Captain Ahab who takes after the Israelite king who led his kingdom to its doom by idolatry and wickedness, navigates the ship *Pequod* and the crew to its peril by the same wickedness and self-centeredness. Regardless of the consideration for others and their opinions, he assumes the role of a dictator who is indisputably obeyed by every member of the crew. Captain Ahab, who has been a harpooner for forty years on whaling ships, killed the first whale at the age of eighteen; left his young wife like a widow soon after the marriage, is now wedded to the white whale and is fascinated by the call of the sea.

Melville's nautical fiction, specifically *Moby Dick*, is an exemplum of the moral tussle taking place in one's mind. Melvillian characters who are destined to wander in the sea assume the role of spokespersons of the exploitation meted out towards the natives in exotic islands and on dumb brutes. The tussle is observable in various terrains in the nautical fiction. The aggression between the tribes in *Typee*, the resistance of the Typee tribe towards the white men against the latter's invasion and colonization; the conflict in the form of mutiny on the board of the ship between the captain and the crew and the predator and the prey rivalry in *Moby Dick* between the carcass of the whale and the sharks. Thus, Melvillian nautical world is an arena of incessant tussles.

The 26th chapter of *Moby Dick* 'Knights and Squires' rightly portrays the crew of The *Pequod*. The chapter opens with the nativity and religious leniency of the chief mate of the *Pequod*, Starbuck who hails from Nantucket and he is a Quaker by descent. The author reiterates the

religious label with special caution to link the environmental view of Quakers with Starbuck. Quakers believe in human beings' dominion over nature. It is further revealed when Starbuck is described in *Moby Dick* as "For, thought Starbuck, I am here in this critical ocean to kill whales for my living, and not to be killed by them for theirs; and that hundreds of men had been so killed Starbuck well knew" (96). The self-assured statement by Starbuck in *Moby Dick* gets reverberated in the present century commercial practicality of the consumerist society. The news story titled 'Outrage over killing of rare whale' on *The Hindu* dated 16 July 2018 by Reykjavik echoes the above-mentioned declaration by Starbuck in the 21st century.

The complementariness of the binary pairs forms contradictoriness in the Melvillian terrains. Serpil Oppermann in her essay 'Feminist Ecocriticism: A Post humanist Direction in Ecocritical Trajectory' points to the western perception of framing the distinct binaries of various entities which are to be subdued. She aptly remarks, "Western epistemologies have legitimated oppressive practices. It also stimulates adequate theoretical models to deconstruct the gendered dichotomies of nature/culture, body/mind, matter/discourse, and subject/object" (Oppermann 20). The dichotomy of nature/culture is pervasive in the books of Herman Melville as the major characters in *Moby Dick* wear a hue of antagonism with nature where nature is to be relegated to foreground culture. The aggravation of the nature/culture dichotomy is partially the result of the ideology of capitalism. Graham Huggan in his ecological text *Postcolonial Ecocriticism* comments on the role of representation as, "While cruelty, death or

extinction are not necessary results of the human representation of animals- many such representations are sympathetic or benign- it is difficult for animals to escape anthropocentrism because they exist in modern cultures much more in representation than in 'the real'. (Huggan 139). It is anthropocentrism which takes the center stage of representation which often relegates the ecocentrism into the oblivion. The dominant representation always sways the minor observations as it happens in *Moby Dick* where the enmity of Ahab with the white whale sways the representation of the white whale as a compendium of malice on earth.

The tussle between the complementary pair, savage and civilized is writ large in *Typee* and *Omoo*. In his works Melville takes special care to include a primitive man, either a native or aborigine to tie the knot with nature and valorize the innate simplicity and the zest for a life closer to nature. In *Moby Dick*, Melville includes Queequeg, a cannibal who comes from the South Sea Islands. In *Omoo* Melville adds a number of natives who lead a life which the narrator longed for. In *Typee* the Typee community are presented as cannibalistic and aborigines. Thus, in his influential works, Melville reiterates the role of the primitive people in binding the people to the earth. Melville meticulously places characters who follow the pagan rituals and worldviews in his works as a dichotomy for the savage and civilized poles of the world. In the essay 'Mariner's Multiple Quest' James McIntosh states, "Queequeg constructs nature as a subjective retreat, a dwelling place for his imagination in which stars are isles and one travels into death as into something familiar. In Pip's case, the sea is not just an analogue for his



terrified state of mind – though it is that – but also a landscape oppressively actual”. (Mcintosh 37).

The contradictory terrains form a sphere of tussle between the utopian and dystopian landscape and seascape. From the dystopian locale in America to the Utopian and Eden like topography in the far away South Sea Islands fascinate the writer. In *Omoo* and in *Typee*, the writer abundantly uses the word ‘Eden’. A longing for an ideal locale is vivid in the writings of Melville as it was a paradigm for the nineteenth century writers. Patrick Parrinder in his seminal essay ‘Utopia and Romance’ says:

At its high point in the late nineteenth century the utopian romance was an increasingly self-conscious genre, a narrative of love and adventure combined with the didactic or satirical portrayal of a supposedly utopian society. In utopian romances, the excitements of love and adventure are normally experienced by a visitor to utopia, not by the utopians themselves, and for good reasons (Parrinder 154).

The utopian romance which foregrounds the quest as its motif incorporates a cosmic world view. These works also suggest the distancing of geographical locations and the distancing of epochs. When in America, the industrialized community thrives on the platform of technology and unmindful exploitation of resources, in the distant locales the half-naked natives with their pagan religions and mindful coexistence with nature form part of the narratives.

In his utopian Romantic imaginations Melville shapes an Eden like valley in

the far away island. In *Omoo* Melville describes the valley as:

It is no exaggeration to say that, to a European of any sensibility, who for the first time, wanders back into these valleys – away from the haunts of the natives – the ineffable repose and beauty of the landscape is such that every object strikes him like something seen in a dream...” I thought I was walking in the Garden of Eden (102)

Paganism is pertinent to the regional ecology and the utilization of the native resources available. Graham Harvey reiterates, “Paganism is a creative tradition of honouring and celebrating the living earth” (38). Sustainable development is feasible only in the utilization and dependence of the indigenous resources available. European colonization followed by the spread of Christianity destabilized the way of life of the natives. In *Omoo* Melville observes the aftermath of European advent to Tahiti, an island in the South Seas as:

It has been said that the only way to civilize a people is to form in them habits of industry. Judged by this principle, the Tahitians are less civilized now than formerly.... Instead of acquiring new occupations, old ones have been discontinued. As previously remarked, the manufacture of tappa is nearly obsolete in many parts of the island. So, too with that of the native tools and domestic utensils; very few of which are now fabricated, since the superiority of European wares has been made so evident. (116)

Colonization affected the religious practices, food habits, dress code and the ecological perceptions to an



alarming level and this resulted in the destabilization of ecology. But Melville prioritized a life in the lap of nature when he compares a European father with a pagan one as the Typee gentleman can easily bring up their children in the cannibalistic way, while a European father struggles to feed one's hungry children. Melville repeatedly comments on the self-sufficiency of the tribe as, "the children of a Polynesian father, without troubling their parents, pluck from the branches of every tree around them" (112). Paganism is perceptible as a consciousness which incorporates respect for nature and having an ecological understanding and practice. In its manifestation, it is visible in the worship of nature. In *Omoo* Melville mentions the utilitarian attitude of the natives towards the coconut tree. He makes a mention that "Upon one of the Tonga islands, there stands a living tree revered itself as a deity" (161)

The attitudinal tussle in foregrounding either deep ecology or shallow ecology takes a subterranean stand in the narratives. The pagan natives uphold a deep ecological religiosity, while the European explorers exhibit a shallow ecological outlook. The eco-centric world view which is an amalgamation of deep ecology assumes the role to human beings as only one of the strands in the web of beings on earth. It is unlike the Old Testament observation of human beings as the stewards of nature. The eco system in which one lives is respected in all the possible ways in pagan culture. The European binary pair nature and culture which is operational as the yardstick to differentiate people and practices from one another really jeopardized the world view and social practices as natural and cultural. Peter

Barry in *Beginning Theory* observes this binary factors as, "It is obvious here that social inequality is being 'Naturalized', that is, literally disguised as nature, and viewed as a situation which is 'god-given' and inescapable, when actually it is the product of a specific politics and power structure." (Barry 244) The efforts to colonize the native kingdoms were justified by this 'white man's burden' which necessitates the Europeans to colonize the savages and civilize them in the parameters of civility framed by the civilized west.

Melville, who spent his youth both on land and in the sea, witnessed the invincibility of the natural elements: wind, water, fire, earth and void. Melville's nautical novels came to the limelight during the early part of the 19th century, the epoch breaking invention of steam engine was at its introduction in the navigation. Hence, the voyage in Melville's novels was made possible by the wind. Thus, a sailor in Melville's nautical world lived in close contact with the elements.

The arcadian life in the Typee valley is contrary to the mechanically and technically driven capitalist extractivism where nature is the abundant source of resources which may be plundered ignoring the necessity to set them aside for the posterity. Melville who witnessed the plight of the islanders who subdued themselves before the civilized Europeans who came to the islands with the mission of civilizing and converting, vivified the deterioration in his sequel titled *Omoo* which portrays the island women being contracted with Syphilis and the livelihood of the people were taken away tactically and gradually. The indigenous crafts and



artifacts were dropped by the islanders as a result of the introduction of durable foreign goods. The indigenous pagan religions were exterminated and a foreign and ecologically unfriendly religion was imposed.

The ecosophy of Herman Melville is rightly expressed in the form of regional autonomy without which the land may be ecologically plundered, about which in *Typee*, Melville admonishes the civilizing mission in the islands and looting the resources as:

The depopulated land is then recruited from the rapacious hordes of enlightened individuals who settle themselves within its borders, and clamorously announce the progress of the Truth. Neat villas, trim gardens, shaven lawns, spires and cupolas arise, while the poor savage soon finds himself an interloper in the country of his fathers, and that too on the very site of the hut where he was born. The spontaneous fruits of the earth, which God in his wisdom had ordained for the support of the indolent natives, remorselessly seized upon and appropriated by the stranger are devoured before the eyes of the starving inhabitants... (195-96)

Vulnerability always accompanies the existence of human beings on earth. Of all the terrains, the sea occupies the most vulnerable but it also lures the adventurous to its bosom as Ishmael remarks in the "Loomings" as, "If they but knew it, almost all men in their degree, some time or other, cherish very nearly the same feelings towards the ocean with me" (3). *Moby Dick* in the outer layer is the violent search of a monomaniac Captain for the white whale that ripped off his leg in one of the fatal encounters with it. But the

subtext of the Melvillian novels heralds man's encounter with the elemental forces. Captain Ahab who is blinded by his false and fatal pride challenges the elemental forces. In "The Candles" he thunders back to the fire as:

Come in thy lowest form of love, and I will kneel and kiss thee; but at the highest, come as mere supernal power; and though thou launchest navies of full-frighted worlds, there's that in here that still remains indifferent. O thou clear spirit, of thy fire thou madest me, and like a true child of fire, I breath it back to thee. (415)

Moby Dick is diachronic descriptions of the development of human beings on earth. From the worshipers of elemental forces like thunder, fire and wind to the technically skilled species who set out to tame the forces which threatened them. As the technical aids helped the Melvillian heroes to rebel against nature and a fraction of the populace remained technologically ignorant and close to nature. *Moby Dick* is not the sole antagonist in the titular novel *Moby Dick*, but the elemental forces assume the guise of antagonists cornering the protagonist on multifarious occasions. When tossed in the typhoon and struck with lightening, Captain Ahab and the crew grew helpless. In spite of being surrounded by the invincible elemental forces Ahab decides to fight back. It is perceptible in the description of Ahab by Ishmael as, "In his fiery eyes of scorn and triumph, you then saw Ahab in all his fatal pride" (424).

Melville's America was on its efforts to expand the market and extract the resources for propelling the economy. This philosophy of expansionism is subterranean in his initial works *Typee*,



Omoo and later in *Moby Dick*. The power struggle that exists between the binaries in Melville's works assumes multifarious forms like the struggle between man on land and the aquatic animals in the sea; the struggle between the savages in the unexplored islands and the civilized explorers; the struggle between the paganism and Christianity. Hence, the 'Other' is ever prevalent in the works. In the capitalist parlance nature is the store house of resources. Whether it be the land or the sea, the capitalist intention is to extract the resources. In *Moby Dick* Captain Ahab's indefatigable effort to float along different oceans in search of Moby Dick is suggestive of the desire to extract resources irrespective of topological differences.

Even after the eclipse of Herman Melville about one and a quarter century ago, the popularity of Melville outlives him through the incessant struggle that he scripted through his works. The inconclusiveness of *Moby Dick* with Ishmael, the sole crew member to be saved by the *Rachel* is destined to carry the struggle. As God asked Job in the Bible about the invincibility of the Leviathan, the Leviathan swims away calmly victorious reclaiming the sovereignty of the Creator rather than the creature. Melville foresees the doom of human beings unless they check their avarice for exploiting the world for claiming dominion over it and he encapsulates it in *Omoo* when he warns, "The palm- tree shall grow/ the coral shall spread/ But man shall cease" (118).

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■

RE-READING THE BINARIES OF SUBJECTIVITY, DIASPORA AND NATIONALISM: A POSTCOLONIAL STANCE ON AMITAV GHOSH'S *THE SHADOW LINES*

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Abstract

The paper focuses on how Amitav Ghosh, the diasporic Indian writer and winner of the 54th Jnanpith award, deconstructs the Metadiscourse of nationalism in his influential novel *The Shadow Lines*, through the little narratives of the nameless narrator. It is an attempt to resolve the irresolvable subjectivity issue in studies of diaspora and nationalism.

Keywords: Diasporic writing, Nationalism, Multiculturalism, Subjectivity, Uninationality.

Nationalism commands profound emotional legitimacy in modern history and is deeply entrenched in general imagination. It is born from the idea of a people's collective history that spans through a long past and racial and/or religious origins that are shared. This is especially so in the postcolonial era, where the identity question is an acute search for Third World nations seeking to claim their individuality as nations, and shed the yoke of being culturally marginalised for a substantial period of their history.

In his seminal novel *The Shadow Lines*, Amitav Ghosh explores the issues

of national borders, the discursive and historical process by which they have come about, and the resulting ironies that affect people's lives in incomprehensible ways in the postcolonial era rich with contradictions. Benedict Anderson in his *Imagined Communities: Reflections on the Origins and Spread of Nationalism* has put forward some ideas on the concept of nation that may help us better understand the convoluted worlds of Amitav Ghosh. Anderson writes, "Nationality, or as one might prefer to put it in view of the word's multiple signification – nation-ness as well as nationalism – are cultural artefacts of a particular kind" (13). He goes on to define the nation as "an imaginary political community – and imagined as both inherently limited and sovereign" (15). Thus the nation is an idea, a myth. It is a discursive construct, not a pre-existing reality. As Ernest Gellner argues in his book *Nations and Nationalism*, "nations are not inscribed into the nature of things" (49). They fundamentally are fabrications. The idea of the nation has been fabricated primarily by the West. It has arisen with the rise of industrialization and capitalism and with the collapse of religious and dynastic regimes.



Anderson investigates the mode of writing that precipitated the creation of the 'imagined community' called nation. He believes that the simultaneities of time and space, exemplified in contexts like that of the novel and the newspaper, are at the core, of the ways in which we regard ourselves as members of a national culture. Nations are narrated like novels and newspapers. Hence individuals come to consider themselves belonging to "a solid community moving steadily down (or up) in history" (26). In the twentieth century, during the numerous conflicts against colonial rule, the myth of the nation proved to be extremely powerful and profitable.

The national political boundaries that had not existed until colonisation and were often set by the colonising powers, often collaborated with anti-colonial nationalist movements. In his influential novel, *The Wretched of the Earth*, Frantz Fanon emphasizes the concept of the nation as the center of anti-colonial resistance. This is because, he says: "national consciousness and national culture are inseparable from each other, anticolonial resistance cannot succeed without them" (172). However, Fanon is of the view that it has to be replaced rapidly by a political and social consciousness once independence is attained or it might lead to what is called neo-colonialism.

Among other theoreticians, who see the myth of the nation as a productive concept, is Partha Chatterjee. In his popular book *Nationalist Thought and the Colonial World*, Chatterjee explains the origin of the nation in the West as having much to do with the universal urge for liberty and progress" (2). Many anti-colonial

revolutions sought to follow Western nationalism's revolutionary elements, which guaranteed people the political and moral rights of liberty and political self-determination.

Nationalism sought to demonstrate the falsity of the colonial claim that the backward peoples were culturally incapable of ruling themselves in the conditions of the modern world. Nationalism denied the alleged inferiority of the colonized people. (Chatterjee 30)

But a disenchantment with the conceptions of nation and nationalism has arisen in the years after the busy period of decolonization. Bruce King argues in his book *West Indian Literature*;

Where the end of the second world war brought a demand for national political independence to the forefront as a solution to the problems of the colonies, this was soon found to be an unrealistic hope as many new nations became divided by civil wars and micro nationalisms . . . (3)

Before the introduction of colonial rule, many inhabitants of colonial territories had no sense of a "deep horizontal comradeship" (Anderson 6). While the myth of the nation may serve as a powerful weapon in uniting people opposed to colonialism, it also does so by denying the uniqueness of those people that it aims to homogenise – generated from differences in gender, ethnicity, faith and culture. In his essay "Racism and Nationalism", Etienne Balibar says, "many decolonized nations have undergone the painful experience of seeing nationalisms of liberation turned into nationalisms of domination". (60)

In the discourse on nationalist representations, Homi K. Bhabha offers



one of the most potent and influential interventions. His essay “DissemiNation: Time, Narrative and the Margins of the Modern Nation” shows nationalist images as highly volatile and unstable structures that do not produce the unity they promise. Bhabha terms nation as a “major structure of ideological ambivalence within the cultural representations of postcoloniality” (309). Thus nationalist discourse according to Bhabha are “fragile, split and contradictory rather than benevolent and inclusive” (309) and must always be challenged. Several other postcolonial critics such as Tom Nairn, Hans Kohn, Elie Kedourie, and Benedict Anderson, share the view that nationalism is both an invention and a force of destruction. To quote one such scholar, Ernest Gellner: “Nationalism is not the awakening of nations to self-consciousness: it invents nations where they do not exist.” (169)

Amitav Ghosh joins the clan, as he challenges the notion of nationhood that is consolidated by the baptism of wars or oppressive state apparatus. He displays – movingly and powerfully – a nationalism, finding its limits, limits that often are the residue of those ineffable shadow lines, the boundaries of the subcontinent. The boundary that is being problematized in the novel is not that between the colonised and colonisers, but rather one that separates India. As Alter affirms; “The novel betrays no anxiety because it attempts to prove nothing and interrogates, rather than defines, the concept of a totalizing India” (13).

In their war against foreign rulers, Indian nationalism, which was the chief tool of the freedom fighters, could not even guarantee the territorial integrity of

the nation. Nationalism has modified its meaning in the Indian context, to exclude those from the other side of the border, but not everyone on this side of the paradise too could be included. Ghosh rejects the notion of nationalism that rejects all these who chose to live beyond the border.

In *The Shadow Lines*, the narrator ponders over the deadly repercussions of borders. Though he acknowledges the well-intentioned political map-makers, he is struck by the fact that “the bonds that link Calcutta and Dhaka are closer than ever” (233). ‘Shadow lines’ are only borders created by politicians. In the text, they have other resonances as the demarcation lines that distinguish coloniser and the colonised, past and the present, self and the portrait. Ultimately, they are the significant acts that establish nations of distinct identity.

The novel’s personal drama is set out on a canvas of sweeping historical events: the independence struggle and the advent of the Bengal insurgency, the English war against Hitler’s Germany, the Chinese invasion and the Indo-Pak war, the desecration of Srinagar’s Hazratbal Shrine in 1963, and the communal disturbances in Khulna and Calcutta in 1964. The movement back and forth in time and across the borders and boundaries of nations, cultures, races and communities, is not merely a structural device - it serves to image a central theme - that the lines dividing past and present are just shadows and that the reality is too vast and complex a concept to be circumscribed within historical or spatial contours. Two views of nationalism and what it means to constitute a nation contest each other throughout the novel. One is voiced clearly by the narrator’s grandmother and the other



takes the form of events that comment on this romantic view in subtler ways. The narrator's grandmother upholds the belief in a united people fighting for freedom and autonomy and constituting a nation held together by blood. The grandmother of the narrator upholds the belief of an united people battling for independence and sovereignty and creating a community held by blood together. "For her, somebody like Ila, the offspring of a metropolitan education and circling between India and London, is an enigma because she escapes categorization, and a traitor because she bought freedom, "for the price of an air ticket (87). She protests:

Ila has no right to live there ... everyone who lives there has earned his right to be there with blood ... They know they are a nation because they have drawn their borders with blood ... war is their religion. That is what it takes to make a country. Once that happens, people forget they were born this or that, Muslim or Hindu, Bengali or Punjabi. They become a family born of the same pool of blood. That is what you have to achieve for India; don't you see ...? (76)

In this regard, Novy Kapadia in her essay titled "Imagination and Politics in Amitav Ghosh's *The Shadow Lines*", comments, "In her conversation she (Tha'mma) reveals an alarming prospect, that feelings of nationalism can only develop through the process of war and sustained bloodshed" (204).

Ila later calls this a war-mongering fascist ideology but the narrator sees a pitiful side to this kind of thinking: a deep-seated bitterness at the yearning for middle-class values of "unity of nationhood and self-respect and national

power" (Gosh 77). The narrator's view is however insightful in explaining people's need for the national myth, and how the force of nationalism commands its appeal, although Ghosh, along the same line of argument made by Anderson, would be the first to reveal its shaky foundations.

Most of the events taking place in the text work against the concept of a nation. In his effort to de-mystify this conception, the writer begins with the notion of the national boundary. He puts across the perspective that in modern days, a boundary supposedly uniting those who are inside it as well as separating them from those who are others, divides rather than it unites. The author shows this in several instances, one of which is through the use of allegory: the partitioning of the grandmother's original home. This partition went through the house in an arbitrary manner not making architectural sense, but making the absurd claim of equality and fairness to both sides. For example, it went through a door, a chest of drawers and their father's name-plaque outside. Hind Wassef opines:

This seems to be reminiscent of the India-Pak border, the outcome of the 1947 partition, which was relatively arbitrary, but laying the same claim to fairness in that the land was divided according to the majority religion in a particular administrative district. (9)

The definition of 'shadow lines' is built in reference to this boundary, to connote arbitrariness and artificiality. The narrator, his family, and the past he is attempting to rebuild are also terrified by this border – more than any border between India and Britain.



The author also reveals the futility of this partitioning in providing any real solution to the disputes, for he tells us they had all longed for this division

. . . but once it had actually happened instead of the peace they had so much looked forward to, they found that a strange, eerie silence had descended on the house. It was never the same again after that; the life went out of it. (Ghosh 21)

He believes that national boundaries de-humanize societies because they reject the reality of human and political plurality that exists in any community.

