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ISSN 2454-2776

JBNB A Multidisciplinary Journal

Special Issue on

Women in Science and Science for Women

State Level Seminar on 7th March' 2015

Organised by

Research Committee

In collaboration with

Internal Quality Assurance Cell

And

Women Development Cell

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B. N. Bandodkar College of Science, Thane.

State Level One Day Seminar

Women in Science and Science for Women (WSSW)

March 7th 2015

Program

Sr. No.	Time	Event
	9.00 am- to 10.00 am	**Registration**
1	10.00 am–10.10 am	Inauguration
2	10.10 am -10.20 am	Welcome Speech by Convener **Dr.(Mrs.) M.K.Pejaver**
3	10.20 am-10.30am	Appreciation of contribution of Women in Science
4	10.30 am– 11.15am	Inauguration Address By **Mrs. Sumedha Bedekar** **Subject:** Potential of Women"
5	11.15 am–12.15 pm	**Mrs. Lalita Dixit and Dr Pratibha Yelnay** **Subject:** "Yoga in relation to women health."
6	12.15am – 1.00 pm	Dr. Anjali Parasnis, TERI Mumbai **Subject:** ""Biochemistry in relation to diet and Gynecology problems of women "
1.00 pm -2.00 pm		**Break**
7	2.00 pm – 4.00 pm	Oral paper presentation
8	4.00 pm – 4.30 pm	Valedictory function
9	4.30 pm -5.00 pm	Certificate distribution

Editor's Message ……

On behalf of the WSSW-2015 organizing committee, we honoured and delighted to welcome you to the state level seminar "Women in Science and Science for women." At VPM's B.N.Bandodkar College of Science, Thane (MS) India. Our technical program is rich and varied with 1 keynote speech and 3 invited talks and around 30 prepares were presented in the seminar. Organizing committee is glad to present special e- issue of **Jbnb** (Journal of B.N.Bandodkar College). Women's contributions all too often slip away and are forgotten. The amazing women writing this issue explore a wealth and health of scientific temperament, experiences, from working in the male-dominated world of super-hero comics, to creating a literary award celebrating gender exploration, to facing discrimination at conventions. The fate of women in science can be influenced for good and bad by political systems. Whether female scientists will want to celebrate International Women's Day on 8 March may depend on how far they look back in time. Things have changed, and if you talk in terms of decades, there are considerable victories to cheer about. But despite those victories, progress now seems to have stalled.

We thank the authors who responded to our call for papers. The contribution of the papers from diversified field in the women concern including science behind jewelry, traditions and rituals , ICT and women, cosmetics and women, economically dependent and independency of women, urban and rural culture and women health and hygiene, is compiled in this volume, covering the multiple tasks across all the regions of the Maharashtra state.

Also ,we greatly appreciate the efforts of all the authors' undergraduate students for their immense contribution which is in special issue.

"She sells sea-shells on the sea-shore.

The shells she sells are sea-shells, I'm sure.

For if she sells sea-shells on the sea-shore

Then I'm sure she sells sea-shore shells."

Dr. (Mrs) M.K.Pejaver

Dr. (Mrs) A.S.Goswami-Giri

Editorial Board

B. N. Bandodkar College of science, Thane.

STATE LEVEL ONE DAY SEMINAR

WOMEN IN SCIENCE AND SCIENCE FOR WOMEN (WSSW)

March 7th 2015

Oral Paper Presentation

Please Note: The Authors of the papers are alone responsible for the technical content of the papers and reference cited therein.

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J BNB

SHIFTING PARADIGM IN GYNECOLOGICAL CANCER RESEARCH

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Abstract:

Cancer is taking an enormous human toll around the world. Cancer denotes, spectrum of diseases characterised by uncontrolled and abnormal proliferation of cells that have a tendency to invade and disseminate in the body. Gynaecologic cancers are the cancers in the female reproductive organs. Cancer research to decipher the mechanisms of cancer development, screening, diagnosis and treatment has seen historic transformations. Cancer research is founded on a paradigm based on two concepts, the stepwise model of cell transformation and the magic bullet theory. However, a paradigm shift in cancer research becomes imminent when anomalies arise and disparity between cancer research and cancer death rises.

Introduction:

Among various diseases, cancer has become a big threat to human beings, globally (Ali *et al.*, 2011). Gynecological cancers may include cancers of the ovary, fallopian tube, uterus, cervix, vagina and vulva etc. Among these, cancer of the uterine cervix followed by ovary and corpus uteri is the major contributors (Takiar *et al.*, 2010). Gynecological cancers like cervical, vaginal and vulvar cancers share similarities, as they start with premalignant stages followed by the invasive cancer. They are also linked with high risk human papilloma virus infection. On the other hand are ovarian, fallopian tube and corpus cancers, do not have any known infective aetiology. Most cases of ovarian cancer occur spontaneously (Iyoke and Ugwu, 2013). The landscape of gynecological cancer research has changed considerably over the decade. The advances made, has set the stage for the current era in which many of the scientific opportunities found now were scarcely imagined few years ago. Shifting paradigm have led to new maps and mapping tools for the diagnosis and treatment of gynecological cancer. Science has totally transformed our understanding of the disease. However, gynecological cancer statistic still

presents a dismal figure thus in the present study, the cancer research paradigm and the anomalies it faces is discussed.