Thus, national borders are made to assert a distinction between self and others, often at a point of crisis. After the partition, people highlight the gaps between themselves and the newly-formed outsiders, as a mechanism of demonising the other. The grandmother's construction of the elaborate web of stories of the "upside down house" (122) on the other side, illustrates this. Then these ideologies of distinction are so instilled in the minds of the people and the community's culture that while the conflicts may be long forgotten, people bear the partition walls in their minds:

. . . they had grown so thoroughly into the habits engendered by decades of hostility that none of them wanted to venture out into the limbo of reconciliation. They liked the wall now; it had become a part of them. (Gosh 22)

From allegory the text moves into reality and demonstrates how partitions come to affect people's lives in ways that are difficult to comprehend. In 1964, as Tha'mma plans to fly to Dhaka, she wonders if she would be able to "see the

border between India and East Pakistan from the plane" (151). When her son laughs and asks her if she thought that the border was a long black line with green on one side and scarlet on the other, like it was in a school atlas," (151) she says:

. . . surely there's something - trenches perhaps, or soldiers, or guns pointing at each other . . . But if there aren't any trenches or anything, how are people to know? I mean, where is the difference? And if there's no difference, both sides will be the same. (151)

Displacement then gives rise to a daunting series of insider-outsider combinations that we witness from the uncertainty of the grandmother. Firstly, she cannot comprehend how her place of birth came to be at odds with her nationality. Like Ila, she finds that she is herself now beyond categorization. As she is informed of what has become of her house and her family, she also learns that she is an alien in her home town. Her uncles have "scattered" (156) all over the Middle East, in Bangalore and other places, and her house has been taken over by Indian Muslim refugees, who are insiders as far as partition has made Dhaka into a Muslim city – but outsiders as they are homeless refugees. When her son points to the historical fact that they also came as refugees to Calcutta, she is intolerant of the word and says ". . . we are not refugees. We came long before partition" (129).

Once in Dhaka, Tha'mma tries to persuade her senile old uncle to leave the decrepit surroundings he lives in, to move to India where she believes he belongs to. However, the old man refuses to move because:



Once you start moving, you never stop. That's what I told my sons when they took the trains. I said: I don't believe, in this India - Shindia. It's all very well, you're going away now, but suppose when you get there, they decide to draw another line somewhere? What will you do then? Where will you move to? (Ghosh 215)

The logic of the nation-state in the subcontinent requires partition to be read as a single, inevitable, original act, one that must never be replicated so citizenship and national boundaries would be automatically, magically co-extensive in a post-partition, post-independence India, but the act of partition itself, as the old Jethamoshai argues, suggests otherwise. Borders and boundaries, shadow lines etched on maps, maintain political distance, but teach the inevitability and even absoluteness of socio-cultural differences across nations, even more firmly. Suvir Kaul, in this regard, comments, "lines on the map are the handwork of administrators and cartographers, and they do not mark much more than the will of the state." (288)

In fact, the maps are beguiling. They tell that the people of the adjacent countries are different, while the truth is altogether otherwise. East Pakistan and West Bengal cannot be separated by any lines, because they have the same culture, the same language and the same food habits. People living in two countries have blood relations. How can they be separated from each other? The novelist has tried to bring this point home to the readers. The narrator draws circles on the maps to discover that the places, generally believed to be far and distant, are not so distant. A circle of 1200 miles in radius, he finds, will cover more than half of the world population:

Beginning in Srinagar and travelling anti-clockwise, it cut through the Pakistani half of Punjab, through the tip of Rajasthan, and the edge of Sind . . . It was a remarkable circle: more than half of the mankind must have fallen within it. (Ghosh 231)

The child who had once believed that distance separates, that it is a corporeal substance . . . that across the border there exists another reality" (Ghosh 233); has by the end of the novel had some of these certainties shattered. Bartholomew's Atlas is for him, no longer a safe guide to a neatly compartmentalized world; The solid lines that separate countries turn into a glass by which we may examine the world and in doing so, it becomes obvious that Chiang Mai in Thailand is closer to Calcutta than New Delhi is, Chengdu in China is closer than Srinagar is. He is disillusioned as to the artificial and imagined nature of the division of borders. The text is a complex allegory that challenges the basis and foundations of this division of borders. As Meenakshi Mukherjee comments:

The material world represented by maps has not changed, nor is it suggested that immigration queues, customs barriers and visa regulations can be wished away, but the defamiliarizing perspective in *The Shadow Lines* initiates an interrogation of the organizing principles of division. (267)

Amitav Ghosh asserts that these boundaries are imagined, by political leaders and political ideologues and their imagining are fraught with incongruities. These incongruities in the construction of national borders de-humanize communities because they negate the reality of human and political diversity which is present in any culture. In an interview Ghosh remarks:



When (one) comes under pressure, the first response is to say the problem can be solved by division . . . An absolutely unpolitical culture is an impossibility. It's enormously important for us to think of multi-ethnic states, because every state is multi-ethnic. (Wassef 89)

As always, Ghosh is not only at pains to demonstrate the porousness of geographical borders, but also the artificiality of a range of binary categorizations of culture and of human psyche. "Shadow Lines" of the title are the borders that divide people and Ghosh establishes that these boundary lines are artificial and constructed realities.

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ESTABLISHING IDENTITY: SPACE, GENDER AND PATRIARCHY IN ANITA NAIR'S *LADIES COUPÉ*

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At potentially dangerous spaces, women set their own agendas to seize the right to live their own lives. The oppressive set of cultural norms limits the destinies of women in both public and private spaces. The gender discrimination is the foundation for the social inequality between men and women. Women are facing unjust social and sexual exploitation based on the cultural construct. The established gender roles prohibit women to have access to leadership and decisive roles in family and society. They are trapped within marital struggles, economic problems, gender discriminations, Poverty, frustration, sexual abuse, etc. Virginia Woolf's *A Room of One's Own* speaks for the literal and figural spaces of women in a patriarchal system. These spaces are still governed by the values of patriarchal structures and institutions. A never ending quest for female space and identity is possible in the sociocultural patriarchal setting of India. As Clara Nubile has suggested, Indian women are "doomed to carry the social burden and cultural humiliation of generations" (30).

Exposed to the routine forms of patriarchal oppression, the women being plunged into traditional silence and

submission is constantly intervened in many of the novels written by Indian women writers. Among the contemporary women writers, Anita Nair occupies a prominent place in championing the women causes through her exemplary novels. *Ladies Coupé* (2001), her second novel, depicts various social, cultural, economic, physical and psychological challenges that the women characters undergo in a male-dominated society. Through her striking women characters in the novel, she presents how women living in orthodox and conservative families feel inhibited to raise their voice against the immediate aggressive dominance of male in their space.

Akhila, the 45-year-old spinster heroine in the novel sets out to break free from the conservative Tamil Brahmin upbringing bound to her. She starts her journey "Dreaming escape and space. Hungry for life and experience" (Nair 2). She is certain that she won't let her family use her anymore. Ahkila's desire to settle her question of her own space is answered through the train journey she takes to Kanyakumari. Through this most exciting and liberating experience, she gets to enjoy things outside her narrowly



prescribed world and moves beyond the ascribed identity of a silent, timid person. She rethinks and revises the cultural prescriptions that inscribe the submission and passivity upon a woman's mind and body. The psychological transformation of Akhila happens, as Felsky observes, "gradually through a steady accumulation of insights into the structures of power governing relationships between men and women" (131). Trapped by patriarchal systems, Akhila finds her journey to Kanyakumari provides a space to recount her past and allows her a choice whether to be a passive woman according to the expectations of the society or an active woman with an autonomous identity.

Akhila's desire for freedom and identity is supplemented with the narratives of the passengers in the coupé. Being caught in the male-dominated, restricted space, the women in the coupé pass veracious judgment of the constrained society. All these stories are about the action taken by them to overcome the oppressions inherent in the traditional patriarchal world but suggest the limits which continue to restrict their development of autonomy and self-fulfillment. Instead of liberating themselves and going against the norms, they find ways to negotiate with the existing male dominated society and thereby enjoying the benefits of protective patriarchal system.

Devoting each chapter of the novel to one of the woman's story, Anita Nair tries to solve the eternal problematic question: Can a Woman stay single and happy at the same time? Janaki, an old woman, Margaret Paulraj, a School teacher, Sheela, a fourteen-year-old girl, Prabhavati, a perfect home maker, and Marikolunthu,

the most victimized of all were her co-passengers. Anita Nair vividly portrays various constraints that these women face in a patriarchal society due to financial instability, sexual harassment, unrequited love, social dependence etc. Though each one is different from one another in their social status and financial conditions, they undergo psychological trauma in their life due to dead sense of inhibitions and rigid code of conduct imposed on them in a male-dominated orthodox society.

Janaki, the eldest of all, blindly accepts the patriarchal understanding that woman is inferior to man. Her life shows how patriarchal control is unavoidable in the life of a woman. Still, long after being a queen of the household chores, at a certain age, even after adjusting herself with the changing relationships, she dreams on living an independent life of her own. She says, "Women like me end up being fragile. Our men treat us like princess . . . I think I was tired of being this fragile creature" (23).

Being sensitive to patriarchy is the very first step to the path of liberation. The fourteen-year-old Sheela is able to perceive things beyond her age. She finds her father starts scolding her for the very same things that he used to delight in her when she was a child. She is the only one who understands the wishes of her grandmother and fulfills it during her last rites. It is her mental maturity that relieves her of the bitterness of sexual harassment by her friend's father. She develops a sense of selfhood and individuality against the patriarchal mistreatment.

Margaret Shanthi, the Chemistry teacher is inhibited by her husband Ebenezer Paulraj who is also the Principal of the

school in which she is working. Instead of her desire to take PhD, she is forced to take B.Ed. Her own sense of beauty is marred when she is directed to shorten her long hair. Against her expectations, she is compelled to abort her first baby. Though she obliges to all his orders, the injustices imposed on her mind and body gradually makes her hate him and takes revenge in a subtle way. "I had no other recourse but to show him what the true nature of water is" (96). She kills his ego by feeding him with fatty foods and making him lethargic and obese.

Yet another passenger journeying in the same compartment is Prabhadevi. She is born to a rich family and brought up as a perfect woman suitable for a home maker. She is trained to be a good cook, good designer, a good singer and a perfect needle worker. After her marriage with Jagadish, a jewellery owner, she feels a vacuum in her life. The unending waiting for things to happen in her nuclear family makes her disappointed. On her trip to New York, she wanted to be like the women there. She notices, "Their lives were ruled by themselves and no one else." (177). Her new interest in the western culture and styles and her emancipatory pride in her beauty end up with the sexual advancement of Pramod. Shocked by the vulnerability of a woman's existence, she recoils to stay within the safety of family life. At last she empowers herself by learning swimming, a craving she had for a longtime, without anyone's help – empowerment from within.

From time immemorial, men have been using sexual violence as a means to manipulate control over women. Among the co-passengers of Akhila, Marikolunth

is the only humble, peasantry woman. After the death of her father she is sent to Chettiyar's family as a maid. She falls prey to the sexual violence when Murgesan, a relative of that family rapes her. After long suffering and humiliation, she gives birth to a child. Frustrated, she refuses to take up the burden of looking after the child and leaves to Velloor for a job. At another point in her life, she is again forced to work at Chettiyar's house and this time, Sujatha's husband Sridhar takes sexual advantage of her. When her physical condition weakens, she sets out for Kancheepuram to meet Murugesan. In order to repay the money that is borrowed for her operation, she sends her son Muthu to work in his factory. It is only her emotional stability that keeps her stay alive in a life of poverty, frustration, ignorance, and loneliness.

The minor characters in the novel, Akhila's school friend Karpagam and colleague Catherine Webber, too break the larger frame of patriarchy that denies personal freedom to women. They are portrayed as courageous women who break the shackles of patriarchy and strive for self-definition.

Akhila is symbolic of all those who are in a quest for female self and liberated selfhood in a patriarchal world. Akhila's journey to Kanyakumari brings about a radical change in her attitude towards sex, social roles and marital relationship. She realizes that the ability to live alone is not the real question; it is the living as a woman in a patriarchy. Even though Akhila crosses the threshold of self-discovery, her final decision is to re-establish her contact with her former lover, Hari; to find dreams and happiness rather than suppressed



desires. She finally decides, “to leave for the railway station. To wrest the reins of her life back, she thinks, looking at her return train ticket” (276).

Anita Nair succeeds in projecting the crisis of the social norms by delineating the difficulties that are faced by the traditional Indian women in relation to men. Shedding away the fear of facing the consequences of establishing selfhood, her characters counteract the established patriarchal ideologies and oppressive tendencies that surround them. They are in constant quest for their female space within the complexity and contradictions of society and finally discover the inner strength to assert their autonomy and agency.

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THE GREAT INDIAN LANGUAGE ISSUE: DO WE HAVE A SOLUTION?

Abhilash

It has always been a confusing thing for everyone to comprehend. When two Indians – let us say, one from Kerala and one from the neighbouring state of Tamilnadu – meet, what language do they use for communication? Of course, English! English, the language of the coloniser; the language of the English people and the U.S.! The same language which unites the whole of India. The language which politicians often look at with contempt. And use at their own convenience to arouse a regional language sensitivity to gain more popularity.

India has a long list of languages. The Eighth Schedule to the Indian Constitution contains a list of 22 scheduled languages. It is also home to hundreds of other languages, many of them used as mother tongue by various people. Hindi is only first among equals, which is the mother tongue of about forty percent of the population. I do not conceal the fact that Bengali, Marathi, Telugu and Tamil have more than 50 million speakers each. With more than 30 million speakers, Malayalam also is not far behind. In the case of English, about one and a half billion people speak English, of which only 360 million are native speakers.

In the case of a language being used as mother tongue, Hindi exceeds English by a large margin.

In 2018, The Indian Express reported that there are 121 languages in India which are spoken by ten thousand people or more, and that there is a total of 19500 mother tongues spoken in India. The news was published in relation with the analysis of a census conducted that year. The report further says:

There are 121 languages which are spoken by 10,000 or more people in India, which has a population of 121 crore, it (the census) said. The Registrar General and Census Commissioner, India, said since a household may consist of persons related by blood or of unrelated persons or a mix of both, it is absolutely necessary to ask every person about her or his mother tongue. It was required because the mother tongue of each member of a household need not necessarily be the same — these may be different for different members in the household.

No other country in the world has such an issue to face. Since we are told about this from childhood onwards, we



do not feel surprised at this problem. But for an outsider, it is really amusing to see people in India communicate to each other in a foreign tongue. The history of the multiplicity of languages in India can be traced back to the various empires as well as the small kingdoms that ruled India in the past. When India got freedom in 1947, there was an attempt to unite the country by declaring Hindi as its official language. Even today, non-Hindi states have to teach Hindi at schools, though it has not helped the national integration in any considerable manner. Instead, we find English taking over the responsibility of linking India. Hindi is still the most spoken language in India. However, we find many states consider Hindi as exerting dominance over them.

English, however, enjoys a better reputation throughout India. In Hindi States as well as Non-Hindi states, English Medium schools are always considered better places to educate children. English is the only language in the prestigious institutes of higher education. There is no choice possible here. Whenever the common man thinks about a child achieving higher positions in career, English language competency is a compulsory background for it in his dreams. So English medium schools flourished all across India. Consider the case of Kerala. Most of the students who perform better in the field of professional courses have an English background, whether taught at schools or acquired on his own. In a state like Kerala where the level of education is so high, English became a precious commodity to perform well in interviews for both in-state as well as foreign jobs. So when it comes to the case of the education of a child, even the least

educated parent prefers a school where knowledge in English can be acquired.

Recently, we notice a reversal policy from the part of the state governments. For example, the Government of Kerala has decided to make Malayalam the only language of official communication. Though I do not doubt the genuine interest to promote mother tongue in the state, I wonder whether a state like ours can afford to do it. Malayalam is the language of our culture, our history. But consider the population density of Kerala and the percentage of youth who get higher education. It has been a long tradition in Kerala for the educated youth to seek employment outside Kerala, a large number of it being in foreign countries. People who work in Western countries and the Middle East has contributed a lot for the economic stability of the small state of Kerala.

What if we pull down English and insist on using mother tongue? First of all, Keralites now use many words from English as part of their daily vocabulary. This is mostly irrespective of their educational levels. This happens as the majority are educated and use sophisticated words in English in many casual contexts. When this standardised language is used in visual media, it reaches all. A deliberate attempt to reverse this trend will only take us back to the times where the divide between the social classes was very wide. The truth is that we do not know the Malayalam equivalents for many words like office, restroom, bill, receipt, bus shelter, ticket, football, shoes, restaurant, etc. If we try to find out and use the dictionary meanings of these terms, our language will appear only awkward. In fact, some Keralite



news papers are coining new Malayalam equivalents for some words, the success of which we cannot say anything at present.

What I am concerned about is the consequences of these. Knowledge of a global language is nothing to be ashamed of, in the first place. We no longer have to consider it as the language of the coloniser or the language of oppression. In fact, it is a powerful weapon we have got in our hands. It is the key to the vast expanse of knowledge of the world. In these times of internet and globalisation, any attempt to hold on to a small part of the world will be a barrier to the growth of any promising child from India. Internationally, Indians usually outperform in any field which needs intelligence and reasoning. Though China emerges as a world power, the greatest barrier for their growth is lack of English communication skills. Even as they try to improve this situation, it will take a long time to bring in any noticeable change. Instead of implementing a compulsory mother tongue drive, what the Indian states should do is to put more importance in English teaching.

Multilingualism in this sense – mastering mother tongue as well as the universal language – is a practical and viable option in many ways. Scientists opine that it helps in better communication skills, heightened linguistic recognition, superior executive functioning and multi-tasking. It even helps in fighting dementia. It broadens one's mind and provides multiple perspectives. Benefits of multilingualism practices in education include the creation and appreciation of cultural awareness, adds academic and educational value, enhances creativity, adjustment in society and appreciation of local languages.

The greatest advantage of this for the Indians will be putting an end to the class divisions. Now English is the language of the elite classes, just like Sanskrit was once. In interviews, candidates fail if they fail to speak fluently in English. Once we go abroad, whatever we know can be used only with fluency of the link language. This is true even if you visit a country as a tourist. Can you even think of an all-India tour, without having English communication skills? Unless English competency is ensured to all kinds of students, the so-called Convent School kids will always take away whatever opportunities are there. One can definitely argue that a candidate can get to a good position by applying for the government sector jobs. But the numbers? We cannot ensure jobs for all in our own place. We will have to look at jobs outsourced by western countries. Even giving tutorials online can generate income. Then let us prepare them for global opportunities. Isn't it a necessary thing we should do?

Mother tongue is one's own language, and they will learn it at any rate. Our school syllabus, if followed genuinely, will provide enough material for the students to learn regional language. Moreover, the learner watches movies in that language, reads newspapers in the language, and much more. There is no real threat at all for the nourishment of one's mother tongue. Those who wish to become advanced learners in that language can still do it. There is no question of neglecting anything. I am pointing at a practical solution which may ensure a better future for the coming generations. Change is the only thing without change. There will be changes in our social life and culture in the future. After all the attempts to promote regional



culture and heritage, one cannot stop our youngsters from watching Hollywood movies and visiting KFC stores. Let us try to make changes positive, instead of sensitising any issue unnecessarily.

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THE FADING CRIES: AN ECOCRITICAL APPROACH TO SELECTED ANIMAL POEMS

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Since the ages of great philosophers like Aristotle and Plato the relationship between human beings and other fellow inhabitants of earth has been treated as a consecrated one. Man is inexplicably interlinked to nature like a child to its mother. The crux of ecocritical or ecological arguments can be found as this. But the present day scenario portrays a picture just as the opposite of what has been considered sacred. The recent activities of humankind give us nothing but a clear cut picture of the malice that has befallen upon nature and other living creatures due to the careless, selfish and money-minded nature of human beings. The fauna is now at the verge of extinction, their very existence being threatened and their rights are denied. It is due to these concerns that certain writers began to move their pen for the sake of animals, the real owners of earth. Serious discussions have been made regarding these issues and a wide range of theories has been formulated. By the end of the second half of the twentieth century the issues regarding nature and its conservation became focal point on which later developments were built. It is from this impetus that the new modes of writings and representations came into

being in the realm of literature. Eminent writers like William Rueckert, Cheryll Glotfelty, Rachel Carson and so on took up the issue and brought it to the forefront. It appears that William Rueckert was the first one to use the term “ecocriticism” in 1978. Rueckert, by using the term “ecocriticism,” speaks about a kind of intrinsic and inevitable relationship between nature and literature, the very way nature is addressed and treated in various forms of writing. Cheryll Glotfelty in her introduction to *The Ecocriticism Reader: Landmarks in Literary Ecology* (1996) says that “ecocriticism is the study of the relationship between literature and the physical environment” (Glotfelty xviii). Here, the subjects such as nature and literature are taken as overlapping, interdisciplinary ones:

Ecocriticism defines itself as a practice of reading literature from an earth-centered (rather than human centered) perspective. There is also an activist dimension to ecocriticism: at least part of the reason ecocritics want to discuss the centrality of nature in literature is to raise awareness more generally about the need for concern and indeed action with regard to the environment. (Buchanan 143)



The ecological aspects and issues are now studied in relation to literature by placing them within the wider milieu of culture. It is only by juxtaposing these two areas that one can address the anti-environmental attitudes that humankind inflicts upon nature nowadays. We often forget the fact that there is no existence for us without the existence of the remaining flora and fauna. It was from this impetus that the notion of deep ecology came into being. Deep ecology views human being just as “one” among the many other inhabitants of this earth. It exhorts for a paradigm shift where the human being is placed “among” the rest rather than “above” them. The shift must be made from an anthropocentric to a more ecocentric or biocentric one. The ecocritical writers always objugate the fellow human beings for their cruel attitude toward nature. The poets have always considered the nature as a superior phenomenon to which we all belong. The poems by Robert Wrigley, Robert Pack and Chad DeNiord portray the oppressing attitudes and deeds of humankind upon earth and its remaining inhabitants.