Gynecological cancer statistics:

By 2020, the world population is expected to have increased to 7.5 billion; of this number, approximately 15 million new cancer cases will be diagnosed and 12 million cancer patients will die (Brayand and Moller, 2006). During the year, 2001, nearly 0.80 million new cancer cases were estimated in the country and this can be expected to increase to 1.22 million by 2016 as a result of change in size and composition of population. The estimated numbers were greater for females (0.406 million, 2001) than males (0.392 million, 2001) (Murthy *et al.*, 2008). Disseminated cancer accounts for most deaths due to malignancy (Coghlin and Murray, 2010). Gynecological cancers have increased in India and are estimated to be around 182,602 by the year 2020 constituting around 30% of the total cancers among women in India (Takiar *et al.,* 2010). A rural institutional study was carried out with the object of recording the number and type of gynecological malignancies in relation to socio-economic status, age, parity, contraceptive use and mode of presentation in current gynecological practice. Between 1985 and 1999 gynecological malignancies comprised 42.52% of all malignancies in women. Cervical cancer (80%) and ovarian cancer (15%) were the main gynecological tumours. 76.5% women were from villages. 72% of women with gynecological malignancies were from a lower socio-economic class. Nearly half, (44.6%) of overall cases occurred between the ages of 35 and 49 years. Sterilisation had been the main birth control method used (Chhabra *et al.,* 2002).

Screening of gynecological cancer:

Screening is an important step in cancer diagnosis. It refers to tests used for the diagnosis of disease, in people who do not have any symptom. Cancer is a major health problem in women as every woman is at risk of developing gynaecologic cancer. Over the years the number of gynecological cancers is increasing, irrespective of social class, with more cases at younger age (Chhabra *et al.*, 2002). Cancers of the female reproductive tract and breast has a high incidence amongst Indian women. Cancer registries have also highlighted that more than 70% of cancers in females occur in the age group of 35-64 and that these cancers exercise an adverse influence on the productive role of women in our society. Over 70% of patients report for diagnostic and treatment services at an advanced stage of disease, resulting in poor survival and high mortality rates. Nearly 1,500,000 people require facilities for diagnosis, treatment and follow-up at a given time (Uma Devi, 2009).

Screening and self-examinations helps in the detection of certain types of gynaecologic cancers. Higher age and advanced stage at

presentation of cervical cancers suggests lacunae in screening programs available (Agarwal *et al.*, 2012). The presence of human papillomavirus (HPV) in virtually all cervical cancers implies the highest worldwide attributable fraction so far reported for a specific cause of any major human cancer (Walboomers *et al.*, 1999). The causal role of human papillomavirus infections in cervical cancer has been documented beyond reasonable doubt. The association is present in virtually all cervical cancer cases worldwide (Bosch *et al.*, 2002). Thus screening for human papillomavirus is important for cervical cancer diagnosis in women. Two of the most recent research methods have been visual inspection with acetic acid and molecular testing for high-risk types of human papillomavirus deoxyribonucleic acid. Visual inspection with acetic acid has shown a great deal of promise in cross-sectional studies (Wright and Kuhn, 2012). The first screening test to be widely used for cancer was the Pap test. Pap-smear screening can detect pre-invasive cervical cancer, so such screening can markedly reduce the occurrence of invasive cancer (Gustafsson *et al.*, 1997). Despite all its limitations, implementing visual inspection with acetic acid screening may facilitate the highly anticipated low-cost, rapid human papilloma virus testing (Sankaranarayanan *et al.*, 2012). New technologies, specifically the development of liquid-based cytology, have improved the performance of cytology as a screening test (Denny, 2012). Current screening uses human papilloma virus DNA testing combined with cytology. It includes HPV diagnostics (detection of either the presence of human papilloma virus or integration of the virus into the host cell), proliferation and detection of epigenetic changes, either in the host or virus. These methods show promise in changing the way that current cervical cancer screening is undertaken in low-and high-resource settings (Brown and Trimble, 2012).

Epithelial ovarian cancer is the most lethal of the gynecological malignancies, largely due to the advanced stage at diagnosis in most patients (Jelovac and Armstrong, 2011). Unfortunately, effective method for screening of ovarian cancer have not been identified, as a result, ovarian cancer is often not detected until late stages. Endometrial cancer is strongly associated with obesity. Despite the fact that most cases are diagnosed in early, more favourable stages, endometrial cancer incidence and mortality rates are on the rise (Fader *et al.*, 2009). Internal examination is not regarded as an effective method for early detection of ovarian cancer. The CA 125 blood test is used to diagnose ovarian cancer in women who have symptoms or

to monitor women after and during treatment of ovarian cancer. A number of imaging methods is used in ovarian cancer screening. Ultrasound scans can be performed either by placing a probe on the abdomen or by trans-vaginal ultrasound (TVS). In a study women with abnormal ultrasound findings and/or raised CA125 values were referred for surgical investigation by a gynecological oncologist (Kobayashi *et al.*, 2008). Starting from 1970s the progress in imaging tests such as ultrasound (sonography), computed tomography (CT scan), magnetic resonance imaging (MRI), positron emission tomography (PET scan), and the use of instruments with fiber-optic technology and miniature video cameras has replaced the need for exploratory surgery. New screening methods seek to provide a precise, efficient and economical way of identifying women at risk for gynecological cancer.

Cancer research paradigm:

The field of cancer research is flourishing as researchers tries to unravel the mechanisms of cancer development, screening methods, cancer diagnosis, and cancer treatment. The need is to prevent this dreadful disease and develop new technologies to keep cancer in remission. However the disparity between the research efforts and cancer death suggest that there is a need to restructure research ideas. Cancer research is primarily based on a paradigm created years ago. The paradigm is based on two concepts, the stepwise model of cell transformation and the magic bullet theory.