The Cries Are Fading

The American poets Robert Wrigley, Chad DeNiord and Robert Pack in their poems always speak about the profound relationship between man and nature. In their poems they always praise nature and mark human beings place in it. The poem “Little Deaths” Wrigley presents before us the malice that humans inflict upon the nature and other living beings. The title of the poem itself reveals the seriousness of the issue discussed. Here, the word “little” is placed with the word “death.” This oxymoron also points out the general

human attitude. For the “mighty” creations, like what we call ourselves, death or even extinction of the rest of the living beings is of “little” importance or of no importance at all. The poem pictures humans as the superior, supreme authority that controls all other living beings. The way the poet details about the deaths of those little creatures like bugs, moths, frogs and rabbits is intriguing. The poet accounts the “killing” process of these creatures as if it is a noble act. The moths in the first stanza are tossed in the stove for it entertains the poet. Then he speaks about the ill fated bugs and the broken grasshopper whose deaths are nothing but mediocre ones. The cruel act of man can be seen when Wrigley writes:

In the woods behind their summer camp
Pentacostal kids crucified frogs
to the trees. Three nails
and a sapling trunk, little fish-belly
amphibious Jesus. Once

I shot a turtle, green lump under
duckweed, (15-20)

Here, one can quote from Shakespeare without much ease as to say the humans “kill” the other creatures “for their sport” (Bloom 41). The picture gives a clear example of an anthropocentric point of view. The speaker in the poem is the dictator who has got the authority to define the lives of other living beings. M.H. Abrams, in his *A Glossary of Literary Terms* (1957), defines anthropocentrism as an array of ideas which are:

oriented to the interests of human beings, who are viewed as opposed to and superior to nature, and as free to exploit natural resources and animal species for their own purposes. (Abrams 97)



This is the prevailing attitude the poet maintains in the poem. The “deaths” of animals are insignificant in this paradigm. The poem ends in such a way that it embraces the chaos which is going to end in a phase where no one is feared of death anymore. This means the fact that the deaths and killings have become a norm and the acts of “little deaths” will continue forever. The complete transformation of man into a kind of monster is clear when the poet says that:

into a cool rocky pool on Potlatch Creek,
we insisted on total immersion,
as though it were a baptism,
as though afterward death were nothing to fear. (27-30)

The words “immersion” and “baptism” means the act of complete submission to and submersion in evildoings and humans’ later transformation into a complete monster that has the ability to mark the doom of earth and its inhabitants. In the last stanza the poet proclaims his love for violence and cruelty and ends the poem in another act of “murder” of four crawdads. He is curious to see who is going to die first, whether it is he or the crawdads. The sacred relationship between humans and animals is no longer a matter to be concerned. The apocalypse is now at hand. Human has indeed become the real murderer and he rejoices in the “little deaths” of his fellow beings. The poem ends as:

I have my own ideas about that,
my own cruwl sense of who’ll die first,
and how. Those four crawdads we caught. (31-33)

In Chard DeNiord’s “Confessions of a Bird Watcher” the poet takes us into the

stark realities of the modern world where man-made buildings stand as a symbol of death. The poet witnesses the “dying” act of those birds which strike against the windows and die. The buildings stand as a metaphor for human evil. The poems clearly depict the evildoings of humans upon animal lives. The birds, unfamiliar of the modern buildings and constructions, fly against them. These buildings are new and strange to them. The poem shows how manmade structures disrupt the balance of the ecosystem and pose a threat to the existence of other living beings, especially for birds. The birds are attracted by the feeder which is placed outside, but when they fly towards it they mistake the glass for air and break their necks:

I have sat at my window now for years and
watched a
hundred birds
mistake the glass for air and break their
necks,
wondering what to do,
how else to live among them and keep my
view. (9-13)

It is quite clear that the poet knows about the impending doom of those birds. He is well aware of the hidden dangers that the building poses. Yet he is not ready to change anything to save those little birds and he also loves to watch them beside the feeder. He is the one who really attracts them. Here, a kind of complicated relationship can be seen. The human becomes the lifesaver and the destroyer. The poet says he knows that the windows are the reason for their deaths and he is the one who attracts them with seeds in the feeder and water in the bath. But he only feels sorry for them.



What sign to post on the sill that says,
 "Warning, large
 glass window.

Fatal if struck. Fly around or above but
 not away.

There are seeds in the feeder and water
 in the bath.

I need you, which is to say, I'm sorry
 for my genius as

the creature inside

who attracts you with seeds and watches
 you die

against the window

I've built with the knowledge of its
 danger to you.

With a heart that rejects its reasons in
 favor of keeping

what it wants:

the sight of you, the sight of you." (17-
 28)

The warning sign that he wants to post
 can also be regarded a kind of justification
 which he makes to justify his own brutal
 acts. The poet knows about the hidden
 danger but he also loves the sight of those
 birds. What we need to understand is the
 inevitability of a change of perspective.
 The poem calls for a reanalysis of the
 relationship between man and nature from
 a deep ecological point of view. The birds
 and other living beings have the right to
 live in this earth like we humans have.
 The proponent of deep ecological studies
 Fritjof Capra in his *The Web of Life* (1996)
 defines the idea as

seeing the world as an integrated whole
 rather than a dissociated collection of
 parts. It may also be called an ecological
 view, if the term 'ecological' is used in a
 much broader and deeper sense than usual.

Deep ecological awareness recognizes
 the fundamental interdependence of all
 phenomena and the fact that, as individuals
 and societies, we are all embedded in (and
 ultimately dependent on) the cyclical
 process of nature. (Capra 6)

The humans must be taught this fact
 that he or she is just a part of that cycle and
 if the uniformity of the cycle is disrupted it
 will eventually leads to catastrophe.

It is the fact that man draws his
 inspiration from nature. Whenever he looks
 at nature, he feels relieved and it helps
 him dwell in serenity. The poem "Eagle"
 by Robert Pack portrays the image of an
 eagle whose impending doom is at hand
 and praises over its majestic beauty as well
 as laments over its imminent extinction.
 The poet bemoans over this terrible fact.
 In the beginning of the poem he introduces
 the eagle drifting around her nest. Like in
 "Confessions of a Bird Watcher" the poet
 here knows that the creature is at the verge
 of extinction. He also acknowledges the
 fact that this ill fate is due to the human
 activities and nothing else. Pack opens the
 poem as:

At dusk, I see an eagle's silhouette

Drifting around her distant nest,

And think how close to stark extinction

She has come, the ultimate defeat,

Contingent on some human whim (1-5)

What is purposefully forgotten is the
 interconnectedness of humans and nature.
 By destroying nature we are destroying
 ourselves. Man is a part of nature, an
 ineluctable part, and the aftermaths of his
 evil deeds towards nature will definitely
 be reflected upon himself. The poet now
 accepts this fact that he feels a kind of



calmness when he looks at nature. The sight of the eagle makes his mind composed.

With a kind of love because

She helps me almost to forget myself,

I watched her tilted wings glide off and lift,

Swooping in some smooth current (16-19)

The lines clearly portray the intricate bonding between man and nature. The fact that the poet transcends himself when he is with nature, savoring the beauty of her, amounts to this bonding with nature. Man's profound relationship with nature is highlighted here. In Brihadaranyaka Upanishad this relation is seen as the most pure and sacred one. The last stanza of the poem speaks about how the poet attains transcendence when he sees the majestic flight of the eagle.

And so I try to think myself released

From thinking of myself

By fixing on the eagle's dips and swerves

Around their nest, my mind filled with their forms,

The angles of their silhouettes, their curves. (31-35)

What we need to note here is the redeeming acts of nature. The irony is that the eagle helps to restore the poet's lost serenity and soothes his mind even when it is in the midst of extinction.

Conclusion

WE STAND NOW where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been travelling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork

of the road – the one “less travelled by” – offers our last, our only chance to reach a destination that assures the preservation of our earth. (Carson 277)

says Rachel Carson in her epoch making work *Silent Spring* (1962). Even though Carson is talking about the harmful effects of pesticides on nature and the need to put a halt on that, the lines can be attributed to a wide range of environmental issues which call for attention. Considering all the anti-environmental acts of human beings what is expected now is a deviation from the long travelled roads of exploitation and destruction to a new less travelled one of conservation and care, not only of earth but also of all its inhabitants. People should be made to think from a deep ecological point of view where he or she should treat himself or herself as a minion of the other inhabitants of this mother earth. We are not the focal point anymore. The paradigm is changed, if not, it should be changed. The poems clearly depict the evildoings of humans upon animal lives and nature and the need to save and conserve it. It is to the poets' outcry that we must lend our ears. It is high time we shifted our paradigm from an anthropocentric to a more ecocentric one.

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■

ONENESS AND BOUNDARIES OUT OF THIN AIR: CULTURAL IMAGINATION AND ITS RELEVANCE (OR IMPACT?)

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Abstract

The purpose of this paper is to share ideas regarding the concept of Cultural imagination and its impact. The term 'imaginary' implies a set of morals, rules, signs and institutions using which people try to belong to the fantasised social community they have created for themselves. This idea can be traced back to the book 'The Imaginary: A Phenomenological Psychology of Imagination' by Jean Paul Sartre in 1940. The theoretical term Cultural Imaginary is a product of different hypothesis that prevailed in Latin American and Hispanic countries. Cultural Imaginary is comprised of the findings of Stuart Hall about culture and Benedict Anderson's concept of 'imaginary'. Cultural Imaginary is the act of the migrant community imagining a culture of their own, in a dimension neither here nor there. Some argue that nations themselves are imagined communities, because most of the people living in a nation will never interact with each other, still they have the sentiment of oneness. It is this nationalistic feeling that produces culture, along with the notion that it should be used as a medium to share the feeling of collectiveness. The

influence of such an imagined community is to be explored using relevant works like 'Imagined Communities', 'The World of Lucha Libre' and many more.

Keywords: *cultural imagination, nationalism, Jean Paul Sartre, Stuart Hall, Benedict Anderson*

Content

Albert Einstein called the intuitive or metaphoric mind a sacred gift. He added that the rational mind was a faithful servant. It is paradoxical that in the context of modern life we have begun to worship the servant and defile the divine. (Bob Samples 1976 p.26)

It is generally believed that Einstein said these words because intuition paves way to the fluidity of thoughts and imaginative capacity is the main factor in brewing self-confidence in individuals. Max Haiven explains the connection between imagination and value as follow:

We rely on our imaginations to give us a coherent sense of experience, of reproductive cooperation, of the world around us. How a person imagines their relations shape what and who they value. Meanwhile, their values, in effect, shape



their imaginations. In other words, their cultural values determine what they think is important and the types of behaviors and attitudes that they believe will allow them to achieve their desires; how they ascribe meaning to the world. (Haiven 2014, loc. 963)

But imagination can be used to manipulate others who never had the privilege or resource to think for themselves from external invasion of any sort. This is the exact reason why European colonization was a tremendous success in the past centuries. The 'Whites' who valued their 'own kind' as superior to the oriental, were able to set foot on the lands of the 'coloured', and they were able to convince the natives that their culture, language and literacy level was far below the required quality, an invisible measuring scale set up by the Europeans to make them look like gods in front of the non-whites. Thus the soon to be colonized people valued themselves as inferior to their new 'liberators'. This is where it all began. In the novel *The Brief Wondrous Life of Oscar Wao* by the Dominican American writer Junot Díaz, there is a motif of destruction and death, which the narrator terms 'fukú'. It is a curse that was unleashed on the Caribbean by the colonizers without intention:

They say it came first from Africa, carried in the screams of the enslaved; that it was the death bane of the Tainos, uttered just as one world perished and another began; that it was a demon drawn into creation through the nightmare door that was cracked open in the Antilles. Fukú americanus, more colloquially, fukú—generally a curse or doom of first kind, specifically the Curse and Doom of the New World (OW1).

It is also explained in the novel that zafa is the "one way to prevent disaster from coiling around you, only one surefire counterspell that would keep you and your family safe." (OW2). This could be understood as the necessity for decolonization for 'curing' their land from the curse of pseudo-liberation by the colonizers. In order to achieve that, it was mandatory for the natives, not just of Latin America, but of all the colonies that existed to give themselves a value as equals to the Europeans, so that they could conjure the bravery and determination to rebel for their freedom. We all know what happened next.

Post –Independence era for the former colonies brought forward new challenges which were quite unexpected. Different post colonial nations had different obstacles to come across depending upon the category they belonged to. It would be fair to say that it is the people of the Latin American countries and the Caribbean Islands who had to endure new traumas even after the reign of the Europeans, as if invisible threads were still being tied upon them like a puppet. Initially Caribbean Islands were populated by Amerindians from different groups of Kalinago and Taino. But after the islands regained their freedom it was possible to witness a hybrid society which could be roughly classified as Afro-Caribbean, who were the descendants of the African slaves, White Caribbean, whose ancestry had its roots from Europe, and Indo-Caribbean. Their hybrid nature along with the mixture of multiple languages and cultures forced upon them a sense of rootlessness, since they are not able to identify themselves to a particular nation. This is where the role of imagination comes in again.



During pre-colonial times, if imagination was used to feel superior about oneself (like the Europeans) or to discover the value of oneself to strive against injustice (like the colonized), now the purpose of imagination is to create a virtual sense of belonging with the piece of land the hybrid post colonial mass are currently residing. Professor Hector Pearla of University of California stated about Latin American as a community that is imagined, one that is “socially constructed through narratives, myths of origins, symbols, rituals, and collective memory, imagined by people who see themselves as a part of that group” (Pearla 45). It is this sense of identity and how culture is able to reinforce it that contributes to the imaginary.

There are several instances of how these hybrid nations pick up or adopt a cultural activity that originally belongs to their native place of one of their ancestors. Heather Levi, an American anthropologist, in her book *The Wold of Lucha Libre: Secrets, Revelations, and Mexican National Identity* explains how the use of mask by a Luchador is a means to establish a cultural tie to the Mexican indigeneity. Luchadores use masks to create an imaginary with the masks used for certain ceremonies by the native people of Latin America:

The Luchadore's appeal to mainstream audiences in Latin America resulted in the creation of an imaginary through which, both high and low cultures were able to relate to one another. This reproduction of the indigenous culture and the identification with the Mexican identity create a cultural imaginary. (Levi 66)

Alicia Camacho, a prominent professor in American Studies, observes that the migrant workers from Latin America to

the U.S are always in a desperate attempt to cling on to this sense of nationality. She believes this is Cultural Imaginary in its epitome. They claim to do this so that they do not lose their identity as Latinos. According to her culture is: merely a detached set of ideas but rather the means by which people work through their connections, and create a sense of relatedness to a particular time, place and condition. Because of the loss of sense of belonging, the cultural imaginary is one that helps define identity and meaning in a setting of neither belonging here or there. (Camacho 29).

Coming back to *The Brief Wondrous Life of Oscar Wao*, we can see Yunior, one of the narrators, saying:

It might have been a consequence of our being Antillean (who more sci-fi than us?) or of living in the DR.. and then abruptly wrenchingly relocating to New Jersey.. You really want to know what being an x-man feels like? Just be a smart bookish boy of color in a contemporary U.S. ghetto. Mamma mia! Like having bat wings or a pair of tentacles growing out of your chest. (Díaz 83)

Here Yunior is talking about a factual historic event, where people migrated from Antilles to the U.S. Sci-fi characters from cartoons and comic books are mentioned here because these fictional characters have super human abilities and hence, they always stand out from the crowd. Yunior is facing the same problem because he is coloured and he stands out from the whites in the U.S. But unlike the adoration the superheroes receive, Yunior is of the opinion that the Americans treat them with contempt. In such scenarios where the new home is very un-homely,



diasporic migrants have to choose but to take up the culture of their new land. That is the only way they can blend in. This is where the ability to imagine and prepare oneself to embrace the new circumstances become prominent.

We could see ideas of similar sentiment in the poem *The Schooner Flight* by Derek Walcott:

I had a sound colonial education
I Dutch, nigger, and English in me
And either I'm nobody or I'm a nation.
I had no nation now but the imagination.

Cultural imaginaries are created in a social realm in order to quench the thirst for the sense of belonging of certain sects. Cloths, dance form, food, be it anything, are constructions of the society to identify what it means to be an element of a group. These constructs and the associated imaginaries help to establish the sense of oneness and meaning to a community. Since a thought is given meaning that only makes sense inside particular cultural restrictions, it is the product of imagination and hence applicable only to that group.

Benedict Anderson, an Irish Political scientist, on the other hand sheds light from a different angle on cultural imaginary; an important aspect which actually answers the basis of different kinds of political conflicts. For Anderson, a nation itself, whether or not it has a colonial background as the land of the colonizer or the land of the colonized, is an imagined community. "It is imagined because most members of said community will never meet or hear from other members of this community, yet each has in their minds the image of their communion."

(Anderson 49). It is this idea of nation as a community that provides and produces culture, and therefore the oneness. The situation in India is a suitable example to showcase the virtual or hollow nature of nationalism of any nations for that matter. India is a country with diverse culture and language. Even the slogan of India is "unity in diversity". But this is something that is achieved using force or artificial means. There is no logical sense in feeling united with the millions of people that we do not know. But this is achieved to a large extent through different means like hereditary, majestic historical evidences etc. Everyone forgets the fact, or the political powers invisibly hanging over us makes us forget, that the boundaries that a nation share is man-made and it has nothing but political agendas. If a section of China becomes part of India, then should we start feeling the same sense of oneness with the new arrivals? This is where the reality of the situation strikes. People imagine that they have some sort of tie with their land, and they are trained to believe that every other nation and its people are somehow not as good as them.

Chris Kyle is professional Navy sniper who got famous after his success in a combat in Iraq where he killed 160 terrorists (he claims that he killed 95 more, but the data is not confirmed). In 2012, he published a memoir titled *American Sniper: The Autobiography of the Most Lethal Soldier in U.S. Military History*. He says:

I loved what I did. I'm not lying or exaggerating to say it was fun. On the front of my arm I had a crusader cross inked in. I wanted everyone to know that I was a Christian. I had it put in red for blood. I



hated the damn savages I'd been fighting. I always will. (Kyle 9)

A movie American Sniper (2014) was made based on this book and it was a huge success. But the fact is disturbing because the movie spread islamophobic message that everyone involved with Muslim religion or Arab nations are terrorists. Thus this is what imagination can do to human civilization if not used properly.

But we could conclude on an optimistic note because by now it is clear cultural imaginary is a psychological product of the people. Thus it could be deconstructed and a brand new structure could be erected eradicating all these problems. After an abundance of reworking on what we consider as our culture and why we cling on to it, nation leaders can actually enlighten their people about a global sense of belonging rather than a national one. Thus people all over the world would feel united with no political boundaries to separate them. Thus culture then could be perceived as different ways of living, wearing cloths and eating. A united world with so many options for everything!

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■

AN INTRODUCTION TO ROBERT M. PRISIG'S ZEN AND THE ART OF MOTORCYCLE MAINTENANCE

Melvin Shaji Mathew

Zen and the Art of Motorcycle Maintenance is a philosophical novel written by American philosopher Robert M. Pirsig. Philosophical fiction has become very popular. Works like Sophie's World, Wittgenstein's Mistress, Infinite Jest, The Monk Who Sold His Ferrari have become international best sellers. Zen and the Art of Motorcycle Maintenance set the precedence of this trend in the 70s when it became an international bestseller and the most popular philosophical book of all time. What is the reason behind the popularity of philosophical fiction? The primary reason is that fiction is the best medium for teaching philosophy, which is infamous for being dull and formidable. Another reason for the popularity of philosophical fiction is that when teen fiction and soap operas flood the market, philosophical fiction provides insight into the process of existence in a lucid form. But renowned Oxford philosopher and author Iris Murdoch refutes this idea. According to her, philosophy calls on the analytical mind to solve conceptual problems in an austere, unselfish, and candid language whereas literature with the help of imagination shows something mysterious, ambiguous, and particular about the world. For her the appearance

of philosophy in her works is purely an inconsequential appearance of what she happened to know. She remarked:

If I knew about sailing ships I would put in sailing ships,". And in a way, as a novelist, I would rather know about sailing ships than about philosophy. (http://www.nytimes.com/2011/01/23/books/review/Ryerson-t.html?_r=0)

The relation between philosophy and literature is not a cordial one. Philosophy always distrusted literature and the quintessential example of this hostility is that of Plato who was fearful of the ability of literature which he termed as the greatest falsehoods to disrupt an individual's quest for truth. Hence, he proposed the banishment of artists from his model state. The reason for this conflict is :

Philosophy is written for the few; literature for the many. Philosophy is concerned with the general and abstract; literature with the specific and particular. Philosophy dispels illusions; literature creates them. Most philosophers are wary of the aesthetic urge in themselves. It says something about philosophy that two of its greatest practitioners, Aristotle and Kant, were pretty terrible writers. (http://



www.nytimes.com/2011/01/23/books/review/Ryerson-t.html?_r=0

Novelists with a philosophical background like Rebecca Newberger Goldstein and David Foster Wallace have different views. For Wallace, fiction offered a way to capture the emotional mood of a philosophical work. According to him, the goal of a philosophical text is not to make an abstract philosophy accessible by simplifying ideas for the lay audience, but “to figure out how to recreate a reader’s more subjective reactions to a philosophical text”. Fiction is subjective and novelists like Iris Murdoch wish to keep the subjectivity of the novel from the influence of philosophy’s objective search for truth. Rebecca Newberger Goldstein says that the way we tackle intellectual problems depend upon who we are as individuals and embedding a philosophical debate in imagined human stories can convey key aspects of intellectual life. It makes one not only understand a conceptual problem but also “feel” the problem.

He was born in Minneapolis, Minnesota. He skipped several grades -due to his IQ of 170- and enrolled at the Blake School in Minneapolis and finally entered the University of Minnesota at the age of fifteen to study biochemistry. Pirsig thought of arriving a unified theory, which explain everything in the universe. While working on experiments, Prising realised the existence of numerous tenable hypotheses. His attempt to tone them down resulted in the generation of an unlimited number of workable hypotheses. This made him question the entire scientific practice, which he concluded as an inherent limitation. Eventually, Prising lost interest in his studies and was expelled from the university. He enlisted in the US army and was stationed in South Korea. After

his discharge from the army, he earned a Bachelor of Arts in Eastern Philosophy and then joined the Banaras Hindu University in India for a Master’s in Eastern Philosophy. He studied philosophy and journalism at the University of Chicago. In 1958, he joined the Montana State University and taught creative writing. He suffered a nervous breakdown and was institutionalised between 1961 and 1963. He was diagnosed with schizophrenia and was treated with electroconvulsive therapy.

One might not understand the dilemma Pirsig faced while conducting experiments. It is a philosophical problem, which is described by Jules Henri Poincare. Jules Henri Poincare, was a French philosopher of science and mathematics as well as a distinguished scientist and mathematician. Poincare believed in the role of intuition in a proper constrictive foundation for mathematics. He believed that logic is a system of truth and mathematicians can use it to check a proof, but they must use intuition to create a proof. According to Poincare the aim of science is to predict or to create hypotheses, which has to be continually tested. For Poincare, a scientific hypothesis which was proved untenable can still be very useful for it implies the fact that we have neglected or misunderstood some element, thus gives us an opportunity to discover the existence of an unforeseen aspect of reality. He suggests that a scientist can make any number of hypotheses for which he must choose a suitable few. Pirsig failed to formulate a criterion according to which he can select few hypotheses for serious experimentation.

Zen and the Art of Motorcycle Maintenance is a philosophical novel first published in 1974. According to Guinness Book of Records 121 publishers rejected it more than any other bestselling book.



It is about Pirsig's trip on his bike with his son Chris and his friends John and Sylvia, from Minnesota to California. On his way, Pirsig ponders about his past- his philosophical journey and calls his past self 'Phaedrus', who is a character in Plato's dialogues.

Pirsig wanted the idea of Quality he formulated to become a topic of metaphysical study but it did not. Philosophers simply ignored it. Most of the people who read Pirsig's books claimed that they did not understand his idea of Quality.

For someone who doesn't have any training in Philosophy reading *Zen and the Art of Motorcycle Maintenance* is a difficult task. Hence it required multiple readings of the primary source to fully understand it. The book is divided into four sections, in each of which Pirsig discusses many heterogeneous concepts to formulate Quality, which is a concoction of all these concepts. The in-congruency one might feel while reading the dissertation is due to the form the primary source. The first four chapters of the dissertation is the analysis of the four chapters of the book and the final one is the conclusion the researcher has arrived at.

The first section of *Zen and the Art of Motorcycle Maintenance* is about the conflict between romanticism and classicism. Pirsig did not want to cut any new channels of consciousness, he wanted to dig deeper in to the old ones. He portrays John and Sylvia as romantics who distance themselves from technology. Pirsig considers himself a proper classicist because he loves technology- he takes care of the motorcycle all by himself. Whereas, John and Sylvia hate it. They love the joy of bike riding but possess deep aversion to the technology that makes it possible. Pirsig considers this kind romanticism as

ingratitude towards technology. There has been many anti-technologists known by the name "beatnik" and "hippie" and these kind of anti-system people will continue to emerge but they won't become a popular movement. Pirsig considers John and Sylvia's attitude as self-defeating and feels sorry for them. They were living with technology without having anything to do with it. Pirsig is trying to explore the duality between what man is, from what man does. The aversion of technology or the present system is an unfulfilling response according to Pirsig. His attempt is to formulate an idea, which incorporates all dualities into a positive whole.

For Pirsig:

Buddha, the Godhead, resides quite as comfortably in the circuits of a digital computer or the gears of a cycle transmission as he does at the top of a mountain or in the petals "flower. To think otherwise is to demean the Buddha, which is to demean oneself. (Pirsig 17)

Pirsig questions the objective existence of scientific laws. He equates the law of gravity proposed by Isaac Newton with the idea of ghosts- a belief Native Americans still maintain. Every scientific concept like mass, energy, etc. reside in one's mind so does theories. The problem scientists are stuck with is that of the 'mind'; they cannot escape its predominance over everything they do.

Like ghosts logic and numbers exist in the mind but that doesn't make it bad but, it is the way everything works. Most people fail to understand this truth and condemn others with different belief system as unscientific. Laws of logic and mathematics are human inventions, like the idea of ghosts.

Pirsig divides the human understanding into the classical and the romantic. A



classical understanding views the world in terms of the underlying form whereas the romantic one sees it in terms of immediate appearance. If one shows a romantic a diagram of a machine it is unlikely that he would show any interest. Romantics value what they perceive. But if the same blue print is shown to a classical person the diagrams, shapes and the complexities of the underlying form would fascinate her.

Romantic mode is imaginative, creative, inspirational and intuitive. Feelings or emotions get primacy. According to Pirsig:

“Art” when it is opposed to “Science” is often romantic. It does not proceed by reason or by laws. It proceeds by feeling, intuition and esthetic conscience. In the northern European cultures the romantic mode is usually associated with femininity, but this is certainly not a necessary association.” (Pirsig 63)

Romanticism was manifested in many ways such as Sentimental Romanticism, Philosophical Romanticism, Individualistic Romanticism and Nationalistic Romanticism. Leon Rosenthal in his book *Romanticism* describes who who a romantic person is:

A Romantic person was first of all sensitive and someone on whom logic and pure ideas has little impact. It was a knowledge person whose actions were based on intuition: as a statesman, he would obey a generous or imaginary impetus; as a writer or poet his thinking was taking shape in images. (Rosenthal 37)

The classic mode proceeds by reason. Pirsig opines that in European cultures it is associated with a “masculine”. Motorcycle riding is romantic but maintenance is purely classic. Although superficial ugliness is associated with classic mode it is not nece-

ssarily so. Classic aesthetic is often too subtle hence the romantics often fail to notice it.

The classic style is straightforward, unadorned, unemotional, economical and carefully proportioned. Its purpose is not to inspire emotionally, but to bring order out of chaos and make the unknown known. It is not an esthetically free and natural style. It is esthetically restrained. Everything is under control. Its value is measured in terms of the skill with which this control is maintained. (Pirsig 64)

To a romantic the classic mode appears dull, awkward and boring for the priority is given not to the immediate appearance but to the harmonies function of the whole. But for a classical person the romantic appears frivolous, irrational, erratic, untrustworthy, interested primarily in pleasure-seeking and shallow. Everybody belongs to either of these two modes. No one is willing to see and understand the other. This attitude resulted in the huge split between classical culture and romantic counter-culture.

One of the reasons for the popularity of *Zen and the Art of Motorcycle Maintenance* is due to its unique form. After its success many philosophical texts with varying levels of complexity were published. What sets *Zen and the Art of Motorcycle Maintenance* apart from those works is that it marked the inception of a new philosophical school. One can equate it with Lyrical Ballads of Wordsworth and Coleridge, which was a radical break from the prevalent forms of literature and perception of art. It is true that though *Zen and the Art of Motorcycle Maintenance* became the ‘most popular’ philosophical book it did not result in a cardinal change in the branch of philosophy. This paradox is due to the fact that like every avant-garde work, academicians were and still are



critical of *Zen and the Art of Motorcycle Maintenance* but, due to its lucid form, it gained immense popularity among the public. It is one of the first philosophical books which a lay person can read and understand by him/herself. The radicalness of the form is just a foreshadow of the content which attempted to formulate a philosophical melting point of the west and the East.

In the traditional Western thought there is a duality in objectivity, reason, logic, dialectic and subjectivity, emotion, imagination, intuition, rhetoric. The former terms are considered as scientific or empirical while the latter are assumed to be artistic devoid of rationality.

Pirsig's philosophical endeavour begins with the identification of the one of the most pronounced duality that exists in the society namely-classicism and romanticism. Classicism understands the world in terms of the underlying form whereas romanticism is concerned with the immediate appearance. Classic mode is rational, logical and hence scientific whereas the romantic mode is imaginative, creative, inspirational, and intuitive. When the classic mode functions on reason the romantic mode works on the basis of immediate feelings or emotions. According to Pirsig, riding a motorcycle is a romantic idea but maintaining it is a classic one. Throughout history, there existed a conflict between classicism and romanticism. To a romantic, the classic mode appears dull and awkward for the priority is given to harmony instead of the immediate appearance. For a classic person, romantic appears erratic, irrational, untrustworthy, and shallow. This conflict led to the split between classic culture and romantic counter cultures. To resolve this conflict Pirsig formulated the concept of quality.

The idea of Quality is also similar to the concept of Tao, which cannot be

understood, in a conceptual form but, only through living experiences of everyday life. Tao is the primordial essence and the underlying natural order of the cosmos whose presence is testified by the existence of the universe. Quality is the immediate experience, which is in a continual changing flux. This is why it is impossible to define Quality.

Quality is not a thing. It is an event. It is the event at which the subject becomes aware of the object... The Quality event is the cause of the subjects and objects, which are then mistakenly presumed to be the cause of the Quality! (Pirsig 226)

Quality is a perception of the world, which accepts both the romantic and the rational. Thus, unifies irrational sources of wisdom like intuition and creativity with rational sources such as science, reason and technology. Intuition and creativity are rationally inexplicable. According to Pirsig the combination of rationality and romanticism can enhance the quality of life.

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അനസ്താസ്യായുടെ രക്തസാക്ഷിത്വവും തിരുത്തപ്പെടേണ്ട സാഹിത്യചരിത്രങ്ങളും

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ആമുഖം

മലയാളസാഹിത്യചരിത്രത്തിൽ ആദ്യ ഖണ്ഡകാവ്യമായി രേഖപ്പെടുത്തിയിരിക്കുന്നത് ഏ.ആർ.രാജരാജവർമ്മയുടെ *മലയവിലാസ* മാണ്. അതിനും 33 വർഷങ്ങൾക്കു മുമ്പുള്ള കൃതിയായ *അനസ്താസ്യായുടെ രക്തസാക്ഷിത്വം*, ആദ്യഖണ്ഡകാവ്യം എന്ന സ്ഥാനത്തിനു യോഗ്യമാണോ എന്നും, എന്തുകൊണ്ട് സാഹിത്യചരിത്രത്തിൽ നിന്നും പ്രസ്തുത കൃതി തഴയപ്പെട്ടു എന്നുമുള്ള അന്വേഷണമാണ് ഈ പ്രബന്ധം.

സാഹിത്യചരിത്രങ്ങളെല്ലാം ഖണ്ഡകാവ്യ പ്രസ്ഥാനങ്ങളുടെ ഉത്ഭവ-വികാസങ്ങളെ പത്തൊൻപതാം നൂറ്റാണ്ടിൽ സാമൂഹിക-സാംസ്കാരിക- ഡൈഷണിക രംഗങ്ങളിലുണ്ടായ ഉണർവിനോടു ബന്ധപ്പെടുത്തിയാണ് ചർച്ച ചെയ്യുന്നത്. മലയാളഖണ്ഡകാവ്യങ്ങളെപ്പൊതുവെ പ്രാചീന ഖണ്ഡകാവ്യമെന്നും ആധുനിക ഖണ്ഡകാവ്യമെന്നും രണ്ടായി തരംതിരിക്കാറുണ്ട്. സംസ്കൃത കാവ്യ നിർമ്മാണരീതി അനുകരിച്ചുകൊണ്ട് രൂപംകൊണ്ട ഖണ്ഡകാവ്യങ്ങളെ പ്രാചീന ഖണ്ഡകാവ്യം എന്നു പറയുന്നു. എന്നാൽ 20-ാം നൂറ്റാണ്ടിന്റെ ഉദയത്തോടുകൂടി രൂപപ്പെട്ട ആധുനിക ഖണ്ഡകാവ്യങ്ങൾ മാതൃകയാക്കുന്നത് ആംഗലഭാഷാ കാവ്യങ്ങളെയാണ്. നവോത്ഥാനപ്രവണതകളോടു ബന്ധപ്പെട്ടു വളർന്നുവന്ന കാല്പനിക പ്രസ്ഥാനത്തിന്റെ ഭാഗമാണ് മലയാളത്തിലെ ആധുനിക ഖണ്ഡകാവ്യങ്ങൾ. ഭാവതീവ്രത,

ആത്മനിഷ്ഠത, വികാരപരത, വ്യക്തിപരത, ആദർശാത്മകത, ആവിഷ്കരണത്തിലെ ആർജവം തുടങ്ങി ഇന്നു ഖണ്ഡകാവ്യങ്ങളുടെ ലക്ഷണമായി വിവക്ഷിക്കപ്പെടുന്നവ ആധുനിക ഖണ്ഡകാവ്യങ്ങൾക്കു മാത്രം യോജിച്ചവയാണ്.

സാമാന്യലക്ഷണം: ഖണ്ഡകാവ്യത്തെ പൗരസ്ത്യസാഹിത്യത്തിൽ നിർവ്വചിക്കുന്നത് ഇപ്രകാരമാണ്.

അല്പാക്ഷരമസന്ദിഗ്ദ്ധം
സംസാരം സർവതോന്മുഖം
സ്തോഭക്ഷോഭകരം വാക്യം
ഖണ്ഡകാവ്യം പ്രചക്ഷതേ

പഴയകാല ഖണ്ഡകാവ്യങ്ങൾ മഹാകാവ്യത്തിന്റെ ഒരു സംക്ഷിപ്തരൂപമായിരുന്നു. അതിനാൽ, ആധുനിക ഖണ്ഡകാവ്യങ്ങൾക്ക് ഈ നിർവ്വചനം പൂർണ്ണമായി ചേരില്ല. സാഹിത്യമേന്മയുള്ള ആധുനിക ഖണ്ഡകാവ്യങ്ങളെ കണക്കിലെടുത്ത്, അവയുടെ സാമാന്യ സ്വഭാവം വ്യക്തമാക്കേണ്ടതുണ്ട്.

ആധുനിക ഖണ്ഡകാവ്യങ്ങളുടെ ഇതിവൃത്തം പുരാണകഥയോ, ചരിത്ര സംഭവമോ, കല്പിതമോ ആകാം. കഥാപാത്രത്തിന്റെ വൈകാരിക അനുഭൂതികൾക്ക് ഇവിടെ ഏറെ പ്രാധാന്യമുണ്ട്. ഔചിത്യപൂർവ്വം ആവിഷ്കരിക്കുന്നതാണ് ഖണ്ഡകാവ്യങ്ങളുടെ സംവിധാന ക്രമം. വർണ്ണനകളും അലങ്കാരപ്രയോഗങ്ങളുമുണ്ടാകും. അവ അനുഭൂതികൾ ഉള്ള

വാക്കുന്ന വിധത്തിലാണ് ക്രമീകരിക്കുന്നത്. എൻ.പി. പണിക്കർ ആധുനിക ഖണ്ഡകാവ്യങ്ങളെ നിർവ്വചിക്കുന്നത് ഇപ്രകാരമാണ് 'നാതിദീർഘവും നാടകീയവും അഥവാ കാവ്യാത്മകവുമായ പ്രതിപാദ്യം, ഭാവതീവ്രതയും ഭാവനാത്മകതയും രൂപസരളതയുമാർന്ന പ്രതിപാദനം, ഔചിത്യഭാസ്യരമായ അലങ്കാരപ്രയോഗവും വർണനയും, പൊതുവെ കാല്പനിക പ്രഭാവലയിതമായ അന്തരീക്ഷം എന്നിവയെല്ലാമാണ് ലഘുകാവ്യങ്ങളെ ആധുനിക ഖണ്ഡകാവ്യങ്ങളുടെ മുൻനിരയിൽ എത്തിക്കുന്നതിന് സഹായിക്കുന്ന സവിശേഷതകൾ'.¹

മലയവിലാസം: മലയാളസാഹിത്യത്തിൽ പൊതുവേ ആദ്യഖണ്ഡകാവ്യമായി പരിഗണിക്കുന്നത് ഏ.ഡി. 1895 (കൊല്ലവർഷം 1070) -ൽ ഏ.ആർ രാജരാജവർമ്മ രചിച്ച മലയവിലാസത്തെയാണ്. അതിനാൽ, ഖണ്ഡകാവ്യങ്ങളുടെ മാർഗദർശകനായി അദ്ദേഹത്തെ പരിഗണിച്ചു കാണുന്നു. 24 ശ്ലോകങ്ങളുള്ള ഒരു ലഘുകാവ്യമാണ് മലയവിലാസം. മദിരാശിയിൽനിന്നും തിരുവനന്തപുരത്തേക്ക് യാത്ര ചെയ്യുന്നതിനിടയിൽ കണ്ട സഹൃദയനായ കവി മനസ്സിൽ ഉളവാക്കിയ അനുഭൂതികളുടെ ആവിഷ്കരണമാണ് മലയവിലാസം. വിവിധ സാഹിത്യ ചരിത്രങ്ങൾ മലയവിലാസത്തെ പ്രതിഷ്ഠിക്കുന്നത് ഇപ്രകാരമാണെന്നു വിലയിരുത്തേണ്ടത് അനിവാര്യമാണ്.

കേരളസാഹിത്യചരിത്രത്തിൽ ഉള്ളൂർ, ഏ. ആറിനെ അവതരിപ്പിക്കുന്ന ഭാഗത്ത് മലയവിലാസം എന്ന കൃതിയെക്കുറിച്ച് പരഞ്ഞുപോരുക മാത്രമാണ് ഉള്ളൂർ ചെയ്യുന്നത്. ഉള്ളൂർ സാഹിത്യചരിത്രം എഴുതിയ കാലഘട്ടത്തിൽ ഏ.ആറിന്റെ കൃതി പുതിയതായതിനാലാകാം ഇങ്ങനെ പ്രതിപാദിച്ചു പോരുക മാത്രം ചെയ്തിരിക്കുന്നത്. മലയവിലാസം എന്ന കൃതിയിലൂടെയാണ് മലയാള ഖണ്ഡകാവ്യപ്രസ്ഥാനങ്ങളുടെ ആരംഭം എന്നു സമർത്ഥിച്ചുകൊണ്ടാണ് 'കൈരളിയുടെ കഥ'യിൽ എൻ.കൃഷ്ണൻപിള്ള എഴുതുന്നത്. '1895-മാണ്ട് അദ്ദേഹം എഴുതിയ മലയവിലാസം എന്ന കൃതിയാണ്, കഴിഞ്ഞ അറുപതു

കൊല്ലമായി വളർന്നു പുഷ്പിച്ചു ഫലിച്ച ആധുനിക കാവ്യവല്ലരിക്ക് വിത്തു പാകിയത്. പർവ്വതവും നദിയും കടലും കായലുമൊക്കെ വർണ്ണിക്കുന്ന കവിതകൾ നമുക്ക് മുൻപും ഉണ്ടായിട്ടില്ലേ? പിന്നെ എന്താണ് ഈ കവനത്തിനു പുതുമ? ഒരു വസ്തുവിനെ കാണുമ്പോൾ കവി ഹൃദയത്തിൽ ഉളവാകുന്ന അനുഭൂതികളുടെ ആവിഷ്കാരമാണത്'.²

'മലയാള സാഹിത്യചരിത്രം കാലഘട്ടങ്ങളിലൂടെ' എന്ന എരുമേലി പരമേശ്വരൻപിള്ളയുടെ ഗ്രന്ഥത്തിൽ 'ഏ.ആർ രചിച്ച മലയവിലാസം ഖണ്ഡകാവ്യപ്രസ്ഥാനത്തിൽപ്പെട്ട ആദ്യകൃതിയായി പരിഗണിക്കാം'³ എന്നു ചേർത്തിരിക്കുന്നു. പത്മന രാമചന്ദ്രൻ നായർ എഡിറ്റു ചെയ്ത സമ്പൂർണ്ണ മലയാള സാഹിത്യചരിത്രത്തിൽ കവിതയുടെ ഭാഗം കൈകാര്യം ചെയ്തിരിക്കുന്നത് ഡോ. ഡി. ബഞ്ചമിനാണ്. 'കാല്പനികതയുടെ ആരംഭകാലത്ത് ചെറുതെങ്കിലും ശ്രദ്ധേയമായ രണ്ടു കൃതികൾ പരാമർശിക്കേണ്ടതുണ്ട്. ഏ.ആർ. രാജരാജവർമ്മയുടെ മലയവിലാസവും വി.സി. ബാലകൃഷ്ണപണിക്കരുടെ വിശ്വരൂപവും'.⁴ ഇങ്ങനെ മലയവിലാസത്തെ കാല്പനികതയുടെ ആരംഭശയിലുണ്ടായ കൃതിയായി പരിഗണിക്കുന്നതു കാണാം. ഖണ്ഡകാവ്യങ്ങളെക്കുറിച്ച് സമഗ്രമായി അന്വേഷിക്കുന്ന പ്രൊഫ. എം.പി.പണിക്കരുടെ മലയാള ഖണ്ഡകാവ്യങ്ങൾ ഒരു പഠനം എന്ന പുസ്തകത്തിൽ, മലയവിലാസത്തിന് സാഹിത്യചരിത്രങ്ങൾ പൊതുവെ നൽകി പോരുന്ന സ്ഥാനത്തെ വിമർശിക്കുന്നുണ്ട്. ഏ.ആർ. വിരചിച്ച 'മലയവിലാസം' ആധുനിക ഖണ്ഡകാവ്യങ്ങൾക്ക് നാനികുറിച്ചു എന്നൊരു ധാരണയുണ്ട്. എന്നാൽ ഇതു മുഴുവൻ ശരിയാണോ എന്നാണ് സംശയം.⁵ ആത്മനിഷ്ഠമായ ആവിഷ്കരണമാണെങ്കിൽ കൂടി ആധുനിക ഖണ്ഡകാവ്യത്തിന്റെ പ്രത്യേകതകളിൽ പലതും ആ കാവ്യത്തിനവകാശപ്പെടാനില്ല. തീവണ്ടിയിൽ സഞ്ചരിക്കുമ്പോൾ അദ്ദേഹം കണ്ട കാഴ്ചകളെയാണ് മലയവിലാസത്തിൽ പകർത്തിയിരിക്കുന്നത്.

'കുതിച്ചുപായും കടുവാക്കിടാങ്ങളും
മദിച്ചു മണ്ടും കളഭപ്രവീരരും



കളിച്ചു വാഴുന്നൊരു കാനനങ്ങളോ-
ലസഹ്യനാം നീ സഹ്യനാണു പോൽ⁶

എന്നു സഹ്യപർവതത്തെ നോക്കി പാടുന്ന കവി പാരമ്പര്യരീതിയിൽനിന്നും വേറിട്ടുനിൽക്കുന്നു. ഇതിവൃത്തത്തിന്റെ പ്രധാനഭാഗത്തിനു കൂടുതൽ പ്രാധാന്യം നൽകി ഭാവതീവ്രതയോടെ അവതരിപ്പിക്കുവാൻ ഏ.ആറിനു സാധിച്ചിട്ടില്ല. അതുകൊണ്ടാണ് ലക്ഷണമൊത്ത ഖണ്ഡകാവ്യം എന്ന സ്ഥാനം മലയവിലാസത്തിന്റെ സ്ഥാനത്ത് കുമാരനാശാന്റെ വീണപൂവിനു നൽകപ്പെടുന്നത്.

അനസ്താസ്യായുടെ രക്തസാക്ഷിത്വം

കാവ്യരചനാപശ്ചാത്തലം: ചാവറയച്ചൻ അനസ്താസ്യായുടെ രക്തസാക്ഷിത്വം രചിക്കുന്നത് 1862-ലാണ്. അതായത് കേരളപാണിനി മലയവിലാസം രചിക്കുന്നതിനു 33 വർഷം മുൻപ്. 150 വർഷങ്ങൾക്കുമുമ്പ് മലയാള ഭാഷയിൽ ഒരു ഖണ്ഡകാവ്യം നിർമ്മിക്കുവാൻ ചാവറയച്ചനെ പ്രേരിപ്പിച്ച ഘടകങ്ങൾ സാമൂഹികവും ആദ്ധ്യാത്മികവുമാണ്. ശുദ്ധമായ ഭാഷ അപ്രാപ്യമായിരുന്ന കാലത്ത്, സംസ്കൃതാതിപ്രസരമില്ലാതെ സാധാരണക്കാർക്ക് സ്വീകാര്യമായ ഒരു സാഹിത്യസംസ്കാരം വളർത്തുക എന്നത് ഈ കാവ്യരചനയുടെ പ്രഥമോദ്ദേശ്യമാണ്. അതിനാലാണ് തികച്ചും ലളിതമായ ഭാഷയിൽ കാവ്യം രചിക്കപ്പെട്ടിരിക്കുന്നത്.

ഇതിവൃത്തസ്വീകരണം: പുരാണകഥകളും ഇതിഹാസങ്ങളും സാഹിത്യകൃതികളുടെ രചനക്ക് ഇതിവൃത്തമായി സ്വീകരിച്ചുപോന്ന ഒരു കാലഘട്ടത്തിലാണ് ഈ കൃതിയുടെ രചന. ഇതിവൃത്തവും, ഭാഷയും സാധാരണക്കാർക്ക് സുഗ്രാഹ്യമായിരിക്കണം എന്ന് ചാവറയച്ചൻ നിർബന്ധമുണ്ടായിരുന്നു. അതിനാലാണ് പാശ്ചാത്യസാഹിത്യ-മതഭാഗത്തുനിന്നും ലളിതമായ ഒരു ഇതിവൃത്തം അദ്ദേഹം സ്വീകരിച്ചത്.

ഇതിവൃത്തത്തെ ഇങ്ങനെ സംഗ്രഹിക്കാം. എ.ഡി. മൂന്നാം നൂറ്റാണ്ടിൽ വലേറിയൻ ചക്രവർത്തി റോമിൽ ഭരണം കൈയേറ്റു ക്രൈസ്

തവരെ നിഹനിക്കുവാനും ജനങ്ങളെയെല്ലാം ജൂപ്പിറ്റർ ദേവന്റെ ആരാധകരാക്കുവാനും പരിശ്രമിച്ചു. ചക്രവർത്തിയുടെ മതമർദ്ദനത്തിനും വിഗ്രഹപൂജയ്ക്കും സഹായം ചെയ്തത് പ്രോബാ എന്ന മന്ത്രിപുംഗുവനായിരുന്നു. അക്കാലഘട്ടത്തിൽ സോഫിയാ എന്ന ഒരു കന്യാസ്ത്രീ ഒരു മഠം നടത്തിയിരുന്നു. സുന്ദരിയായ അനസ്താസ്യ എന്ന പെൺകുട്ടി മഠത്തിൽ അംഗമായി. അവളെ മന്ത്രി കൊട്ടാരത്തിലേക്കു പിടിച്ചുകൊണ്ടുപോയി. ഈശ്വരവിശ്വാസം ഉപേക്ഷിക്കണമെന്നും ജൂപ്പിറ്റർ ദേവനെ ആരാധിക്കണമെന്നും മന്ത്രി ആവശ്യപ്പെട്ടു. അതിനു പ്രതിഫലമായി സമ്പത്തും രാജ്ഞിപദവും നൽകാമെന്നും മന്ത്രി വാഗ്ദാനം ചെയ്തു. പക്ഷേ അനസ്താസ്യ അതെല്ലാം തള്ളി കളഞ്ഞു. ക്രിസ്തുവിനു വേണ്ടി ആത്മാർപ്പണം ചെയ്യുവാൻ അവൾ തയ്യാറായി. മന്ത്രി അവളെ ക്രൂരമായി ഉപദ്രവിച്ചു. തടവറയിൽ നിന്നും ദൈവസ്തുതി പാടിയ അവളുടെ നാവ് മന്ത്രി അറുത്തു കളഞ്ഞു. മരണം മുന്നിൽ കണ്ടുനിന്ന അനസ്താസ്യ സമീപം നിന്നിരുന്ന സിറിലോസ് എന്ന ചെറുപ്പക്കാരനോട് ദാഹജലം ആംഗുലാഷയിൽ ആവശ്യപ്പെട്ടു. അയാൾ ജലം പകർന്നു നൽകി. അനസ്താസ്യയേയും അവൾക്കു ജലം നൽകിയ യുവാവിനേയും പ്രോബാ നിർഭയം വധിച്ചു. തനിക്കുവേണ്ടി വീരചരമം വരിച്ച ആ രണ്ടു പേരുടേയും ആത്മാക്കളെ ദൈവം മോക്ഷത്തിലേക്കു നയിച്ചു.