The step wise model:

Cancer progression occurs in consecutive steps beginning with a normal cell and ending with a malignant metastatic tumour (Fearon and Vogelstein, 1990). According to the stepwise model of cell transformation, cancer is a disease that develops in a stepwise manner. A cell is first subjected to mutation that confers unrestricted cell division. This creates a clone of cells originating from the initial cell. The high division rate presents opportunities for additional genetic errors to occur randomly throughout the genome. Some of these mutations promote features that endow cells with a selective advantage over normal cells, thus creating a more aggressive sub-clone with an even higher mutation rate, eventually leading to tumour formation (Nowell, 1976).

Surgery:

Until second half of 20^{th} century cancer diagnosis had only one treatment option and that was surgery. Surgical anaesthesia became available after 1846, the next hundred years was known as the "the century of the surgeons." Bilroth from Germany, Handely in London and Halsted from Baltimore were known for their

contribution to cancer surgery. Endometrium cancer was the gynecological cancer to be treated surgically. The classic operation for cervical cancer is radical hysterectomy with pelvic lymphadenectomy. For the last decade, therapists have applied laparoscopic techniques to the radical hysterectomy procedure (Cohen, 2005). Surgery has a unique role in ovarian cancer, as it is used not only for diagnosis and staging but therapeutically, even in patients with widely disseminated, advanced disease.

The magic bullet model:

In the beginning of 20th century Paul Ehrlich conceived a concept "the magic bullet" that revolutionized the cancer research for the next century. He claimed that chemical compounds can be synthesized to specifically target a pathogen without effecting healthy tissue (Strebhardt and Ullrich, 2008). Inspired by the success of antibiotics, biologist applied Ehrlich's theory of magic bullet to the study of cancer. So the paradigm in cancer research was that "cancer cell is a foreign entity to the body much like a bacterium, it is the only cause of the disease." In 1942, it was found that nitrogen mustard had anticancer activity (Gilman, 1963). Thus anticancer chemotherapy was introduced to the world.

Chemotherapy:

Under the cancer research paradigm the stepwise model and magic bullet theory were united which resulted in the chemotherapeutic achievements, as compounds targeting the cancer cells which did not affect the normal healthy tissues were searched. The paradigm shift was towards non-invasive intervention that is cancer to be restricted by chemical agents without using surgical intervention. Cytotoxic cancer chemotherapy drugs are believed to gain selectivity by targeting cells that proliferate rapidly (Timothy, 2012). With modern surgical interventions and contemporary chemotherapy, most patients attain complete clinical remission (Bristow *et al.*, 2002).

Ovarian cancer is the leading cause of death in gynecological cancer. In most cases, the high death rate is due to tumour that has spread beyond the ovary at the time of diagnosis (Cannistra, 2004). Paclitaxel is used to treat ovarian cancer, breast cancer, lung cancer and pancreatic cancer etc. Paclitaxel, an antitumor drug was demonstrating encouraging activity in human malignancies, play a major role in cancer chemotherapy. The fact that the drug has a specific binding site on the microtubule polymer makes it unique among chemotherapeutic agents (Horwitz, 1994). Patients with ovarian cancer usually present with advanced disease, and the disease is generally managed with surgical

resection followed by platinum-based chemotherapy. Recent chemotherapeutic advances have led to improved survival (Cannistra, 2004). With much work done and many chemotherapeutic compounds developed, the paradigm was flourishing and this was the golden era of chemotherapy.

The estimation of cancer burden is valuable to set up priorities for disease control. Political will and advocacy to invest in healthcare infrastructure and human resources to improve service delivery and accessibility are vital to reduce the current burden (Sankaranarayanan, and Ferlay, 2006). Despite of screening thousands of chemicals performing hundreds of clinical trials and development of several FDA approved drugs (Chabner and Roberts, 2005) cancer still killed millions and were diagnosed at higher rates than before. Thus paradigm shift was imminent because in spite of all the advances made, most of the cancer patients still died. The first generation chemotherapeutic compounds designed did not fulfil Ehrlich's ideal. These compounds killed the cancer cells but it also killed the normal dividing cell. Also chemotherapy often causes several debilitating side effects. Thus cancer research focuses on searching for drug that affects only the cancer cells and cause minimum side effects.

Targeted therapy:

The paradigm which was flourishing failed to sustain its promise thus entered a new phase, an innovation called, targeted therapy. The targeted theory is merely a refinement of the original paradigm. Targeted cancer therapies are emerging based on basic signalling mechanisms involved in cell growth and cell death pathways. Many of the novel small molecules and biological agents being developed, target pathways involved in apoptosis thereby uncovering the molecular events that control and mediate apoptotic death. While approaches able to characterize the proteome and metabalome are beginning to emerge, next-generation sequencing technologies able to comprehensively evaluate DNA and RNA changes in tumors have altered the way in which we characterize tumors and manage patients (Chin *et al.,* 2011). Cancer is a disease of the genome (Macconaill and Garraway, 2010). Given the heterogeneity of this disease, increases in long-term survival might be achieved by translating recent insights at the molecular and cellular levels to personalize individual strategies for treatment and to optimize early detection (Bast *et al.,* 2009). Using targeted agents to inhibit multiple signalling pathways has emerged as a new paradigm for anticancer treatment based on preclinical and clinical data showing potent anti-

tumor activity of single drugs inhibiting multiple molecular targets or combination therapies involving multiple drugs with selective or narrow target specificity (Faivre *et al.,* 2006).

Personalised therapy:

Solid tumours are complex entity. In addition to any mutation acquired during cancer, the genetic makeup of the patient is also an important factor in the outcome of the given treatment. Thus the shift was towards personalized therapy in which each tumour should be treated differently. The implementation of personalized cancer therapy will require an improved link between the ability to characterize the genome of the patient and the changes that occur in the patient's tumour to identify biomarkers that will predict which patients will respond to specific targeted therapeutics (Brooks, 2012). Improvements in drug development, such as that of therapeutic antibodies and small molecule inhibitors, and emerging approaches to interrupt protein–protein and protein–DNA interactions, such as stapled peptides, and siRNA approaches to silence gene expression may soon allow us to drug the "undruggable" and are creating a new drug toolkit (Mangala *et al.,* 2009).

Conclusion:

Shifting paradigm in gynecological research is due to discrepancy between the advances made in cancer research and cancer mortality. Scientific progress is a long drawn out process and the advances made in cancer research are slow and sequential. Gynecological cancers incidences are reported to have increased in India, thus early diagnosis and treatment are crucial to reduce the mortality in women. Gynaecologic cancers are treated by surgery, radiation therapy and/or chemotherapy used singly or in combination. Cancer is a disease of the genome so research undertaken in cancer genetics and targeted therapies are to explored and learn about the molecular biology of cancer. Advances in the field of nanotechnology, robotic surgery and expression profiling are aiding the new techniques in cancer treatment. Proteomic for screening is an exciting area of cancer research. The ability to characterize the tumour and patient genome is a step towards personalized therapies. Despite the disturbing statistics, there is considerable optimism in the cancer research community that new targeted therapies will significantly improve on the cancer statistics or a shift in the paradigm may result in the quest for developing a cure for cancer.

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J BNB

A NOTE ON ANTS IN RESIDENTIAL AREAS OF MUMBAI

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ABSTRACT:

Ants are highly diverse and responsive to changes in the surroundings.They are considered as indicators of environmental health. Urban environments support ant diversity up to certain extent. The ants were recorded using bait traps and all out search method. Total seven species of ants were recorded representing 3 subfamilies, Formicinae, Myrmicinae and Dolichoderinae.

Paratrechina longicornis was recorded in about 80% observations where as *Solenopsis geminata,* was recorded in 46.7% observations. *Paratrichina longicornis* was the first to appear after the chemical treatment to control household insect pests.

KEYWORDS:

Residential areas, ant, diversity, Paratrechina longicornis,

INTRODUCTION:

Ants arecommon insects in urban environment, but occasionally noticed. They have been around 100 million years and also successful species as they are premier soil turners, channelers of energy. The known living ants involve 16 subfamilies, 296 genera and 15000 species, around 10 000 of which are described (Bolton, 1994). However, the number of species still remaining to be discovered and described is incredibly high (Holldobler and Wilson, 1990). Social insects in general, and ants in particular have achieved unprecedented ecological success and dominance in tropical ecosystems (Gadagkar *et al*. 1993). As ants can be virtually everywhere from the forest interiors below ground, right upto the kitchen, here, we attempted to focus on the residential places.

MATERIAL AND METHODS:

Study Area: The present study was undertaken in the year 2013. Fifteen residential areas were selected from Thane and Mumbai region. Average age of selected house varied between 7 to 60 years

with area ranging from 200-1000 sq.feet. The opportunistic observations were recorded during pre-monsoon season as this is the period of maximum activity. The individual ants were collected using various baits and all out search (Gadagkar *et al.*, 1993)

Preservation: The specimens were mounted using the standard procedure for identification using light as well as compound microscope in the laboratory (Tiwari, 1999). The individuals were collected using gloves and were transferred to the vials with 70% ethyl alcohol and glycerol for preservation.

OBSERVATION:

Fifteen residential areas were visited and the ant samples were collected from all rooms of the houses. The ants which were recorded are represented in the below table.

Table: 1- Ant diversity in residential areas

SN	***Ant Species***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	*Paratrechina Longicornis* (Black crazy ant)	+	+	-	+	+	+	+	-	+	-	+	+	+	+	+
2	*Camponotus compressus* (Common Godzilla ant)	+	-	-	-	-	+	-	-	+	-	+	-	-	-	+
3	*Camponotus modoc* (Black carpenter ant)	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-
4	*Monomorium pharaonis*	-	-	+	+	+	-	-	-	-	-	-	-	+	+	-
5	*Pheidole watsoni* (Spiny harvester ant)	+	-	-	-	-	+	-	-	+	-	-	-	-	-	+
6	*Tapinoma melanocephalum* (Odour ant)	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+
7	*Solenopsis geminate* (Red fire ant)	+	-	-	-	-	+	+	-	+	-	+	+	+	-	-

Total seven species of ants were recorded. These ants represented three subfamilies as Formicinae, Myrmicinae, and Dolichoderinae. Six genera were observed. *Camponotus* was represented by two species. *Camponotus modoc* was observed to be associated with Rain tree (*Samanea saman*), where the branches provided direct access to the ants to enter in the house. Presence of vegetation around the house appeared to influence ant fauna.