ഭാഷാപരമായ സവിശേഷതകൾ: കവിതസാധാരണക്കാരനു കൂടി ആസ്വദിക്കുവാൻ പര്യാപ്തമാകണം എന്ന പക്ഷക്കാരനാണ് ചാവറയച്ചൻ. 19-ാം നൂറ്റാണ്ടിൽ ഉടലെടുത്ത കവിതകളെ സംബന്ധിച്ചിടത്തോളം അവ പലതും സാധാരണക്കാരനു അപ്രാപ്യമായിരുന്നു. ലളിതവും എളുപ്പത്തിൽ ഗ്രഹിക്കുവാൻ കഴിയുന്നതുമാണ് ചാവറയച്ചന്റെ ഭാഷ. സംസ്കൃതഭാഷ അദ്ദേഹത്തിനു വശമുണ്ടായിരുന്നു. എന്നാൽ, കൂടുതൽ ദുർഗ്രഹമായ സംസ്കൃതപദങ്ങളെ ഒഴിവാക്കി സാധാരണക്കാരന് ഒറ്റവായനയിൽ മനസ്സിലാക്കുവാൻ പര്യാപ്തമായ ഭാഷയിലാണ് അദ്ദേഹത്തിന്റെ കാവ്യ



രചന. 'അനസ്താസ്യായുടെ രക്തസാക്ഷിത്വം' എന്ന ഖണ്ഡകാവ്യത്തിൽ ഈ സവിശേഷത ഏറെ പ്രകടമാണ്. എടുക്കുന്നത്, സെന്നാത്തുമാർ, നായകജാതന്ത്രിയുഗം തുടങ്ങിയ ചുരുക്കം ചില ദുർഗ്രഹപദങ്ങൾ മാത്രമെ ഈ കൃതിയിൽ ഉപയോഗിച്ചിട്ടുള്ളൂ.

ശൈലി: മനുഷ്യമനസ്സിന്റെ ആദർശശുദ്ധി, അർപ്പണ ബോധം, ഈശ്വരവിശ്വാസം, സഹവർത്തിത്വം ഇവയെല്ലാമാണ് കാവ്യം മുൻപോട്ടു വെക്കുന്ന സന്ദേശധാരകൾ. അത് ഉജ്ജ്വലമായി പ്രതിപാദിക്കുവാനും പരിപാലിക്കുവാനും പര്യാപ്തമായ ഭാഷയും ശൈലിയുമാണ് ചാവറയച്ചൻ ഉപയോഗിച്ചിരിക്കുന്നത്.

കന്നി തന്റെ ദേഹമൊക്കെ ചീന്തിയവർ പൊളിച്ചിട്ടു ചിന്നിവീഴും ചോരകൊണ്ടു കുതിർത്തു ഭൂമി വെള്ളിപോലെ വെളുത്തുള്ള കന്നി തന്റെ പല്ലുകളെ വല്ലിയൊരു ചുറ്റികയാൽ തല്ലി വീഴിച്ചു'

ചക്രവർത്തിയുടെ ആജ്ഞ അനുസരിപ്പിക്കുവാൻ ശ്രമിക്കുന്ന മന്ത്രിയോടുള്ള അനസ്താസ്യായുടെ മറുപടി ഇപ്രകാരമാണ്.

നിന്റെ ദാനം ത്യജിക്കുംപോൽ നിന്റെ ക്രൂര്യം ക്ഷമിപ്പാനായ്

എന്റെ നാഥൻ സർവ്വശക്തി തന്നിടും ദയാൽ'

രചനാരീതി: മന്ത്രി പുംഗുവൻ മുന്നിൽ നിൽക്കേ, പ്രശാന്തമായി മകൾക്ക് അന്ത്യോപദേശം നൽകുന്ന സോഫിയായെ അവതരിപ്പിക്കുന്നത് ശ്രദ്ധേയമായ ഒരു വാങ്മയചിത്രമാണ്. എത്രയും വേഗം രാജാവിന്റെ പക്കലേക്ക് നീ ചെല്ലുക എന്നു സോഫിയാ പറയുമ്പോൾ അത് ചക്രവർത്തിയെക്കുറിച്ചാകുമെന്ന് മന്ത്രി കരുതുന്നു. എന്നാൽ മണവാളനായ രാജാവായി സോഫിയ പറയുന്നത് ക്രിസ്തുവിനെയാണ്. ചക്രവർത്തിയുടെ ആജ്ഞപ്രകാരം അനസ്താസ്യായോടു പോകുവാൻ പറയുന്ന ഈ രംഗം വളരെ നാടകീയമായിട്ടാണ് കവി അവതരിപ്പിച്ചിരിക്കുന്നത്.

'സ്നേഹമേറും മകളേ നിൻ ഭാഗ്യമേറും മണവാളൻ

ദാഹമോടെ വിളിക്കുന്നു വേഗമായ്പ്പോക

പൂർവ്വകാലേ നിൻകരഞ്ഞ നീട്ടി ദിവ്യദാഹമോടെ

മാറിടത്തിലണച്ചൊരു രാജനെ ഓർക്ക

നിൻമണഞ്ഞ മുടിപ്പാനായ് വെൺമയോടെ ധരിത്രിയിൽ

ഭംഗിയേറും കൊടി ഏന്തി വൻഗിരിയേറി

മെച്ചമേറും കിരീടത്തെ വച്ചുചൂടി ശിരസിനെ അർച്ചനയായണച്ചു തൻ ജീവനും കൂടെ'

ഈശ്വരവിശ്വാസം ഉപേക്ഷിച്ച് ചക്രവർത്തിയുടെ ഇംഗിതം നിറവേറ്റിയാൽ രാജ്യത്തെ സമ്പത്തു മുഴുവൻ സ്വന്തമാക്കാമെന്നുള്ള ചടുലവാക്കുകൾ കൊണ്ട് മന്ത്രി അവളെ പ്രലോഭിപ്പിക്കുന്നു. ഈയവസരത്തിൽ വളരെ തന്മയത്വത്തോടെയാണ് അനസ്താസ്യാ മറുപടി പറയുന്നത്.

'ലോകഭാഗ്യം സമർപ്പിക്കാൻ ദാഹമില്ല മമ ചിത്തേ

കോലഹലമായ ശിക്ഷാ ഭീതിയുമില്ല'

വിവിധ മുഹൂർത്തങ്ങളിലെ വൈകാരിക ഭാവങ്ങളെ അവതരിപ്പിക്കുവാൻ ചാവറയച്ചൻ സവിശേഷമായ സിദ്ധിയുണ്ടായിരുന്നു. മന്ത്രിയുടെ ക്രൂരഭാവം അവതരിപ്പിക്കുന്നത് ശ്രദ്ധിക്കുക.

'ക്രൂരഭാവം നടിച്ചവൻ ചുണ്ടു രണ്ടും ചുമപ്പിച്ചു ക്രോധവീര്യാൽ മുഖം സൂര്യമേഘമായ് മുടി' "

ചുരുങ്ങിയ വാക്കുകളിലാണ് കവി ഇത് അവതരിപ്പിച്ചിരിക്കുന്നത്. പക്ഷേ, മന്ത്രിയുടെ രൗദ്രഭാവം വായനക്കാരനു പകർന്നു നൽകുവാൻ കവിക്ക് സാധിച്ചിട്ടുണ്ട്. ആസ്വാദക മനസ്സുകളിൽ വേദന ഉളവാക്കും വിധത്തിലാണ് അനസ്താസ്യ നേരിടേണ്ടി വന്ന ദുരന്തങ്ങളേയും പീഡനങ്ങളേയും അവതരിപ്പിച്ചിരിക്കുന്നത്.

'കന്നി തന്റെ ദേഹമൊക്കെ ചീന്തിയവർ പൊളിച്ചിട്ടു

ചിന്നിവീഴും ചോരകൊണ്ടു കുതിർന്നു ഭൂമി'

'മാതൃതന്റെ മാരിൽനിന്നും പാൽകുടിച്ച തോർത്തിടാതെ



മാനഹീനാൽ അറുപ്പിച്ചു മുലകളെയും¹²

വേദനയിലും ഈശ്വരന്റെ അപദാനങ്ങൾ വാഴ്ത്തി അനസ്താസ്യയുടെ നാവ് അറുത്തു മാറ്റി;

‘കഷ്ടമയ്യോ ശിഷ്ട നാവു പിഴുതു വേരാൽ ശുദ്ധവായിൽ നിന്നുടനേ കൊച്ചൊരാറെന്നതുപോലെ

രക്തധാര പുറപ്പെട്ടു, നനച്ചു സർവ്വം’¹³

വൃത്തം: നതോന്നതവൃത്തത്തിലാണ് ഖണ്ഡകാവ്യം രചിച്ചിട്ടുള്ളത്. കൂട്ടനാട്ടിൽ ജനിച്ചുവളർന്ന ചാവറയച്ചൻ വഞ്ചിപ്പാട്ടിന്റെ താളം പ്രിയങ്കരമാണ്. സംസ്കൃത വൃത്തങ്ങൾ സുപരിചിതമായിരുന്നിട്ടും ദ്രാവിഡവൃത്തമാണ് തികഞ്ഞ ഒരു മാതൃഭാഷാഭിമാനിയായ അദ്ദേഹം സ്വീകരിച്ചിരിക്കുന്നത്. കാവ്യത്തിന്റെ വൃത്തഭംഗി ശ്രദ്ധിക്കുക. നതോന്നതയുടെ ലക്ഷണം താഴെ ചേർക്കുന്നു.

‘ഗണം ദൃക്ഷരമെട്ടെണ്ണമൊന്നാം പാദത്തിൽ, മറ്റതിൽ

ഗണമാറ, നില്ക്കേണം

രണ്ടുമെട്ടാമതക്ഷരേ ഗുരുതന്നെയെഴുത്തെല്ലാ മിശ്ശിലിൻ പേർ നതോന്നത’

‘പാപി/കൾക്കു/രക്ഷ/ചെയ്വാൻ/

നിന്നു/നീ പു/ജിച്ചു/പോലേ/ (എട്ടു ഗണം, സർവ്വ ഗുരു)

പാപി/യാമെൻ/ജീവ/പുജ/

പൂർത്തി/യാൽ ഏൽ/ക്ക/’ (ആറു ഗണം, സർവ്വ ഗുരു)

‘അനസ്താസ്യയുടെ രക്തസാക്ഷിത്വ’ത്തിന്റെ രചനാസവിശേഷതകളെ ഇത്തരത്തിൽ പരിശോധിക്കുമ്പോൾ ഈ ഖണ്ഡകാവ്യം ഉത്തമമായ ഒരു കാവ്യമാണെന്ന് വ്യക്തമാകുന്നു. ഖണ്ഡകാവ്യങ്ങളുടെ നിർവചനങ്ങളും ലക്ഷണങ്ങളും ഈ കൃതിയിൽ മനോഹരമായാണ് സമ്മേളിച്ചിരിക്കുന്നത്. ആറു സർഗ്ഗങ്ങളിൽ കുറവുള്ള കാവ്യങ്ങളെ ഖണ്ഡകാവ്യങ്ങളെന്ന് സംസ്കൃതത്തിൽ നിർവചിക്കാറുണ്ട്. ചാവറയച്ചന്റെ ഖണ്ഡകാവ്യം ഇതുമായി പൊരുത്തപ്പെട്ടു പോകുന്നു. 91

ഈരടികൾ മാത്രമുള്ള ഒരു ലഘുകാവ്യമാണിത്. സോഫിയായുടെ കന്യകാലയം, രാജകൽപന, യാത്രാ മംഗളം നേരുന്നു, അനസ്താസ്യയുടെ മറുപടി, പീഡനങ്ങൾ തുടങ്ങുന്നു, കന്യകയുടെ ധീരത എന്നിങ്ങനെ ആറു ഭാഗങ്ങളായി ചാവറയച്ചൻ ഈ ഖണ്ഡകാവ്യത്തെ വിഭജിച്ചിരിക്കുന്നു.

ആധുനിക ഖണ്ഡകാവ്യത്തിൽ ഇതിവൃത്തം പുരാണകഥയോ കൽപ്പിതമോ ആകാം. അതുമല്ലെങ്കിൽ അവയുടെ മിശ്രമാകാം. ഉദാഹരണമായി വള്ളത്തോളിന്റെ ‘അച്ഛനും മകളും’ എന്ന ഖണ്ഡകാവ്യത്തിൽ ‘മിശ്ര’രൂപം കാണാം. ശകുന്തളയുടെ കഥ പുരാണ പ്രസിദ്ധമാണ്. എന്നാൽ വിശ്വാമിത്രൻ ശകുന്തളയെ കാണുവാൻ ആശ്രമത്തിലെത്തുന്നത് കവിഭാവനയും. ചാവറയച്ചന്റെ ഇതിവൃത്തം പുരാണകഥയാണ്. ഗ്രീക്ക്, ലത്തീൻ തുടങ്ങിയ ഭാഷകളിൽ പ്രചരിച്ചിരുന്ന കഥകൾ വിഭിന്നമാണ്. ഈ കഥകളുടെ ചരിത്രപരമായ പ്രാധാന്യം തെളിയിക്കുവാനോ നിഷേധിക്കുവാനോ മതിയായ രേഖകളില്ല. ഒരു പുരാണകഥ എന്ന മട്ടിൽ പ്രചരിച്ചിരുന്ന കഥ വിദേശഭാഷാപണ്ഡിതൻ കൂടിയിരുന്ന കവി തിരിച്ചറിഞ്ഞ് കവിധർമ്മം ചേർത്താണ് കാവ്യം ചിട്ടപ്പെടുത്തിയിരിക്കുന്നത്.

ഇതിവൃത്തത്തിലെ സുപ്രധാനഭാഗത്തിന് മിഴിവു നൽകി അപ്രധാന ഭാഗങ്ങൾ ചുരുക്കി ആവിഷ്കരിക്കുന്നവയാണ് ആധുനിക ഖണ്ഡകാവ്യങ്ങൾ. ‘സമഗ്രമായ ജീവിതത്തിന്റെ എല്ലാ ഭാഗങ്ങളിലുമായി ചിതറുന്നതിനു പകരം അതിന്റെ ഒരു ഭാഗത്ത് കവിപ്രതിഭ ഉറച്ചു നിൽക്കുമ്പോൾ ഒരു ഖണ്ഡകാവ്യം രൂപമെടുക്കുന്നു.’¹⁴ കാവ്യത്തിൽ അനസ്താസ്യ എന്ന തരുണീമണിയുടെ ജീവിതകഥ മുഴുവനും അവതരിപ്പിക്കുന്നുണ്ടെങ്കിലും അവളുടെ ജീവിതത്തിലെ സുപ്രധാന ഭാഗങ്ങൾക്ക് മിഴിവ് നൽകിക്കൊണ്ടാണ് കാവ്യരചന. ചക്രവർത്തിയുടെ ആജ്ഞപാലിക്കാതെ നിലകൊള്ളുന്ന അനസ്താസ്യയ്ക്ക് നേരിടേണ്ടിവരുന്ന ക്രൂരമർദ്ദനങ്ങളും അവളുടെ മരണവുമാണ് സുപ്രധാനമായി അവതരിപ്പിക്കുന്നത്. എന്നാൽ അവളുടെ ജീവിതകഥ - സോ



ഫിയയുടെ ആശ്രമത്തിൽ പ്രവേശിക്കുന്ന തൊക്കെ കവി സൂചിപ്പിച്ചു പോരുന്നുമുണ്ട്.

ഉപസംഹാരം

ഭാഷാപരമായും ഇതിവൃത്തപരമായും ലക്ഷണാപരമായും പരിശോധിക്കുമ്പോൾ, രൂപത്തിലും ഭാവത്തിലും ഒരു ഉത്തമ ഖണ്ഡകാവ്യമാണ് അനന്താസ്തായുടെ രക്തസാക്ഷിത്വം എന്നത് വ്യക്തമാണ്. എങ്കിൽപ്പിന്നെ, എന്തുകൊണ്ട് സാഹിത്യചരിത്രങ്ങളുടെ നവീകരിച്ച പതിപ്പുകളിൽ ഈ തിരുത്തൽ രേഖപ്പെടുത്തുന്നില്ല എന്നത് പ്രായോഗികചോദ്യമായി ബാക്കി നിൽക്കുന്നു. മറ്റു പലരെയും പോലെ സാഹിത്യചരിത്രത്തിൽനിന്നും ചാവറയച്ചൻ ഒഴിവാക്കപ്പെട്ടു എന്നത്, പലവിധകാരണങ്ങളാൽ സംഭവിച്ചുപോയ ദുർഭാഗ്യകരമായ ഒരവസ്ഥ മാത്രമാണ്. സാഹിത്യചരിത്രങ്ങളിലെ ഇടമോ, കാവ്യപാരമ്പര്യത്തിലെ സ്ഥാനമോ, കാവ്യലോകത്തേക്കുള്ള പ്രവേശനമോ അദ്ദേഹത്തിന്റെ വിദൂരലക്ഷ്യങ്ങളിൽപ്പോലും ഉണ്ടാകാതിരുന്നതിനാൽ അതിനായുള്ള ശ്രമവും ഉണ്ടായില്ല; മറ്റാരും അക്കാലത്ത് അതിനായി മുന്നിട്ടിറങ്ങിയതുമില്ല. 1987 ൽ അന്നത്തെ രാഷ്ട്രപതി ആർ. വെങ്കട്ടരാമൻ ചാവറ തപാൽ സ്റ്റാമ്പ് പുറത്തിറങ്ങിയതും, 2006 ൽ ചാവറയച്ചന്റെ സാഹിത്യസംഭാവനകളെ ആദരിച്ച് അദ്ദേഹത്തിന്റെ ഛായാചിത്രം കേരള സാഹിത്യ അക്കാദമി ഹാളിൽ അനാച്ഛാദനം ചെയ്തതും 2014-ൽ കേരളസാഹിത്യ അക്കാദമി, ഇടയനാടകങ്ങൾ എന്ന കൃതി പ്രസിദ്ധീകരിച്ചതും, 2015 ൽ അക്കാദമികതലത്തിൽ നവോത്ഥാന നായകനിരയിൽ ചാവറയച്ചനെ ഉൾപ്പെടുത്തിയതുമൊക്കെ ചരിത്രത്തോട് നീതി പുലർത്തുന്നതിന്റെ ശുഭോദർക്കകരമായ സൂചനകളായി കരുതാം.

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പക്ഷിയുടെ മണം സൃഷ്ടിക്കുന്ന സ്ത്രീ

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അവർണനീയമായ ശക്തി സ്വരൂപത്തിന്റെ മുർത്തിഭാവമാണ് സ്ത്രീ. എല്ലാ പ്രകൃതി ശക്തികൾക്കും സ്ത്രീരൂപം കല്പിച്ചു ആരാധിക്കുന്നവരാണ് ഭാരതീയർ. 'സ്ത്രീ' മഹത്തായ ശക്തിയുള്ള മഹിളയായും എല്ലാവർക്കും ആശ്രയവും അഭയവും നല്കുന്ന വനിതയായും ഈ പ്രപഞ്ചം മുഴുവൻ നിറഞ്ഞു നിൽക്കുന്നു.

ലോകപ്രശസ്ത കവയത്രിയും മലയാളത്തിന്റെ പ്രമുഖ കഥാകാരിയുമാണ് മാധവികുട്ടി. സ്ത്രീയുടെ ശക്തിയെ തിരിച്ചറിയാനും അംഗീകരിക്കാനും തയ്യാറായ ഒരു സമൂഹത്തിനു മുൻപിൽ ഈ കഥാകാരി അവതരിപ്പിക്കുന്ന സ്ത്രീ കഥാപാത്രങ്ങൾ വളരെയധികം സവിശേഷത അർഹിക്കുന്നതാണ്. മാധവികുട്ടിയുടെ കഥാപാത്രങ്ങൾ പീഡനങ്ങൾ അർഹിക്കുന്നവരും ഉള്ളിന്റെയുള്ളിൽ അതിനെതിരെ ശക്തമായി പ്രതികരിക്കുന്നവരുമുണ്ട്. 'പക്ഷിയുടെ മണം' എന്ന കഥയിലൂടെ ലൈംഗികതയുടെയും മരണത്തിൻറെയും മുന്നിൽ ഒറ്റപ്പെട്ടപ്പോയ സ്ത്രീയുടെ അവസ്ഥയാണ് കഥാകാരി അവതരിപ്പിക്കുന്നത്. മൃത്യുവും, രതിയും അടിച്ചേല്പിക്കുന്ന പീഡനങ്ങളിൽ തളർന്നു വീഴുന്ന നായികയിലൂടെ ആധുനിക ഇന്ത്യൻ സ്ത്രീത്വത്തിന്റെ ദൈന്യവും, നിസഹായതയുമാണ് പ്രകടിപ്പിക്കുന്നത്.

കൊൽക്കത്ത നഗരത്തിലെ ഒരു വ്യവസാ

യ സ്ഥാപനത്തിൽ ജോലി തേടിയെത്തിയ ഒരു സ്ത്രീക്കുണ്ടായ അനുഭവമാണ് ഈ കഥ. ടെക്സ്റ്റൈൽ ഇൻഡസ്ട്രിസിന്റെ ഓഫീസ് അന്വേഷിച്ച് നടന്ന നായിക അവസാനം dying (മരണം ഏർപ്പാടാക്കി കൊടുക്കുന്ന സ്ഥലം) എന്ന ബോർഡ് തൂക്കിയ ഒരു വലിയ മുറിയിൽ എത്തിച്ചേരുന്നു. അവിടെ അവൾ കണ്ടത് കുതിരയുടെ മുഖം പോലെ, നീണ്ട മുഖമുള്ള കനത്ത രോമങ്ങൾ വളർന്നു നില്ക്കുന്ന ശക്തമായ കൈകളുള്ള, മരിക്കുവാൻ ഏർപ്പാടാക്കിക്കൊടുക്കുന്ന ഒരു മനുഷ്യനെയാണ്. അവിടെ നിന്നും രക്ഷപ്പെടാനാവാതെ അവൾ വീർപ്പുമുട്ടുന്നു.; അസ്വസ്ഥയാകുന്നു; ഒടുവിൽ അടഞ്ഞ വാതിലിനു പിന്നിൽ തളർന്നു വീഴുന്നു.

'അവൾ വാതില്ക്കൽ മുട്ടി തുടങ്ങി; അയ്യോ എന്നെ ചതിക്കുകയാണോ?

അവൾ ഉറക്കെവിളിച്ചു ചോദിച്ചു; ഞാനെന്തു കുറ്റമാണ് ചെയ്തിട്ടുള്ളത്? അവളുടെ തേങ്ങൽ കുറച്ചു നിമിഷങ്ങൾക്കു ശേഷം അവസാനിച്ചു. അവൾ ക്ഷീണിച്ചു തളർന്ന്, വാതിലിൻറെ അടുത്ത് വെറും നിലത്ത് വീണ്'

സ്ത്രീ പാരതന്ത്ര്യത്തെ സൂചിപ്പിക്കുകയാണ് നായികയുടെ മുന്നിൽ അടഞ്ഞ വാതിൽ. വിലക്കുകൾക്കും വിലങ്ങുകൾക്കും മുന്നിൽ നിസഹായയാകാൻ വിധിക്കപ്പെടുകയാണ് ഇവിടെ. സ്ത്രീത്വം നിരപരാധിയും നിഷ്കള

ജമെങ്കിലും സ്ത്രീ എന്നും പുരുഷനിർമ്മിത സാമൂഹ്യ വ്യവസ്ഥയിൽ വഞ്ചനയ്ക്കും പീഡനങ്ങൾക്കും വിധേയയാകുന്നു. 'പക്ഷിയുടെ മണം' എന്ന കഥയിലെ സ്ത്രീ കഥാപാത്രത്തിലൂടെ പുരുഷമേധാവിത്ത സമൂഹത്തിൽ സ്ത്രീയുടെ ദാരുണവും, നിന്ദ്യവുമായ അവസ്ഥയാണ് മാധവിക്കുട്ടി വ്യക്തമാക്കുന്നത്. വാതിലിനു സമീപം വെറും നിലത്തു വീഴുന്ന നായിക നിസഹായവും നിരാലംബവുമായ സ്ത്രീത്വത്തിന്റെ പ്രതീകമാണ്. കീഴടങ്ങലും വിധേയത്വവും മാത്രമേ അവൾക്ക് കരണീയമായുള്ളൂ. കൈവിരലുകളിൽ നീണ്ട രോമങ്ങളുള്ള കുതിരയുടെ മുഖമുള്ള ചെറുപ്പക്കാരൻ മരണത്തിന്റെ പ്രതീകമാണ്.

'അതെ സ്നേഹത്തിന്റെ പരിപൂർണ്ണത കാണിച്ചു തരുവാൻ എനിക്കു മാത്രമേ കഴിയുകയുള്ളൂ. എനിക്കു നീ ഓരോന്നോരോന്നായി കാഴ്ച വയ്ക്കും "ചുവന്ന ചുണ്ടുകൾ, ചാഞ്ചാടുന്ന കണ്ണുകൾ, അവയവ ഭംഗിയുള്ള ദേഹം" എല്ലാം ഓരോ രോമകുപങ്ങൾ കൂടി നീ കാഴ്ചവയ്ക്കും, ഒന്നും നിന്റെ തല്ലാത്തവു. പക്ഷെ എല്ലാമായിത്തീരും'²

മഞ്ഞ നിറവും പക്ഷിയുടെ മണവും മരണത്തിന്റെ പ്രതീകമാണ്. മരണത്തിന്റെ മുന്നിൽ ചെന്നുപെടുമ്പോൾ പുരുഷനിലുള്ള വിശ്വാസം അവൾ ഉപേക്ഷിക്കുന്നില്ല.

മുറിയുടെ വാതിൽ തുറക്കുന്നതിൽ പരാജയപ്പെടുന്ന അവൾ മുന്നിലിരിക്കുന്ന

ചെറുപ്പക്കാരനിൽ പ്രതീക്ഷയർപ്പിക്കുന്നു.

'ദയവു ചെയ്ത് ഇതൊന്നു തുറന്നു തരു' അവൾ പറഞ്ഞു; 'എനിക്ക് വീട്ടിലേക്ക് പോവണം എന്റെ കുട്ടികൾ കാത്തിരിക്കുന്നുണ്ടാവും, അയാൾ തന്റെ വാക്കുകൾ കേട്ട്, ക്രൂരചിന്തകൾ ഉപേക്ഷിച്ച് തന്നെ സഹായിക്കുവാൻ വരുമെന്ന് അവൾ ആശിച്ചു.'³

'എന്നാൽ അയാൾ വീണ്ടും വീണ്ടും വിസ്മയിപ്പിച്ചു. വീണ്ടും വീണ്ടും അവളെ നോക്കി ചിരിച്ചു'⁴ പുരുഷരൂപത്തിൽ മരണത്തെ ചിത്രീകരിക്കുന്ന കഥാകാരി പുരുഷനിർമ്മിത സദാചാരമൂല്യങ്ങൾ കൈതിരെയുള്ള വിധിയെഴുതുകയാണ് ചെയ്യുന്നത് .

കഥാകാരി സ്ത്രീ മനസിന്റെ സങ്കീർണ്ണതകളെ സൂക്ഷ്മമായി ചിത്രീകരിക്കുകയാണ് ഈ കഥയിലൂടെ. പുരുഷന്റെ പരിലാളനയും, സ്നേഹവും, ആശ്രയവും ആഗ്രഹിക്കുന്ന സ്ത്രീ കഥാപാത്രങ്ങൾ മാധവിക്കുട്ടിയുടെ കഥകളിൽ നിറഞ്ഞു നില്ക്കുന്നു. മരണത്തിന്റെ മുന്നിൽപ്പെടുമ്പോഴും പ്രതിഷേധത്തിന്റെ ശബ്ദങ്ങളൊന്നും കേൾപ്പിക്കാതെ കുട്ടികളെയും കുടുംബത്തെയും കുറിച്ച് വിലപിക്കുന്ന നായികയെയാണ് ഈ കഥയിൽ കാണാൻ സാധിക്കുന്നത്. 'പക്ഷിയുടെ മണം' എന്ന കഥയിലെ നായിക കഥാപാത്രം ഫെമിനിസ്റ്റുവാദികളുടെ ചിന്താധാരയുമായി ഒരിക്കലും പൊരുത്തപ്പെടുന്നില്ല. അവബോധ മനസിലൂടെ മരണത്തെ കാണുകയും, ബോധമനസിൽ അവൾ പ്രകടിപ്പിക്കുന്ന മാതൃത്വവും മാധവിക്കുട്ടിയുടെ സ്ത്രീ സങ്കല്പത്തെയാണ് സൂചിപ്പിക്കുന്നത്.

സഹായഗ്രന്ഥങ്ങൾ

അശോകൻ കെ നോവൽ മലയാളത്തിൽ 1982 നാഷണൽ ബുക്ക് സ്റ്റാൾ

അയ്യപ്പപ്പണിക്കർ അയ്യപ്പപ്പണിക്കരുടെ ലേഖനങ്ങൾ

ഇന്ദിര സ്ത്രീകൾ സാമൂഹ്യമായും ലൈംഗികമായും അടിമകളാണോ? പി. ബി.നറ : 1037 പട്ടം തിരുവനന്തപുരം

മാധവിക്കുട്ടിയുടെ കഥ (പക്ഷിയുടെ മണം)

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‘अक्षयवट’: एक विश्लेषणात्मक अध्ययन

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समकालीन हिन्दी साहित्य में आज की ज़िन्दगी को संपूर्ण रूप में देख सकते हैं। आधुनिक काल की लोकप्रिय और सर्वाधिक शक्तिशाली विधा हैं उपन्यास। समय के अनुसार उपन्यास का स्वरूप बदलता रहा है। प्रारंभिक उपन्यास का लक्ष्य शुद्ध मनोरंजन था। लेकिन आधुनिक उपन्यास में मानव जीवन के विराट संघर्ष और स्वप्न को रूपायित करने की क्षमता पायी जाती है।

नासिरा शर्मा

नासिरा शर्मा हिन्दी गद्य साहित्य की विभिन्न शाखाओं पर हस्ताक्षर डालनेवाली प्रतिभाधनी लेखिका हैं। निम्न मध्य वर्ग झेलनेवाले दलित समस्या, भूख की तीव्रता, बेरोज़गारी, जल समस्या आदि सब समस्याओं को अपने उपन्यासों में चित्रित करने का सफल प्रयास नासिरा जी ने किया है। उन्होंने न केवल समस्याओं का वर्णन किया है, अपितु उनका समाधान भी प्रस्तुत किया है। सामाजिक, राजनैतिक, धार्मिक क्षेत्रों पर उनकी लेखनी कार्यरत है। उनके व्यक्तित्व और कृतित्व में आधुनिकता और परंपरा का सामंजस्य मौजूद है।

अक्षयवट

सन् २००३ में इलाहाबाद की पृष्ठभूमि पर लिखा गया उपन्यास है अक्षयवट। नासिरा शर्मा ने इस उपन्यास में इलाहाबाद शहर की सांस्कृतिक घरोहर, पुलिस द्वारा होनेवाले अत्याचार, भ्रष्टाचार, बेरोज़गारी, युवा आक्रोश आदि मुद्दों को विशेष रूप से उजागर किया है। इलाहाबाद में जन्मी नासिरा जी ने उस शहर के आज के पतन को देखकर बहुत दुखी हैं। “अक्षयवट का जो मामला था वो कई सालों से बह रहा था। बारह सालों में वो नाँविल.... इन बारह सालों में क्या गाँव, क्या अमेरिका, क्या एशिया... सब जगह की जवान नस्लों को बड़ा परेशान देखा मैंने, तो ‘अक्षयवट’ तो था मेरे जेहन में”^१।

अक्षयवट उपन्यास का मुख्य पात्र है ज़हीर। जब ज़हीर चार माह का था तब इलाहाबाद के सांप्रदायिक दंगों में उनके पिता की मृत्यु हुई। दादी और माँ ने उनका पालन पोषण किया। ज़हीर पढाई में निपुण और होशियार लडका था। जब एक दिन वह कॉलेज में आता है तब कॉलेज की एक घटना से उसकी ज़िन्दगी बदल आती है। विश्वविद्यालय की परीक्षा में नकल करने के झूठे आरोप में उसे दो वर्ष के लिए निष्कासित कर दिया जाता है। उस कॉलेज के अध्यापक लोग उसकी सच्चाई और ईमानदारी से परिचित हैं। लेकिन नकल करनेवाला छात्र अन्य प्रोफेसर का संबन्धी है। इसलिए उसे बचाने के लिए ज़हीर को बलिवेदी पर चढ़ा दिया है। इस घटना से निराश होकर ज़हीर पढाई छोड़कर छोटे-मोटे काम में लग जाता है। अंत में एक दूकान खोलकर वह अपनी दादी और माँ की देखभाल करता है।

इलाहाबाद शहर के समाज में फैली विभिन्न विकृतियों और प्रशासन की भ्रष्टता को ज़हीर और उसके मित्र गण-रमेश, वसंत, मुरली, जगन्नाथ और सलमान दूर करने का प्रयास करते हैं। फलतः इनको अनेक समस्याओं और कष्टताओं को सामना करना पड़ता है। ज़हीर अपनी अधूरी पढाई को पूरा करके अध्यापक बन जाता है। इसके अलावा लोक कल्याण के लिए काम भी करते हैं।

अक्षयवट में चित्रित समस्याएँ

यौन शोषण

वर्तमान समय में स्त्री का अनेक रूपों में यौन शोषण होता है। महानगरों में युवतियों को अपने जाल में फँसाकर उन्हें शोषण करनेवालों की संख्या बढ़ते जा रहे हैं। युवतियों की अश्लील फोटो लेकर उन्हें ब्लैकमेल किया जाता है। प्रस्तुत उपन्यास में इस घृणित कार्य का पर्दाफाश हुआ है। एक पुलिस वाला इस संबन्ध में कहते हैं, ‘इन बातों ने तो इलाहाबाद जैसे शहर की लड़कियों को लगभग बर्बाद कर डाला है। अभी साल पहले हमने दो ब्यूटी पार्लर्स पर

छापे मारकर लड़कियों को बर्बाद की थी। फैशन शो के नाम पर लड़कियों को पकड़कर जबरदस्ती ब्लू फिल्मों बनायी जाती है।¹²

भ्रष्टाचार

भ्रष्टाचार ऐसी समस्या है जिसके कारण हमारे देश की प्रगति अवरूद्ध होती है। अब जीवन के हर एक क्षेत्र में भ्रष्टाचार व्याप्त है। सी. पी. श्रीवास्तव जी के अनुसार “भ्रष्टाचार का प्रवाह उद्दाम वेग के साथ बह रहा है और इसने लोगों को स्वच्छ प्रशासन से वंचित तथा विकास के मार्ग को अवरूद्ध कर दिया है। ...भ्रष्टाचार ने वास्तव में एक महामारी का रूप ले लिया है और अधिकांश नौकरशाही, पुलिस, न्यायपालिका और राजनीतिक सत्ता सब इसकी लपेट में हैं।”³

अक्षयवट उपन्यास में इस समस्या की सटीक अभिव्यक्ति हुई है। उपन्यास का एक पात्र है रामस्वरूप सिंह। वह पुलिस विभाग में होनेवाले भ्रष्टाचार के बारे में ऐसे कहते हैं, “पुलिस की जात का तो तुम जानते हो, दरोगा हरपाल सिंह हरामी है। खाये-पिये के आगे ओका कुछ और सूझत नाही है। टाकुर का लौण्डा वोटल-बोटल देय-दिलाय के और मुट्ठी गर्म कर सच्चाई दवाय दीस।”⁴ पुलिस का कर्तव्य समाज की रक्षा करना है। यही पुलिस जब अपना कर्तव्य भूल गया तो जनता का जीवन दूभर हो जाता है। अक्षयवट उपन्यास का इन्स्पेक्टर त्रिपाठी अच्छे-अच्छे शरीफ लोगों को वह घण्टे भर में देश का सबसे नामी गुण्डा करार दे सकता था। यही नहीं, उस आदमी को स्वयं यह अहसास दिला देता कि वह एक मुजरिम है। उसकी मामूली हरकत कानून की नज़र में आती है और धारा जल, जुर्माना और घर की कुर्की तक पहुँच सकती है। वह कहता भी था, कि जब नाव पर बैठकर हमारी विरासत वाले इस शहर में जिसको चाहते थे, पकड़ बुलाते थे। हम तो थाने में बैठे हैं। अच्छे-अच्छों की पुलपुली ढीली कर देते हैं।”⁵

पुलिस व्यवस्था का चित्रण करते हुए नासिरा जी लिखती हैं कि, “इलाहाबाद शहर में ही नहीं बल्की पूरे हिन्दुस्तान में पुलिस दो फाक हो चुकी है। एक वह जो अपनी सत्ता का गलत इस्तेमाल करती है और भोले, सीधे, शरीफ नागरिकों की जीना हराम कर देती है। दूसरी वह जो कानून की रखवाली करती है, जनता की सेवा में अपनी जान गँवा देने में गर्व का अनुभव करती है।”⁶

बेरोजगारी

नासिरा शर्मा के उपन्यासों में आर्थिक बोध के विविध आयाम परिलक्षित हैं। वर्तमान समय में बेरोजगारी युवाओं के समक्ष बड़ी समस्या बनकर खड़ी है। कई युवक ऐसे हैं जो अपने देश में रोज़गार न मिलने के कारण विदेश जाकर नौकरी करते हैं। जब वे विदेश से लौटते हैं तब भी यहाँ कुछ करने योग्य नहीं रहते। ऐसा त्रासद जीवन व्यतीत करनेवाला एक युवक का चित्रण अक्षयवट

उपन्यास में नासिरा ने जी बखूबी किया है। वह ‘पराए देश नहीं जाना चाहता, मगर मजबूर है। जब आया था तब भरी थी। ...मगर पिछले तीन महीनों में घर और घरवालों की ज़रूरत पूरी करते-करते पहले घड़ियें एक-एक कर बिकी, ट्रैजिस्टर, थरमस कंवल और अब बुलेट भी बिक गई। खाली हाथ विदेश गया था भरे हाथ देश लौटा था। अब सब कुछ खर्च कर फिर वही खाली हाथ वापस जा रहा है।”⁷ प्रस्तुत उपन्यास का और एक पात्र है रमेश। वह सुशिक्षित है किन्तु बेरोजगार। उसकी माँ को यही चिंता है कि कब उसे नौकरी मिलेगी? रमेश की नौकरी के लिए माँ ज्योतिषी, टोने-टोटेक, तावीज़ आदी बातों अन्जाम देती है।

बालमजदूरी

जब किसी कारणवश बच्चा परिश्रम कर धनोपार्जन करता है, उसे बाल मजदूरी कहते हैं। सरकार ने बालमजदूरी रोकने के लिए कई कड़े कानून बनाए हैं। कारगर सिद्ध नहीं हुए हैं। आज भी होटलों, दूकानों, मिलों में बालक बालिकाएँ मजदूरी करते हैं।

अक्षयवट उपन्यास का जगन्नाद भी ऐसा एक पात्र है जो पिता की मृत्यु के बाद घर की ज़म्मेदारी अपने कंधे पर उठाते हैं। वह खुद कहते हैं, “नौ लोगों का भोजन जुटाने के लिए मैं उसी स्कूल के सामने छोले, मूँगफली भी बेचता था, जहाँ पढ़ता था फिर होटल में काम भी किया। मार खायी, गाली सुनी, रात को रोया भी मगर हार हार नहीं मानी। मेरी इस दौड़ में कुछ वर्षों बाद बहन भाई भी शामिल हो गये।”⁸

उपसंहार

नासिरा शर्मा जी ने सामाजिक बोध से युक्त उत्तरशती की प्रभावी लेखिका हैं। सामाजिक, आर्थिक एवं राजनीतिक बोध से संबंधित तमाम पहलुओं को नासिरा जी ने निर्भयता से अभिव्यक्ति की है। वे अपने साहित्य के माध्यम से समाज की अनेक ज्वलंत समस्याओं को उजागर करने में सक्षम दीखती हैं।

संदर्भ ग्रन्थ सूची

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2. वही, पृ 253
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डॉ.शंकर शेष के नाटकों मेंसमकालीनपारिवारिकयथार्थ

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प्राचीन काल से ही समाज में सामूहिक परिवार का अस्तित्व रहा है। भारतीय संस्कृति में सदैव परिवार को महत्वपूर्ण स्थान मिला है। व्यक्ति के निर्माण का प्राथमिक दायित्व परिवार पर होता है इसलिए दूसरे किसी समूह की अपेक्षा परिवार का प्रभाव सामाजिक जीवन पर अधिक पड़ता है। व्यक्ति के निर्माण का प्राथमिक दायित्व परिवार पर होता है। परिवार सगे संबंधियों से पूरित एक ऐसी संस्था है जिसके रीति-रिवाज, सभ्यता एवं संस्कृति, आचरण एवं व्यवहार लगभग समान होते हैं। परिवार मानव समूह की आधारभूत इकाई है। कहा जा सकता है कि परिवार एक ऐसी सामाजिक संस्था है जहाँ से मनुष्य अपने सामाजिक जीवन की शुरुआत करता है सामाजिक जीवन का मूल परिवार में ही निहित होता है।

मानव विकास के साथ-साथ पारिवारिक जीवन में भी परिवर्तन लक्षित होने लगे हैं, नवीन आवश्यकताओं नवीन परिस्थितियों एवं सामाजिक संबंधों का प्रभाव परिवार पर पड़ा है। डॉ. शंकर शेष के नाटकों में इसी समकालीन पारिवारिक जीवन हमें दिखाई देते हैं। उनके नाटक साहित्य में अंकित पारिवारिक संबंधों, उनमें उपस्थिति तनावों एवं विघटन आदि को निम्नलिखित शीर्षकों के अन्तर्गत विश्लेषित किया जा सकता है

1. स्त्री-पुरुष संबंधों में तनाव

रत्नगर्भा में डॉ.शंकर शेष ने इला और सुनील के जीवन संघर्ष को प्रस्तुत किया है। सुनील एक प्रसिद्ध डाक्टर है। यश और नाम पाने की उसकी प्रबल आशा है। उसकी पत्नी इला अपने जेवर भेजकर सुनील को हार्ट स्पेशलिस्ट और सर्जन बनाने के लिए विदेश भेजती है। अपने पति के लिए कुछ भी त्याग करने में इला को दूसरी बार सोचने की ज़रूरत नहीं है। सुनील विदेश में पत्नी के प्रेम से एकनिष्ठ रहकर शिक्षा प्राप्त करता है। इला भी सुनील के न होते हुए भी उसे अपने आस-पास महसूस करती है। इसके बीच घर में स्टोव फटकर इला का चेहरा जल जाता है। वह क्रूर हो जाती है। इला नहीं चाहती कि सुनील की पढ़ाई में किसी प्रकार की बाधा उत्पन्न हो इसलिए वह सुनील से इस दुर्घटना के बारे में नहीं कहती है। सुनील

विदेश से आता है तो इला को देखकर घबरा जाता है लेकिन वह इला के प्यार के प्रति वह फिर से आकृष्ट हो जाता है। वह सोचता है इला ने सुनील को विदेश भेजने के लिए अपना सब कुछ त्याग दिया है। इसलिए उसे इला की ख्याल करना चाहिए। लेकिन बाद में वह जगदीश जैसे खल नायक के चाल में पड़कर इला से घृणा करने लगता है। इला के प्रति सुनील के प्रेम, विश्वास, प्रणय आदि उसके प्रति घोर विरोध में बदल जाता है वह शराब पीने, हुआ खेलने तथा वेश्यालय जाने लगता है सुनील का व्यक्तित्व नष्ट हो जाता है। उसकी आर्थिक स्थिति भी बुरी हो जाती है। कर्ज वापस माँगने के लिए लोग घर आते जाते हैं। जगदीश बताता है कि संकटों से बचने के लिए उसे इला की हत्या करनी होगी बीमा के पचास हजार रुपये के लिए सुनील इला की हत्या करने तैयार हो जाता है लेकिन इला की बहन माया सचेत होकर इला की रक्षा करती है। इतना होने पर भी इला सुनील को क्षमा करती है। आखिर इला और सुनील के जीवन पर निर्णय लेने के काम नाटककार प्रेक्षक पर छोड़ देता है।

रत्नगर्भा नाटक का पूरा कार्यव्यापार एक उच्च-मध्यवर्गीय परिवार के ड्राइंगरूम में ही घटता है। इस नाटक में आज की भौतिकवादी जीवन दृष्टि और आदर्श के संघर्ष की पृष्ठभूमि में नर-नारी के संबंधों को रूपायित करने का प्रयास किया गया है। अर्थ और आदर्श के बीच संघर्ष और इस पृष्ठभूमि में पति-पत्नी के परस्पर संबंधों का विश्लेषण करना ही इस नाटक का मूल स्वर है। व्यक्तिगत अहं की तुष्टि एवं सुखोपभोग ही सुनील के जीवन को बर्बाद करनेवाली स्थिति का कारण है। सुनील पूँजीपति न होकर सुविधानुसार प्राप्त हो गई पूँजी और भोगविलास की सब-संस्कृति के दो स्तरों में संक्रमित रहने वाला दयनीय उच्च मध्यवर्गीय चरित्र है।