CONCLUSION:

Paratrechina longicornis (Formicinae) was prominently seen in these residential places during this study. These ants are very well adapted to the human habitats. These are tiny dull coppery brown ants, which appear black, found commonly scurrying around pavements and kitchens (Narendra and Kumar, 2006). Availability of suitable food material and nesting places in the form of crevices around the houses provides opportunity for ants to survive and develop. Potted plants in the house, crevices and even undisturbed pile of clothes in laundry bag was used by these ants to keep their brood safe. It was observed that these houses undergo chemical pest control periodically or occasional use insecticides available locally. In spite of use of chemicals, the ants appear after few months, even considered as pest. So, at least few species of ants showed ability to survive and adapt in the urban houses.

ACKNOWLEDGEMENT:

We are grateful to the Principal and Staff of Zoology department M.D College, Parel for the support and encouragement.

Sincere thanks to the Principal B.N. Bandodkar College of Science, Thane, for the valuable guidance.

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Women and ICT

GUNWANTI NEGI

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Abstract:

Women are a very crucial part of our society. Information is power and women if deprived of access to various forms of information will make them feeble. Increased knowledge enables women to contribute more to their community. ICT comprises a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. There is a lack of knowledge amid women about the use and applications of ICT for their growth and empowerment. This paper deals with the role ICT can play in the development and empowerment of women. It can provide a good platform for the women to tap their skills and explore their potentials making them more independent and confident. The advantages offered by ICT and its potential can serve to be an effective tool for the empowerment of women enabling them to face the outside world with greater confidence.

Keywords: Women, Information and communication technology (ICT), education, empowerment, e-learning.

Introduction:

Women are a very crucial part of our society. They exhibit various important roles in the society. In spite of being an important part of the society their status still remains neglected[(1)]. Their status need to have a lot of development. A large group of women in India works in the rural and unorganized sectors. A major chunk of Indian women are still tradition bound and are in a disadvantageous position. Inequality in women's access to and participation in all communications systems, especially the media, and their insufficient mobilization are the key reasons that only a few working women are present at the decision making level[(2)]. Information is power and women if deprived of access to various forms of information will make them feeble. Their information on many matters is restricted for cultural, social, economic and geographic reasons. To improve this scenario a lot needs to be done like they need to have access to quality education; as it is rightly said educating a girl or a woman means educating a family or even a community. They

also need exposure to new information and technology to bring about their overall development and to be in par with men in the society. Education and information increase knowledge about the world and various political, economic, social and cultural factors which influence their lives[3]. Increased knowledge enables women to contribute more to their community.

Information and communication technology (ICT): It comprises a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. The term ICT has been used to encompass technological innovation and convergence in information and communication leading to the development of knowledge[4]. This paper deals with the role ICT can play in the development and empowerment of women. ICT plays a very vital role in today's life. It is considered as one of the most effective tools for economic development [5]. It serves as a catalyst in the economic sector and developing human resources.

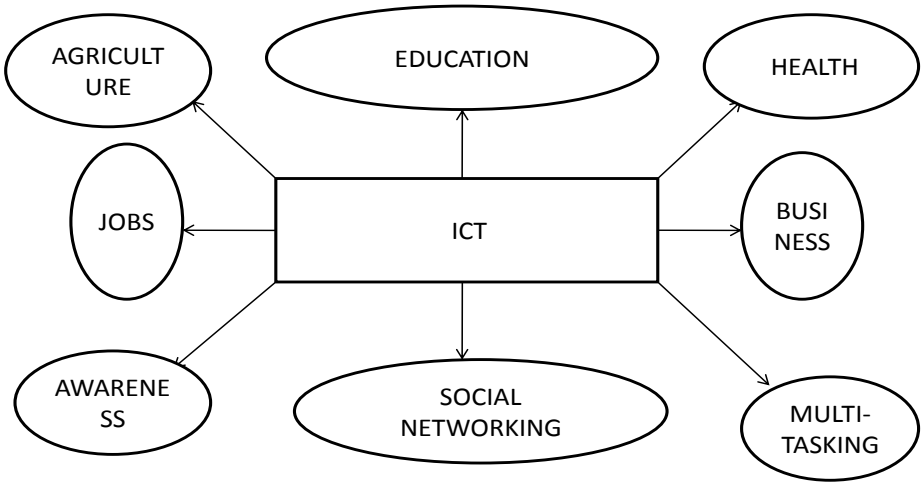
There is a lack of knowledge amid women about the use and application of ICT for their growth and empowerment. ICT can provide a good platform for the women to tap their skills and explore their potentials. It allows contribution of women in political, social and economic arenas and supports their empowerment [6]. This in turn is essential to build stronger economies, achieve national and international goals for growth and development and improve the quality of life for women, men, families and even communities.

In Recent years, ICT has brought about enormous changes in the way people communicate, work, interact and socialize with each other[7]. It also changes the perspective related to health, entertainment and leisure. These changes have made the lives of people superior and comfortable in several ways and have also lead to globalization. With the use of ICT, it is possible to have access to global information. ICT allows fast information exchange; access to the current knowledge in the interested fields in minimum amount of time, long-distance learning and communication [8]. It enables individuals to discuss their views with each other at a greater ease in the regional, national and global levels. Apart from this, it also enables to save money and time.

A Other most influential application of ICT in the field of knowledge networking is electronic

commerce which allows selling products and services on-line and also promotes for the growth of a new class of ICT-savvy women entrepreneurs.

The growing access of the web has contributed a lot to the empowerment of women. That is all explained in flow sheet diagram.