दुर्घटना के कारण विकृत चेहरा बन गयी इला की दयनीय अवस्था का चित्रण इसमें हुआ है। आधुनिक पति सुनील अपनी पत्नी इला के बाह्य सौंदर्य से ही आकर्षित होता है बाह्य सौंदर्य नष्ट हो जाने पर वह इला की आंतरिक सौंदर्य को भी नकार देता है। अमानवीय और अनैतिक होना उसके लिए कोई अर्थ नहीं रखता शंकर शेष 'इला' के माध्यम से यह बताना चाहता है कि आधुनिक

युग में नारी भले ही कितनी आधुनिक और सुशिक्षित क्यों न हो, परंतु आज भी उसपर पति का अंकुश है। इला विवश है उनका दांपत्य जीवन केवल बाह्य सौंदर्य की कमी के कारण बिगड़ गई है, नीरस और अशांति फैल गई है। इला की बहन माया सुनील को शंका की दृष्टि के देखती है और उसके विरोध में आवाज उठाती है क्योंकि वह जानती है कि कमजोर जब चरित्रवान होने का ढोंग करता है तो खतरनाक हो सकता है।

रत्नगर्भा में शंकर शेष ने बनावटी जीवन भोगने वाले प्रतिष्ठित लोगों पर कहकर व्यंग्य किया है 'जीवन की वास्तविकता से दूर नारी के बाह्य सौंदर्य पर रीझने वाले इस वर्ग की नियति अभिशाप है जो कभी अपनी अलग पहचान नहीं बना पाती।' ¹ बनावटी जिंदगी जीने-भोगने वालों द्वारा घटित समस्याओं का चित्रण प्रस्तुत नाटक में हुआ है।

श्रीमती सुनीता मंजनबैल ने इस नाटक के बारे में कहा है कि 'आलोच्य नाटक में पति-पत्नी संबंधों के टूटने के सभी प्रमुख कारण, जैसे-आपसी अविश्वास, काम-वासना की अपूर्ति अर्थ की हवस और तीसरे व्यक्ति का आगमन की ओर संकेत करते हुए इस समस्या का चित्रण किया है। नाटक के अंत में 'भ्रमभंग' होने के पश्चात् दुखी और असमंजस से घिरी इला को दिखाकर नाटककार १ समस्या को और गहन बनाता है।' ² इला अपने पति को मनुष्य बनाने के लिए अपनी जान तक कुर्बान करने के लिए तैयार हो जाती है। यही तो भारतीय नारी की विडंबना है कि वह अपने आदर्श चरित्र के कारण पति को समर्पित हो जाती है।

डॉ. शंकर शेष के सर्वप्रथम प्रकाशित नाटक बिन-बाती के दीप में उन्होंने स्त्री पुरुष संबंधों को नए धरातल पर रखकर दांपत्य जीवन को अधिक असली रूप में अंकित करने का प्रयास किया है। नाटककार ने इस नाटक के द्वारा इस तथ्या का उद्घाटन किया है कि नैतिक -अनैतिक मान्यता काल- सापेक्ष और व्यक्ति सापेक्ष होता है। जीवन में अतिरिक्त महत्वाकांक्षा की धुन सवार होनेवाले व्यक्ति के चारित्रिक पतन के साथ भारतीय नारी का आदर्श रूप भी शंकर शेष ने इस नाटक में उजागर किया है।

शिवराज औसत श्रेणी का कवि तथा लेखक है। लेकिन वे कविताएँ अच्छे कंठ से गाते थे, कवि सम्मेलनों में बुलाए जाते थे। उसके कंठ ने ही विशाखा को उसकी ओर खींच लाया था उसने विशाखा से विवाह करने का निश्चय किया लेकिन उसके परिवार के सदस्य और दोस्त उसके विरोध में खड़े हो गए प्रश्न यह था कि विशाखा की माँ के आँखों की रोशनी नहीं थी। 'सारा समाज जानता था। सब यही सोचते थे कि धतूरे के पेड़ पर धतूरे का फूल उगेगा, लडकी माँ पर जाएगी।' ³ पर शिवराज विचलित नहीं हुआ, वहतो ऐसे हिंदुस्तानी आदमी है जो निडर है। उनका प्रेम सूर्य के प्रकाश की भाँति शादी में परिणत हुआ।

विशाखा भी साहित्यिक है, लेखिका है। उसकी कहानियाँ श्रेष्ठ

पत्रिकाओं में छपती थी। वह अपना प्रथम उपन्यास लिखकर पूरा करती है कि वह अंधी हो जाती है। शिवराज को स्वप्न में भी अनुमान नहीं था कि ऐसा हो जाएगा। उसके स्वप्न अंधकार की कड़ में समा गए, उसकी कविता की निर्झरणी सूख गई। आदर्श और सत्ते प्रेमी शिवराज को मोह का क्षण ग्रस ही लेता है। बचपन से पालित पोषित शिवराज की महत्वाकांक्षा का सर्प अपना फन निकालकर फूटकारने लगता है। ⁴ उसने विशाखा के उपन्यास को अपने नाम से छपवाया। रातों रात वह हिंदी साहित्य जगत का श्रेष्ठ लेखक बन जाता है। यश की भूख ने उसे बेईमान बना करवाता है। विशाखा द्वारा लिखे गये सारे उपन्यासों को अपने नाम नाम के साथ उसे रूपया भी बहुत मिला। मकान, गाड़ी, टेलीफोन, टाइपिस्ट सब मिल गया। अंधी विशाखा उसके लिए सोने का अंडा देनेवाली मुर्गी बन गई।

टाइपिस्ट के रूप में आयी मंजू को शिवराज ने धन और विवाह का प्रलोभन दिखाकर अपने वश कर लेता है। दोनों मिलकर विशाखा के सामने एक बनावटी दुनिया बना देते हैं। झूठी प्रशंसा सुनवाकर विशाखा को और लिखने की प्रेरणा देता है। शिवराज विशाखा के अंधेपन से ऊबे हुए थे लेकिन विशाखा समझती है कि अंधी की लाठी बन गया है। वह शिवराज के बचपन के मित्र आनंद को शिवराज के घिनौने कृत्य और साजिश का पता चलता है। उसने विशाखा के सामने सब सत्य खोलता है। लेकिन विशाखा शिवराज के अपराध की क्षमा करती है। शिवराज आत्मग्लानि से चीख उठता है।

प्रतिभाशून्य शिवराज स्वार्थी तथा अतिरिक्त महत्वाकांक्षी है। यही कारण से उसके चारित्रिक अधःपतन हो जाता है। टाइपिस्ट मंजू का कहना है कि शिवराज सबसे खतरनाक अदमी है। उसमें रूपयों के साथ नाम कमाने की धुन भी सवार हो गई है। इसलिए आदर्शवान, निडर हिंदुस्तानी होते हुए भी शिवराज की वर्तमान दुरवस्था हो गया है। शिवराज खुद बोलता है कि 'मेरी इस यश की भूख ने मुझे बेईमान बना दिया।' ⁵ शिवराज ने एक क्षण के मोह में, प्रसिद्धि की भूख में अपना स्वर्ग खो दिया। उसकी दुर्घटना की साथी है मंजू। जब शिवराज गलती कर चुके थे तभी मंजू उसके जीवन में आयी थी उसे भी अपनी गलतियों का एहसास है लेकिन वह आर्थिक विवशता में गिरी हुई थी। अपने परिवार को उठाने के लिए ही वह शिवराज की साथ दिया था शिवराज विशाखा के उपन्यास चुराते रहे और मंजू उसका विश्वास चुराती रही। विशाखा और शिवराज के बीच तनाव को पैदा करने में मंजू भी एक कारण है

नटवर शिवराज की हरकत के समान बातों को अनजाने में अपने नाटक कथावस्तु के रूप में कहता है तो वह उसे बकवास कथावस्तु कहता है। की 'शिव सुनी है, पर जो अपनी पत्नी को धोखा दे वह नीच है, पापी है।' ⁶ नटवर द्वारा नाटककार ने जीवन के कड़वे, मीठे सत्य को अभिव्यक्त करता है।

आनंद द्वारा ही विशाखा के सामने शिवराज के कारनामों का

पर्दाफाश होता है और वह विशाखा को सत्य से परिचित होने का एक अंतर्दृष्टि प्रदान करता है। डॉ. प्रकाश जाधव ने लिखा है 'शिवराज द्वारा विशाखा के उपन्यास अपने नाम पर छपना उसे अनैतिक एवं अन्यायकारी लगता है। मंजु को चाहकर भी, उसकी अंधी महत्वाकांक्षा के कारण वह उसे ठुकरा देता है'⁷ उसका व्यक्तित्व अस्वाभाविक रूप से आकर्षक दिखाई देता है।

'बिन बाती के दीप' नाटक में शंकर शेष ने अंधेपन की समस्या के मुद्दों पर वर्तमान पति-पत्नी के बीच की संघर्ष तथा मध्यम वर्गीय नारी की लाचारी और आर्थिक विषमता को चित्रित किया है। नैतिकता और अनैतिकता के बीच पैर फिसल गये अतिरिक्त महत्वाकांक्षी लोगों की विसंगतियों पर प्रकाश डालने वाला नाटक है बिन बाती के दीप।

घरौदा नाटक की शुरुआत मोदी एण्ड मोदी कंपनी के दफ्तर के माहौल से होता है। सुदीप जो इस नाटक का नायक है कंपनी के क्लर्क है और बड़े बाबू, मिश्रा, सोडावाला आदि उसके साथ दफ्तर में काम करता है। कंपनी के मालिक है मोदी, जो अर्धेड उम्र के है। छाया जो नायिका है टाइपिस्ट के पद पर नई नियुक्ति हुई है। उसकी शक्ल मोदी की स्वर्गीय पत्नी से मिलती जुलती है। इसी कारण ही मोदी ने उसको नौकरी दी थी।

बड़े बाबू पहले ही दिन छाया को कागज़ का पुलिंदा देकर शाम तक टाइप करने को कहता है। सुदीप छाया की मदद करता है। मोदी छाया के प्रति आकर्षित है और मोदी द्वारा उसकी तारीफ दिन-ब-दिन बढ़ती गयी। लेकिन छाया सुदीप से प्यार करती है।

सुदीप चोपड़ा, अब्दुल और गुहा के साथ एक लृज में रहता है। यह छाया से कहता है कि वह शादी इसलिए नहीं कि क्योंकि बीवी को रखने के लिए जगह नहीं है। उसका अपना घर नहीं है। छाया कहती है कि हर महीने थोड़ा थोड़ा बचाकर मकान थरादेगे। लेकिन सुदीप उसको समझाता है कि उनकी समस्या गरीबी है और वे कभी मकान के लिए पचास हजार नहीं इकट्ठा कर सकता। चाल में ही रहने पड़ेगा। लेकिन छाया सुदीप को धीरे धीरे बंधाता है कि एक-एक पैसे बचाकर फ्लैट खरीदेगे। सुदीप भी इसका साथ देने को राजी हो जाता है।

महीनों बाद सुदीप का ग्रेड प्रमोशन हो जाता है। वह बड़ा क्लर्क बन जाता है। मकान के लिए प्रयत्न जारी रखता है। लेकिन उनके सब प्रयत्न बेकार हो जाता है। मकान लेने के सब रास्ते खत्म हो देते हैं। छाया ने एक एक बूंद खून जलाकर मकान के लिए प्रयत्न किया। पहली बार बिलडर रुपये लेकर भाग गया। दूसरी बार उसका भाई। वह अमरिका जाने के लिए छाया की भावना पर खेला। उसके बाद मकान मालिक उनके आठ हजार रुपये हड़प कर ले गये। इसी बीच छाया के सामने मोदी ने विवाह का प्रस्ताव रखा। लेकिन छाया इस प्रस्ताव को अस्वीकार करते हुए नौकरी छोड़ने के लिए तैयार हो जाती है। लेकिन सुदीप कहता है कि खान की कर्ज देने के लिए उसे नौकरी करना ही पड़ेगा। सुदीप षड्यंत्र रचाता है कि छाया मोदी

से शादी करके उसकी मौत का इंदज़ार करेगे। चूँकि मोदी दिल का मरीज है। छाया अनमना शादी के लिए तैयार हो जाती है।

छाया मोदी की खूब देखभाल करती है। उसकी तबीयत दिन-ब-दिन अच्छा होता रहा। मोदी कहता है कि छाया की पैर पड़ने ही उसके बिजनेस में फायदा हुआ है। सुदीप अक्सर छाया से कुछ-न-कुछ कारण बताकर रूपए हड़प कर ले जाता है। वह खान का कर्ज चुकाता भी नहीं और छाया से उससे भी अधिक रुपये ले जाता है। आखिर जब वह छाया से मोदी की हत्या करने को कहता है तो छाया उसके लिए राजी नहीं होती उसके प्यार भरे व्यवहार से मोदी की जीने की इच्छा फिर से करवट ले रही थी। फिर भी उसे डर है कि कहीं छाया ने उसकी जायदाद के मोह में तो उससे शादी की है लेकिन धीरे-धीरे छाया और मोदी के बीच की तनाव प्यार में बदल जाता है।

2. विवाहोपरान्त प्रेम

आधुनिक युग में हम देख सकते हैं कि विवाह के उपरांत भी स्त्री पुरुष नए प्रेम बंधन आरंभ करते हैं। आज पति-पत्नी के बीच प्रेम के बदले शारीरिक संबंध ही अधिक है संबंधों की इस नवीनता का रूप शिक्षित वर्गों में अधिक दिखाई पड़ता है। 'रत्नगर्भा' नाटक का सुनील उसके लिये अपना सब कुछ खोया पतिन इला नियति के क्रूर हाथों का खिलौना बनने पर उसको छोड़कर उसकी बहन के साथ प्रेम का रिश्ता जोड़ना चाहता है।

'सुनील : हलो माया, यू लुकचार्मिंग माया, तुम स्वर्ग की परी हो. नहीं तो यह तुम्हारी बहन. (इला एकदम रुआंसी हो जाती है)'⁸

किसी अपघात में इला की सूरत विकृत हो जाने पर सुनील अन्य स्त्रियों के साथ स्वच्छंद व्यवहार करने लगता है। विलास का आनंद उठाने के लिए उसने अपनी पतिव्रता पत्नी इला के साथ मनमानी करता है।

विवाहोपरान्त प्रेम संबंध का एक और दृश्य डॉ. शंकर शेष का नाटक बिन बाती के दीप में भी उपस्थित है। प्रस्तुत नाटक का नायक शिवराज साधारण स्तर का कवि है। राष्ट्रीय स्तर के शिखर पर पहुँचने की उसकी महत्वाकांक्षा है। अपनी महत्वाकांक्षा की पूर्ति के लिए शिवराज प्रतिभासंपन्न और अंधी युवती विशाखा से विवाह कर लेता है। वह शिवराज के लिए वरदान बन जाती है।

शिवराज विशाखा के उपन्यास को अपने नाम से छपवाकर रातोंरात हिंदी साहित्य जगत का श्रेष्ठ लेखक बन जाता है। शिवराज के इस रहस्य को केवल टाइपिस्ट मंजु जानती है। इसलिए वह उसको प्यार के जाल में फँसाता है।

'शिव : मंजु, मैं तुमसे प्रेम करता हूँ मैं चाहता हूँ कि अब तुम मेरे जीवन में.....'⁹

इससे विशाखा और शिवराज के जीवन में तनाव उत्पन्न हो जाता है। उसके साथ पारिवारिक जीवन में जो अनुशासन कायम रह गया था उसका विघटन होने लगा।

3. सुविधाभोगी मनोवृत्ति

सुविधाभोगी मनोवृत्ति का विकृतरूप 'रक्तबीज' नाटक में देखा जा सकता है। नाटककार ने छोटे पुरुष को केंद्र में रखते हैं, जो बड़ा बनना चाहता है। वह अपने वर्ग से घृणा करता है और अपनी वर्गीय पहचान छुपाने की कोशिश उसमें हिंसक और अपराधीपन भरती है वह अपनी पत्नी के माध्यम से अपने बाँस का इस्तेमाल करता है और बड़ा पुरुष अपने हितों के लिए छोटे पुरुष को इस्तेमाल करता है। यथार्थ विडंबना यह है कि छोटा पुरुष बड़े पुरुष द्वारा शोषित होने को तैयार है। क्योंकि वह सुविधाओं और स्वत्व की अपनी भूख किसी भी कीमत पर शांत करना चाहता है। उसके सामने समझौते की विवशता का हथियार उसकी निश्चित नियति है और उनके लिए नीति, मूल्य नियम के कोई मायने नहीं है।

डॉ.शंकर शेष ने रक्तबीज के माध्यम से सुविधा की पूर्ति के लिए प्रयुक्त इस्तेमाल के दुनिया का चित्रण किया है समस्याओं से छुटकारा पाने के लिए व्यक्ति कुछ भी करने को तैयार है। वह अपनी जिंदगी से संतुष्ट नहीं है 'छोटा पुरुष बस इन्हीं बातों से तो छुटकारा पाने की कोशिश कर रहा हूँ, सुजाता। ये भी साली कोई जिंदगी है। पैसे-पैसे के लिए तरसो हमेशा अपने अपाहिजपन का एहसास। केवल तमाशाई भीड़ की तुच्छ सदस्यता। एक पत्ता भी कहीं न हिला सकने की विवशता की घुटना।'¹⁰ योग्यता और मेहनत से कोई काम नहीं चलता।

एक और द्रोणाचार्य नामक नाटक में लीला और कृपी के चरित्र से भी सुविधाभोगी मनोवृत्ति का पता लग जाता है। सुरक्षा और सुविधा के मोह में पढ़कर ही लीला ने अरविंद को अन्याय के रास्ते पर चलने के लिए मजबूर करता हुआ दिखाई देता है। कृपी भी सुरक्षा और सुविधा की प्रेमी है। उसने भी द्रोणाचार्य को अन्याय के विरुद्ध आवाज़ उठाने से रोका। कृपी की सुविधा भोगी मनोवृत्ति ही द्रोणाचार्य को ऋषि परंपरा से गिराकर रजपुत्रों की दासता में धकेल दिया था।

4. मध्यमवर्गीय परिवार और गरीबी

मध्यमवर्गीय परिवार का पहचानपत्र के रूप में गरीबी दिखाई दे रहा है। मध्यवर्ग की महत्वाकांक्षाएँ उच्चवर्ग के समान हैं लेकिन उनकी गरीबी के कारण वे अपनी महत्वाकांक्षा की पूर्ति करने में असफल दिखाई पड़ता है। उनको मजदूरों से भी कम तनखावा मिलते हैं। 'घरौदा' नाटक के सुदीप और छाया का भी यही हाल है। छाया की परिवार की हालत भी उनकी गरीबी के कारण पूरी तरह से विकल हो गया है। सुदीप के परिवार का विघटन इसी गरीबी के कारण हुए है। छाया और सुदीप गरीबी में उलझकर अपनी माँ को भी नकारते हैं। गरीबी के कारण निकट संबंधों को भी बोझ समझने लगा है जटिल अर्थ व्यवस्था मध्यवर्गीय परिवार को संघर्षपूर्ण मोड़ पर खड़ा कर देता है।

मोदी ने छाया के सामने शादी का प्रस्ताव इसलिए पेश किया

क्योंकि वह गरीब परिवार की लड़की है। सुदीप कहता है- 'अगर किसी लखपति की जवान लड़की उसकी औरत जैसी ही दिखाई देती तो क्या वह उस प्रकार का प्रस्ताव रखने की हिम्मत कर सकता था ? तुम्हारे सामने उसने प्रस्ताव इसलिए रखा क्योंकि तुन गरीब हो। क्या यह साजिश नहीं हो ?'¹¹ गरीबी के कारण छाया मोदी के यहां की नौकरी न ही छोड़ पाती है और न ही सुदीप से क्रसकी प्यार को शादी तक जा सकती है। अपनी इच्छा के अनुसार शादी करने के लिए परिवार को गरीबी से दूर बसाना पड़ता है। मध्यवर्गीय परिवार कभी इस गरीबी की पकड़ से मुक्त नहीं हो पाते।

डॉ.शंकर शेष के नाटकों में जहाँ भी मध्यवर्गीय परिवार का चित्रण है हुआ वहाँ मध्यवर्गीय विकराल आर्थिक व्यवस्था का ही चित्रण हुआ है। नयी सभ्यता नो नमूने नाटक में जो मध्यवर्गीय परिवार चित्र उभरता है उसका भी आर्थिक व्यवस्था संघर्षपूर्ण दिखाई देता है। इस नाटक का मुख्य पात्र कृष्ण मध्यवर्ग का प्रतिनिधि है। उसके परिवार में भी धन की अभाव है। यही मध्यवर्ग की विडंबना है। प्रथम श्रेणी में ग्रेजुट होने पर भी कृष्ण को नौकरी नहीं मिलती धन के अभाव के कारण कृष्ण की माँ को समय पर इलाज नहीं दे सकता है और उसकी मृत्यु हो जाता है। जब उच्चवर्ग के लोग आडंबर की आड़ में विलासिता का जीवन बिताते हैं तो मध्यवर्गीय परिवार गरीबी के तप में चूर-चूर हो रहा है।

शंकर शेष का नाटक 'मूर्तिकार' में भी मध्यवर्ग का यही हालत है। अर्थ के अभाव में अनादी की माँ बेमौत मर जाती है। हम सकते हैं कि अर्थ के अभाव में मध्यवर्गीय परिवार का भविष्य खतरे में पड़ गया है।

5. प्रेम की नयी मान्यताएँ

प्रेम का मानवजीवन में अत्यन्त प्रमुख स्थान है पुराने जमाने में भारत में प्रेम को अत्यंत पवित्र माना है। मूल्य विघटन की इस आधुनिक युग में प्रेम संबंधी मान्यताओं में कई परिवर्तन आया है डॉ. शंकर शेष का नाटक घरोदा में सुदीप और छाया के प्रेम का आधार भावना और भावुकता न होकर बौद्धिकता तथा जैविक आवश्यकता पर निर्भर होता दिखाई देता है। आर्थिक चक्रव्यूह में पैसा सुदीप छाया को मोदी से विवाह करने के लिए मजबूर कर देता है। लेकिन उसका इरादा यह है कि दिल का मरीज मोदी कब भी मर सकता है, उसके बाद उसका सारा जायदाद छाया के नाम पर आ जायगा और दोनों मिलकर खुशी से जीवन बिताएँगे। सुदीप अपने स्वार्थ के लिए मोदी के खिलाफ षडयंत्र रचाने के लिए अपनी प्रेमिका छाया का ही इस्तेमाल करता है। छाया जब मोदी के साथ विवाह करने से इनकार करता है तो सुदीप प्रेम की नयी मान्यता प्रस्तुत कर छाया को मोदी के साथ विवाह करने के लिए मजबूर करता है।

'छाया : लेकिन मैं तुम्हारे अलावा किसी के बारे में सोच भी नहीं सकती।

और यह पाप.....