Some of the important aspects that can lead to empowerment of women are as follows-

- With e-learning (electronic learning), women can study from their homes at their own convenient time. This would make possible for women to complete their education along with fulfilling their household responsibilities.
- Completing their education or higher studies via e-learning along with household chores enables them to do multi-tasking.
- Electronic learning also allows women to opt for various online courses in their field of interest. Some of these courses even offer certificates on successful completion of the course.
- Online lectures and videos in the subject of interest update them about their subject even if they are at home.
- It will help them to gain information about health, agriculture, weather and innumerable other topics.

- It may also be useful for developing certain market related skills and set up a business or enhance an existing one.
- Knowledge about the market allows them to sell their products in the most profitable markets thus preventing their exploitation.
- Use of e-mail facilitates faster transfer of information.
- It provides them an opportunity to familiarize themselves with all the information about various jobs available. This results in better and faster matching between employer and employee.
- It also enables to opt for various online jobs. This would prove to be a boon for women who prefer to work from home.
- It allows them to be a part of social networking sites thus providing a platform for every woman to share their views and opinions with people all over the world.
- Also blogging is an important tool for the educational empowerment of women.
- It makes women more independent and confident.

Conclusion:

The advantages offered by ICT and its potential have provided an effective tool for the empowerment of women and have open up new windows for the women to face the outside world with greater confidence. This has put them in a greater control over the activities performed by them laying the foundation for entrepreneurship development.

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Data Warehousing, Data Mining, OLAP and OLTP For DECISION-MAKING PROCESS: A Comprehensive Study

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ABSTRACT

Data warehousing, Data Mining, OLAP and OLTP are essential elements to support decision-making process in industries, exploring the features, applications and the architecture of Data Warehousing. One may claim that the exponential growth in the amount of data provides great opportunities for data mining. In many real world applications, the number of sources over which this information is fragmented grows at an even faster rate, resulting in barriers to widespread application of data mining. The data warehouse supports on-line analytical processing (OLAP), the functional and performance requirements of which are quite different from those of the on-line transaction processing (OLTP) applications traditionally supported by the operational databases. Data warehouses provide on-line analytical processing (OLAP) tools for the interactive analysis of multidimensional data of varied granularities, which facilitates effective data mining. Data warehousing and on-line analytical processing (OLAP) are essential elements of decision support, which has increasingly become a focus of the database industry. OLTP is customer-oriented and is used for transaction and query processing by clerks, clients and information technology professionals. An OLAP system is market-oriented and is used for data analysis by knowledge workers, including managers, executives and analysts. Data warehousing and OLAP have emerged as leading technologies that facilitate data storage, organization and then, significant retrieval. Decision support places some rather

different requirements on database technology compared to traditional on-line transaction processing applications.

Keywords: Data Warehousing, OLAP, OLTP, Data Mining, Decision Making and Decision Support

1. INTRODUCTION

A data warehouse is a "subject-oriented, integrated, time varying, non-volatile collection of data that is used primarily in organizational decision making. Typically, the data warehouse is maintained separately from the organization's operational databases. There are many reasons for doing this. The data warehouse supports on-line analytical processing (OLAP), the functional and performance requirements of which are quite different from those of the on-line transaction processing (OLTP) applications traditionally supported by the operational databases. Data warehousing is a collection of decision support technologies, aimed at enabling the knowledge worker (executive, manager, and analyst) to make better and faster decisions.

2. DATA WAREHOUSING

2.1 Definition of Data Warehousing

Data can now be stored in many different types of databases. One type of database architecture that has recently emerged is data warehouse, which is a repository of multiple heterogeneous data sources, organized under a unified schema at a single site in order to facilitate management decision-making. A data warehouse is defined as a subject-oriented, integrated, time variant, non-volatile collection of data that serves as a physical implementation of a decision support data model and stores the information on which an enterprise needs to make strategic decisions. [Reference: O'Donnell, P., Arnott, D., & Gibson, M. (2002)]

2.2DATA WAREHOUSING FUNDAMENTALS

A data warehouse (or smaller-scale data mart) is a specially prepared repository of data designed to support decision making. The data in a data warehouse have the following characteristics:

1. *Subject oriented* — the data are logically organized around major subjects of the organization, e.g., around customers, sales, or items produced.
2. *Integrated* — all of the data about the subject are combined and can be analyzed together.
3. *Time variant* — historical data are maintained in detail form.

4. *Nonvolatile* — the data are read only, not updated or changed by users.

A data warehouse draws data from operational systems, but is physically separate and serves a different purpose. Operational systems have their own databases and are used for transaction processing; a data warehouse has its own database and is used to support decision making. Once the warehouse is created, users (e.g., analysts, managers) access the data in the warehouse using tools that generate SQL queries or through applications such as a decision support system or an executive information system.