सुदीप : पाप केवल एक धारणा है, छाया । उसकी कभी कोई स्थायी व्याख्या नहीं है। सामर्थ्य और प्रसंग ही उसके होने न होने का फैसला करते हैं । अगर मैं तुम्हें पापी नहीं समझता तो चुम फिर किसी दूसरे के प्रति जवाबदेह नहीं हो शायद । हम थोड़ा अलग होकर ही एक-दूसरे को पा सकते हैं । बस, यही एक रास्ता है । मोदी से हाँ कह दो, मैं कह रहा हूँ, जाओ हाँ कह दो । जाओ, हाँ कह दो ।¹²

आधुनिक युग में प्रेमी प्रेमिकाएँ अपने प्रेम की पूर्ति के लिए शार्टकट का रास्ता अपनाता है नयी सभ्यता नये नमूने नाटक में प्रेम स्वार्थ पूर्ति का साधन मात्र दिखाई देता है प्रस्तुत नाटक का नायक कृष्ण कन्हैया मध्यवर्ग का प्रतिनिधित्व करनेवाला है कालाबाज़ार से पैसा कमाने वाले लखपति व्यापारी की बेटी है स्मृति कृष्ण उससे प्यार का नाटक करता है । वह स्मृति को बताता है कि वह लखपति चाचा का भतीजा है । मैं ही उसका असली वारिस हूँ । उसकी मृत्यु के बाद मुझे पाँच लाख रुपये मिलने वाले हैं फिलहाल मेरे पास फूटी कौड़ी नहीं है । कृष्ण स्मृति से पैसा लूटने के लिए उसके प्यार में लिखा हुआ नाटक दिखाया है । लेकिन भुलकृप्रसाद जो अमीर बाप का बेटा है स्मृति से प्रेम करता है मगर स्मृति उससे घृणा करती है । स्मृति को वश में करने के लिए भुलकृप्रसाद कृष्ण को स्पया देता है ।

पाश्चात्य संस्कृति की उपासित और मुक्त जीवन भोगी धरणी जो एक अमीर बाप की बेटी है कृष्ण के प्यार करता है कृष्ण भी अपने स्वार्थ पूर्ति के लिए धरणी से प्रेम का नाटक रचता है । अत्याधुनिक सभ्यता का प्रतीक धरणी अपने रूप अंगार पर अधिक ध्यान देती है । उसकी इसी कमज़ोरी का फायदा उठाकर कृष्ण उससे फिल्म बनाने के लिए पंद्रह हजार रुपये पाता है । धरणी से प्रेम करने वाला दूसरा पात्र है गगनबिहारी । लेकिन धरणी उससे प्यार नहीं करती है । लेकिन कृष्ण रूपों के लिए गगनबिहारी से भी सौदा करता है । इस प्रकार सभी पात्र स्वार्थ की पूर्ति के लिए प्रेम को एक साधन के रूप में स्वीकृति करते दिखाई देते हैं ।

उपर्युक्त विवेचन के आधार पर हम कह सकते हैं कि डॉ शंकर शेष ने पारिवारिक यथार्थ को अत्यंत व्यापक फलक पर चित्रित करने का प्रयास किया है। पारिवारिक यथार्थों में विशेषतः स्त्री-पुरुष संबंधों के सकारात्मक एवं नकारात्मक दोनों अंशों का तथा मध्यमवर्गीय परिवार का डॉ शंकर शेष ने अपने नाटकों में विशिष्टता से चर्चा किए हैं । सुविधा भोगी मनोवृत्ति तथा प्रेम की नई मान्यताएँ वर्तमान परिवार का एक बड़ा अभिशाप है जिसका मूल कारण उनके नाटकों में चित्रित हुआ है । अतः कहा जा सकता है कि डॉ.शंकर शेष के नाटक अनेक पारिवारिक यथातथ्यों से ओतप्रोत हैं ।

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समकालीन हिन्दी साहित्य में नई प्रवृत्तियाँ एवं समस्याएँ

डॉ.षिजा ग्रेस

सहायक आचार्या, सी.एम.एस कॉलेज, कोट्टयम

संस्कृतियों की जननी भारत की समकालीन साहित्य में सामाजिक समस्याएँ, चुनौतियाँ, विसंगतियाँ, जटिलताएँ, यंत्रणाएँ आदि दृष्टिगत है। इसमें अनुभव तथा जीवन-यथार्थ प्रस्तुत है। बदलते हुए सामाजिक, आर्थिक एवं नैतिक संबंध इसका मुख्य विषय रहा है। समाज के बदलने के साथ-साथ साहित्य में भी परिवर्तन आ जाते हैं। समकालीन हिन्दी साहित्य में भी नई प्रवृत्तियाँ एवं समस्याएँ द्रष्टव्य है।

समकालीन साहित्य में विशेषकर हिन्दी साहित्य में बदलते हुए पारिवारिक, वैयक्तिक संबंधों को दर्शाया है। समकालीन साहित्यकारों ने व्यक्ति के माध्यम से समाज की हालत को सामने लाया है। इन रचनाओं में नर-नारी संबंधों में आए बदलाव, कामकाजी नारी की समस्याएँ, महानगरीय जीवन की यंत्रणा और खोखलेपन, व्यक्ति की मानसिक व्यथा, बोझिलता आदि चित्रित है।

हिन्दी साहित्य की समकालीन कहानियों में सामाजिक, आर्थिक, नैतिक संबंधों में आए बदलाव का चित्रण मिलते हैं। मानव ही इसका केंद्र-बिंदु है। डॉ. मंजुलता सिंह की राय में, “समकालीन कहानी में जीवन-सापेक्ष समस्याओं, आदर्शों की निरुद्देश्यता, मूल्यहीनता और प्रदर्शनहीनता स्वभाव और क्रियाहीन स्वभाव वाले मनुष्य का चित्रण है।”^१ इन कहानियों में यथार्थबोध अधिक झलकती है।

समकालीन हिन्दी कहानियों में सामाजिक, पारिवारिक, वैयक्तिक संबंधों में आए हुए बदलाव अत्यंत रोचक ढंग से दर्शाया है। कमलेश्वर जी की कहानी ‘मैं’ का साहब अपने घर में घुसते वक्त पुलिस ने उसे चोर समझकर पकड़ लिया। वे अपने स्वत्व को दूसरों के सामने साबित करने में असफल हो जाते हैं। अजनबी कहानी में व्यक्ति का अजनबीपन एवं अकेलापन का उल्लेख हुआ है। ‘अच्छा थीक है’ कहानी में आर्थिक तनाव में बिगड़ते पति-पत्नी संबंध को दर्शाया है।

नारी विमर्श समकालीन हिन्दी साहित्य का उल्लेखनीय मुख्य प्रवृत्ति है। साहित्य में नारी का चित्रण सर्वप्रथम पुरुष द्वारा किया गया था। महिला लेखिकाओं के उदय के संबंध में डॉ. इंदिरा गोस्वामी ने यों लिखा है, “केवल १९-वीं शती में उनकी स्थिति कुछ सीमा तक सुधरी। तब तक स्त्री का चित्रण भारतीय साहित्य में पुरुष लेखकों के द्वारा ही हो रहा था। अतः हम कह सकते हैं कि ये पुरुष लेखक ही थे जिन्होंने स्त्रियों को अपने अधिकारों के लिए संघर्ष करने एवं उन्हें समाज में समानता का स्थान दिलवाने के लिए द्वार खोले। समय के साथ-साथ महिला लेखकों ने शक्ति प्राप्त की तथा भारतीय साहित्य में अपना स्थान पाया।”^२ पुरुषप्रधान समाज में आर्थिक सत्ता का केंद्र पुरुष ही है। पितृसत्तात्मक आर्थिक व्यवस्था के कारण पिता की संपूर्ण संपत्ति का कानूनन अधिकारी पुत्र ही होता है। ‘एक स्त्री’ कविता में मंगलेश डबराल ने नारी - पीड़ा के हर पहलुओं को प्रस्तुत किया है:-

“सारा दिन काम करने के बाद
एक स्त्री याद करती है
अगले दिन का काम
एक आदमी के पीछे
चुपचाप एक स्त्री चलती है
उसके पैरों के निशान पर
अपने पैर रखती हुई
रास्ते भर नहीं उठाती निगाह”^३

नारी-उत्थान की बातें तो सब कहीं होते हैं, लेकिन व्यवहार के स्तर पर वह कहाँ तक पहुँचता है, इस बात पर उन्होंने जोर दिया है।

दलित साहित्य समकालीन हिन्दी साहित्य के केंद्र में प्रतिष्ठित है। दलित-चेतना का आविर्भाव नाथों और सिद्धों के साहित्य से ही

माना जाता है। कबीरदास जी दलित मुक्ति आन्दोलन के प्रारंभिक उल्लेख्य कवि है। समाज के उत्पीडित, दरिद्र शूद्र को ही दलित माना जाता है। समकालीन हिन्दी साहित्य दलित, पीडित, शोषित वर्ग को उनकी शक्तियों एवं अधिकारों से परिचित कराते हैं। पवन करण जी की कविता 'कहना नहीं आता' दलित वर्गों का प्रतिनिधित्व करती है। इसमें कवि ने यों लिखा है:-

“तुम्हें कहना नहीं आता

कहने क्यों चले आए

पहले कहना सीखो

फिर अपनी बात कहना

जिनके पास कहने को है

जो कहना चाहते हैं

जिन्हें कहना नहीं आता

मैं उनमें से एक हूँ।”

वास्तव में दलित -पीडित वर्ग को समाज के केंद्र में लाने के लिए दलित साहित्य ने अपना योगदान दिया है।

आदिवासी साहित्य भी समकालीन मुख्य प्रवृत्ति है। आदिवासी समाज व्यापक शोषण का शिकार है। शिक्षित, सभ्य समाज उनका शोषण करते हैं, आज भी आदिवासी स्त्रियों की खरीद-बिक्री जारी है, उनके साथ सामूहिक बलात्कार जैसे जघन्य अपराध होते रहते हैं। आदिवासियों की दुर्दशा को कवयित्री निर्मला पुतुल अपनी कविता में यों प्रस्तुत करती है:-

“मैं अपने इलाके के सूखे और

अकाल की चर्चा करना चाहती

हूँ आपसे-

भूख बिमारी से लडते-मरते मंगरू, बुधवा और

इलाज के लिए राशन कार्ड गिरवी रखने वाले समरू

पहाडिया की

बात करना चाहती हूँ

जड खाकर जिंदा संतालों

और चूहे पकाकर खा रहे भूखे-नंगे-पहाडियों की

बात करना चाहती हूँ

उत्तर प्रदेश के एक जनपद में पाँच हजार में बिकी

सत्रह वर्षीय सोनामुखी हासदा की बात करना चाहती हूँ मैं

मैं बात करना चाहती हूँ हिजला मेला देखकर वापस घर लौट रही

मेलचे मूर्म के साथ हुए सामूहिक बलात्कार की”

डॉ. मोहन जी ने व्यक्त किया है, “कवयित्री निर्मला पुतुल का अनुभव जिस सच्चाई को बयान कर रहा है, वह आदिवासी समाज के व्यापक शोषण का है। यहाँ पर स्त्री समाज पर छाये दोहरे अमानवीय खतरों पर भी निगाह रखी गई है। कवयित्री पूरे अंचल में फैले भूख और बेरोजगारी की चर्चा तो करती ही है, उसमें मरे मंगरू और बुधवा की शिनाख्त करना नहीं भीलती है।”⁴ आदिवासी स्त्रियों की खरीद-बिक्री तथा बलात्कार जैसे अपराध को समाज के सम्मुख प्रस्तुत करने में समकालीन साहित्य सफल हुए हैं।

भूमंडलीकरण समकालीन हिन्दी साहित्य की मुख्य प्रवृत्ति है। इसका सबसे बड़ा खतरा आम जनता तथा उनकी अभिव्यक्तियों को अर्थहीन बना लेना है। वास्तव में भूमंडलीकरण ने हमारे स्वत्व का हनन किया है। भूमंडलीकृत समाज में विकास केवल समाज के अभिजात वर्ग तक सीमित रह गया। भूमंडलीकरण ने बाहरी परिस्थिति को परिवर्तित किया होगा, परंतु व्यक्ति की भीतरी स्थिति में कोई बदलाव नहीं आया है। डॉ. ए. अरविदाक्षन जी के मत में, “आज की भूमंडलीकृत संस्कृति में यह एक सरल -सी सदृष्टि नहीं है। यह एक शक्ति दृष्टि है, जिसको बचाये रखने का मतलब है अमानवीय संस्कृति का प्रतिरोध।”⁵ कुमार अंबुज की कविता में लिखा है:-

“यों तो मैं खुश हूँ

परन्तु मुझे शर्म आती है

अपनी समकालीन कायरता पर

मैं शब्दों से काम चलाता हूँ

परन्तु मुझे अब कुछ दूसरे हथियार भी लगेंगे” (अतिक्रमण संग्रह)

समकालीन हिन्दी साहित्य में जीवन-यथार्थ, मानवीयता, समानुभूति, सामाजिक प्रतिबद्धता आदि दृष्टिगत है। यह आने वाले पीढ़ी के लिए एक महत्त्वपूर्ण विरासत है। समकालीन साहित्य में मानवीय संसक्तियों की बहुवर्णी छवियाँ द्रष्टव्य हैं। वास्तव में समकालीन हिन्दी साहित्य निरंतर गतिशील है तथा इसकी समकालीनता मनुष्य के यथार्थ पर केंद्रित है।

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THE ROLE OF COMMUNITY BASED ORGANIZATIONS IN RURAL DEVELOPMENT

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Community Based Organisations (CBOs) have the requisite potential for bringing sustainable development to local communities in rural areas. Institutions of state and other development agencies are increasingly seeking the involvement of CBOs in conceiving, planning and implementation of rural development programmes. CBOs are generally established with the motivation and support from outside agencies such as state or other development agencies or even large NGOs. Some CBOs have also emerged independently from within local communities with the motivation and missionary zeal of indigenous community leaders. The approaches to rural development have evolved from state's 'top-down' approach through 'passive participation' to 'interactive and contributory participation' of people in the process of rural development. The approach, which strives to institutionalize people's participation through mobilization of communities, is characteristic of CBOs.

Significance and Emergence of CBO

The ultimate aim of rural development programmes have been the mitigation

of poverty, eradication of illiteracy, development in health and the consequent enhancement of the standard of living of rural population. Most of the rural development programmes in the past were exclusively conceived and designed by the ministries and departments of the government. The needs of the 'rural people' were assessed and programmes were formulated by the higher institutions of the state. There was hardly any consultation, let alone meaningful participation of rural communities. The rural development schemes/programmes were then implemented by various functionaries of the state. Most implementing agencies and their functionaries had little knowledge of the local conditions in rural areas. Above all, they usually remained less interested in the outcome of development projects or programmes. Not surprisingly, many of the earlier rural development programmes failed to achieve their objectives despite the immense investments made by the Indian state.

Later on, it was realized that people's participation is the key element for the success of rural development programmes.



Efforts were made to encourage participation but such efforts failed to bring about meaningful and sustained participation of rural people. People participated in various state sponsored rural development schemes and projects but in a very limited way, i.e., nominally and formally only. They lacked enthusiasm to participate in a sustained manner in such rural development programmes. The reason being, that people did not develop a sense of belongingness to rural development programmes. They had a feeling that ultimately they will not be the owners of the assets created by various rural development programmes. Therefore, for all practical purposes, rural development programmes mainly remained government programmes and they did not become people's programmes.

By 1980s the development practitioners realized that 'top-down' approach had failed to encourage people's participation in rural development. They realized that it was not sufficient to ask rural communities to implement such development projects as were planned by ministries or other institutions of the state. It was further realized that rural communities must be involved in local level planning for the successful implementation of rural development programmes. It made a sound sense, since having lived in the area for many generations; a rural community usually has a direct knowledge of the local conditions. Even the technically and theoretically well versed, well intentioned and sincere development functionaries of state may not have intimate knowledge of the socio-cultural and economic conditions prevalent in rural areas. It was realized within the development paradigm, that role and participation of

communities need not remain limited to the activities related to the implementation of rural development programmes. Rather, such participation must be extended beyond implementation stage whereby local communities must be assigned the responsibility-(or ownership) to maintain the assets created in the course of rural development programmes. A vast number of assets created through development efforts in rural areas usually get decaying because of neglect or subsequent lack of continuance by the development agencies. Since the local community is the direct or indirect beneficiary of rural development programmes, it is in the best interest of the community to look after assets created by such programmes.

The local community is the first to notice any faults or become aware of any damage inflicted on assets in rural areas. Thus the assets created by any development project are likely to be much better maintained by the community rather than outside development agencies or institutions of state. For such a situation to materialize, it is necessary to have an interactive participation between local communities and development agencies even during the post implementation stage of rural development programmes. The whole process involving participation of local communities during all stages of rural development programmes, viz., conception, designing, formulation, implementation and post-implementation (maintenance of assets) lays the foundations of community based approach to rural development. For institutions of state, have large NGOs and other development agencies, community based organisations have turned out to be the most suitable 'medium for bringing sustainable development in rural areas.



CBO-Approach in the- Concept of 'Ladder of Participation'

In order to understand and appreciate how the CBO-approach is different from other 1 participatory approaches. Robert Chambers (2002) has employed the concept of 'ladder of participation' as follows:

Ladder of Participation

- i) **Passive Participation:** The process of participation starts with the passive participation of the community. The villagers remain mere recipients of benefits and do not play any role. The planning and implementation of programme strictly remains in the hands of Development Agencies (DAs).
- ii) **Consultative Participation:** Villagers are consulted to obtain their opinions, but decision making remains with development agencies. Information received from communities may or may not be used in designing and implementation of the programme.
- iii) **Contributory Participation:** Beneficiaries share the cost of the projects. Contribution may be in cash or kind or in the form of labour. Sometimes this contribution is saved for the future maintenance of the assets created by the project.
- iv) **Functional Participation:** Institutionalization of community participation in the form of collective action. Institutions such as Gram Vikas Mandal, Self-Help Groups, User Groups, Forest Project Committees, etc. are formed for effective and transparent implementation of the project. Development Agencies share

all information about the project with the villagers.

- v) **Interactive Participation:** Development Agencies interact with the community intensely and build capacity of the community to take decisions about the projects. Roles and responsibilities of stakeholders such as Development Agencies (DAs) and village institutions are decided during this stage. The DAs act as facilitators and the community becomes the implementer of the programme.
- vi) **Self-Mobilization:** In this stage, the community generates awareness about its resources, problems and possible solutions. The community starts realizing its development needs. The Development Agencies provide support to the village community to link up with other agencies.

Formation of CBOs

Community based organisations (CBOs) are small, informal organisations based within the local communities they serve. This makes it difficult for them to interface with other stakeholders in the development sector such as donors or government agencies. Many CBOs run development programmes, sometimes through intermediary NGOs.

The process of forming a CBO may begin with a Participatory Rural Appraisal (PRA). The aim of this exercise is to understand the status of the village with reference to a particular development project and the needs and demands of the rural community. The objectives of the project may be explained, especially how its provisions will meet needs and demands of the community. A Gramsabha



meeting may be an appropriate venue for such a discussion. Considerable time needs to be invested at the motivation and mobilization stage to ensure participation which is necessary for the sustainability of development project. Whether the community agrees to form a CBO may depend on the motivating effort of a development agency. An “inspirational visit” may be arranged to the community that has successfully implemented the project. For all meetings, including the very first meeting, both the time and venue of the meeting are chosen with care. The time chosen should be convenient to all the members of the community and the venue should be a public place where everyone feels free to walk in. The CBO has to develop its rules and regulations and procedures for carrying out the activities and for conducting meetings, appointing office bearers, etc. The CBO has to be registered under the appropriate law - as a cooperative, as a society, or as public trust. To do so, it will have to have a constitution. This would require interacting with bureaucracy and preparing or obtaining the required set of documents. An agreement or a Memorandum of Understanding (MoU) is usually signed between the CBO and the Ministry or the Development Agency, which owns, controls, or manages the resource. .

Providing technical and administrative/managerial training to the CBO is an extremely important responsibility of the external agent. The training may be in the form of classroom training or hands-on practical training. It may comprise visiting another community which has successfully implemented the project. Technical training may include gauging the quality of materials to be used in

repairs or construction, ascertaining the quality of the finished structures, and taking accurate measurements etc. Administrative/managerial training may be given for writing the constitution, dealing with bureaucracy, keeping minutes of the meetings, writing the agenda of the meeting, conducting a meeting, holding elections of the executive committee or other office bearers, maintaining project bank account and keeping accounts of the CBO.

Relevance of Community Organisation for Community/rural Development

Community organisation and community/rural development are interrelated. To achieve the goals of community/rural development the community organisation method is used. According to United Nations, community development deals with total development of a developing country that is their economic, physical, and social aspects. For achieving total development community organisation is used. In community development the following aspects are considered as important. The same aspects are also considered important by community organisation. They are;

- **Democratic procedures** deal with allowing all the community members to participate in decision-making. It is possible to achieve this by community organisation. The selected or elected members or representatives are helped to take decisions. Democratic procedures help people to take part in achieving community development goals. Community organisation method permits democratic procedures for people's participation.



- **Voluntary cooperation** means that the people volunteer for their participation. For this they are convinced. They should feel that they should involve themselves in the process of development without hesitation. This attitude is supported by community organisation method. People's emotional involvement is necessary to make success of the community organisation method. If discontentment about their conditions is created, then people will volunteer for participation. Community organisation emphasizes the discontentment aspect only to make them initiate people's participation.
- **Self-help** is the basis for community development. Self-help deals with the capacity of mobilizing internal resources. Self-help is the basis for self-sufficiency and sustainable development. In community organisation self-help is emphasized. Community organisation is relevant to community development because both emphasize the self-help concepts.
- **Development of leadership** is an important aspect in community development. Leadership deals with influencing and enabling people to achieve the goals. Community organisation also emphasizes leadership. With the help of leaders the people are motivated to participate in action. Community organisation is a relevant method to develop and use leadership. This is applicable for community development also.
- **Educational aspects** in community development means helping people to know, learn, and accept concepts of democracy, cooperation, unity, skill development, effective functioning

etc. In community organisation also the above mentioned aspects are considered very important. The process of community organisation emphasizes education of the community. Thus both are emphasizing the educational aspects for the progress of the community. Thus community organisation and community development are interrelated and mutually supportive. There are no opposing aspects in between community organisation and community development as both emphasize democratic method and self-help principles. Thus they are relevant. So in all community development programmes community organisation method is used as implementing method.

Community Organization as a Problem Solving Method

In community organisation method the community is the client. Community organisation solves the community problems and fulfills the needs of the community. Many of the community problems like social injustice, poverty, inadequate housing, poor nutrition, lack of health, lack of medical services, unemployment, pollution, exploitation, bonded labour system, illicit arrack, dowry, female infanticide, women and children trafficking, drug trafficking etc. Being solved by using community organization method. In problem solving generally there are three basic aspects. These are study, diagnosis, and treatment. First the problem has to be studied. For this, information is collected regarding the problem. From the information collected the main causes are identified. This is called diagnosis. Based on the findings, or diagnosis, a solution is evolved



that is called treatment. Problems can be solved only with involvement of people due to which resources are mobilized to solve the problems. This method is specially applicable in Indian situations, because in India a large number of people are affected by poverty or other poverty related problems which need speedy solutions.

Conclusion

Community Based Organisations (CBOs) have acquired a critical relevance in the field of rural development. Institutions of state and other development agencies are increasingly motivating and supporting local communities to form community based organisations. They impart technical and administrative skills to CBOs for their effective contribution to the process of rural development. CBOs are further encouraged to become owners/managers of assets created through rural development programmes. In fact, CBOs are seen as the most effective medium for bringing sustainable development in rural areas such as to meet the needs and bring about and maintain adjustment between needs and resources in a community, helping people effectively to work with their problems and plan to realize their objectives by helping them to develop, strengthen, and maintain qualities of participation, self-direction and cooperation and bringing about changes in community and group relationships and in the distribution of decision- making power.

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