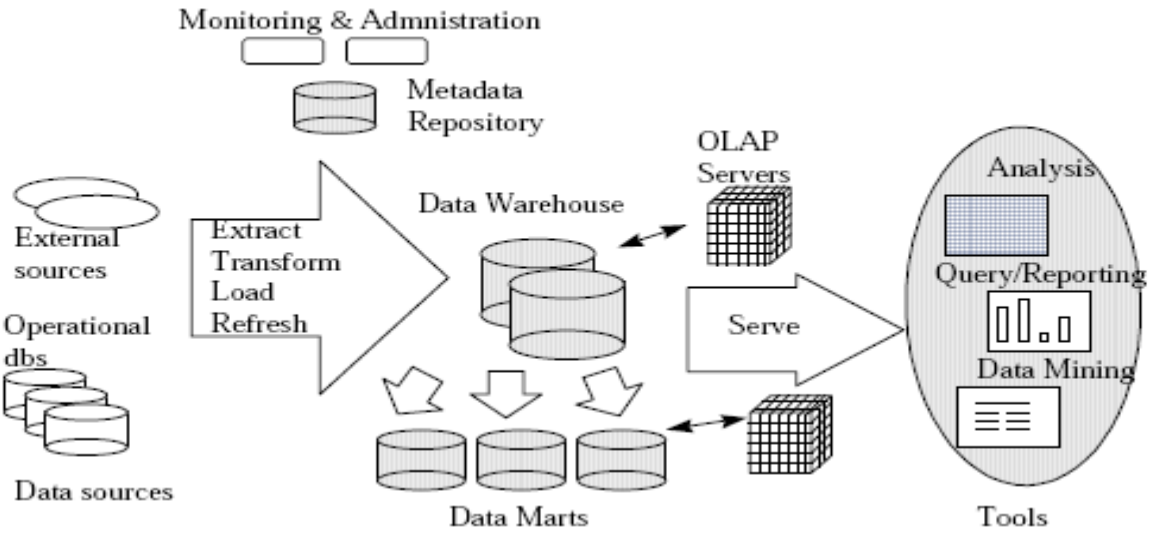

Figure 1: Data Warehousing Architecture

2.3 Architecture and End-to-End Process

It includes tools for extracting data from multiple operational databases and external sources; for cleaning, transforming and integrating this data; for loading data into the data warehouse; and for periodically refreshing the warehouse to reflect updates at the sources and to purge data from the warehouse, perhaps onto slower archival storage.

3. OLTP AND OLAP

The job of earlier on-line operational systems was to perform transaction and query processing. So, they are also termed as on-line transaction processing systems (OLTP).Data warehouse systems serve users or knowledge

workers in the role of data analysis and decision-making. Such systems can organize and present data in various formats in order to accommodate the diverse needs of the different users. These systems are called on-line analytical processing (OLAP) systems. [Reference: Hwang, H.-G., Kua, C.-Y., Yenb, D. C., & Chenga, C.-C. (2002)]

3.1 Need of data warehousing and OLAP

Data warehousing developed, despite the presence of operational databases due to following reasons:

An operational database is designed and tuned from known tasks and workloads, such as indexing using primary keys, searching for particular records and optimizing 'canned queries'. As data warehouse queries are often complex, they involve the computation of large groups of data at summarized levels and may require the use of special data organization, access and implementation methods based on multidimensional views. Processing OLAP queries in operational databases would substantially degrade the performance of operational tasks. Concurrency control and recovery mechanisms, such as locking and logging are required to ensure the consistency and robustness of transactions. While and OLAP query often needs read-only access of data records for summarization and aggregation. Concurrency control and recovery mechanisms, if applied for such OLAP operations, may jeopardize the execution of concurrent transactions.

4. DATA FLOW

The steps for building a data warehouse or repository are well understood. The data flows from one or more source databases into an intermediate staging area, and finally into the data warehouse or repository (see Figure 2). At each stage there are data quality tools available to massage and transform the data, thus enhancing the usability of the data once it resides in the data warehouse.

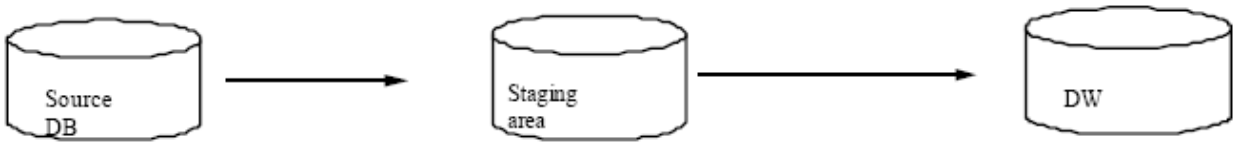

Figure 2- Data Flow

5. DATA MINING

Data Mining is the extraction or "Mining" of knowledge from a large amount of data or data warehouse. To do this extraction data mining combines artificial intelligence, statistical analysis and database management systems to attempt to pull knowledge form stored data. Data mining is the process of applying intelligent methods to extract data patterns. This is done using the front-end tools. The spreadsheet is still the most compiling front-end application for Online Analytical Processing (OLAP). The challenges in supporting a query environment for OLAP can be crudely summarized as that of supporting spreadsheet operation effectively over large multi-gigabytes databases. In a database application the queries issued are well defined to the level of what we want and the output is precise and is a subset of operational data. In data mining there is no standard query language and the queries are poorly defined. Thus the output is not precise (fuzzy) and do not represent a subset of the database.

6. DECISION MAKING USING A DATA WAREHOUSE

A Decision Support System (DSS) is any tool used to improve the process of decision making in complex systems. A DSS can range from a system that answer simple queries and allows a subsequent decision to be made, to a system that employ artificial intelligence and provides detailed querying across a spectrum of related datasets. Amongst the most important application areas of DSS are those complicated systems that directly "answer" questions, in particular high level "what-if" scenario modeling. Over the last decade there was a transition to decision support using data warehouses. The data warehouse environment is more controlled and therefore more reliable for decision support than the previous methods.

7. DATA WAREHOUSING INTEGRITY

Data Warehouses (DW) integrate data from multiple heterogeneous information sources and transform them into a multidimensional representation for decision support applications. Apart from a complex architecture, involving data sources, the data staging area, operational data stores, the global data warehouse, the client data marts, etc., a data warehouse is also characterized by a complex lifecycle. In a Permanent design phase, the designer has to produce and maintain a conceptual model and a usually voluminous logical schema, accompanied by a detailed physical design for efficiency reasons. The designer must also deal with data warehouse administrative processes, which are complex in structure, large in number

and hard to code; deadlines must be met for the population of the data warehouse and contingency actions taken in the case of errors. Finally, the evolution phase involves a combination of design and administration tasks: as time passes, the business rules of an organization change, new data are requested by the end users, new sources of information become available, and the data warehouse architecture must evolve to efficiently support the decision-making process within the organization that owns the data warehouse. All the data warehouse components, processes and data should be tracked and administered via a metadata repository.

8. CONCLUSION

Data warehouse can be said to be a semantically consistent data store that serves as a physical implementation of a decision support data model and stores the information on which an enterprise needs to make strategic decisions. So, its architecture is said to be constructed by integrating data from multiple heterogeneous sources to support and /or adhoc queries, analytical reporting and decision-making. Data warehouses provide on-line analytical processing (OLAP) tools for the interactive analysis of multidimensional data of varied granularities, which facilitates effective data mining. Data warehousing and online analytical processing (OLAP) are essential elements of decision support, which has increasingly become a focus of the database industry. OLTP is customer-oriented and is used for transaction and query processing by clerks, clients and information technology professionals. The job of earlier on-line operational systems was to perform transaction and query processing. Data warehouse systems serve users or knowledge workers in the role of data analysis and decision making. Such systems can organize and present data in various formats in order to accommodate the diverse needs of the different users. OLAP applications are found in the area of financial modeling (budgeting, planning), sales forecasting, customer and product profitability, exception reporting, resource allocation, variance analysis, promotion planning, and market share analysis. Moreover, OLAP enables managers to model problems that would be impossible using less flexible systems with lengthy and inconsistent response times. More control and timely access to strategic information facilitates effective decision-making. This

Provides leverage to library managers by providing the ability to model real life projections and a more efficient use of

resources. OLAP enables the organization as a whole to respond more quickly to market demands. Market responsiveness, in turn, often yields improved revenue and profitability. And there is no need to emphasize that present libraries have to provide market-oriented services.

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BIOMETRIC AUTHENTICATION USING HUMAN EAR

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Abstract:-

In this computer-driven era, identify theft and the loss or disclosure of data and related intellectual property are growing problems. We each have multiple accounts and use multiple passwords or an ever-increasing number of computers and web sites.

Central to all "security" is the concept of authentication verifying that the user is who he claims to be. Biometric promises to verify the person on the basis of his physiological or behavioral characteristics. By using biometrics it is possible to conform or establish an individual's identity on "who he/she" rather than by "what he/she possesses" (e.g. An id) or "what he/she remembers"(e.g. A password) biometrics has many ways of identification under it – eye, finger printing ,voice iris, face, etc. Recognizing people by their ear is relatively new class of biometrics.

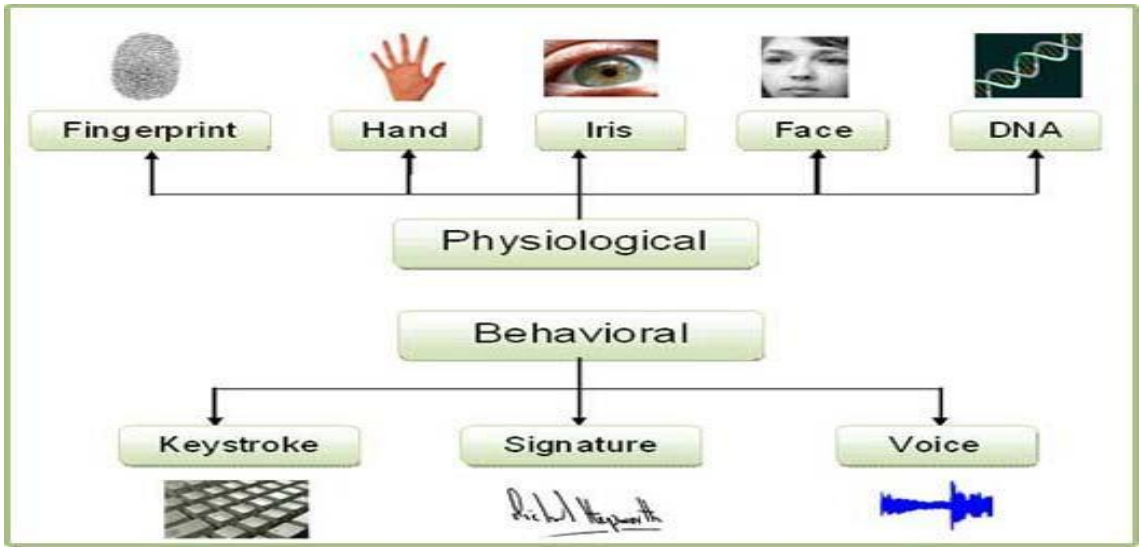
Several reasons account for this trend: first ear recognition does not suffer from some problems associated with other non-contact biometrics. Such as face recognition. Second, shape and features are unique for each person and invariant with age and structure of the ear is fairly stable and robust to change in facial expressions. It is most promising candidate for combination with the face in the context of multiposeface. In this paper we propose to discuss different method of ear detection and recognition using 2d and 3d technique.

Keywords:-Biometric, ear recognition, image matching.

Introduction:

Biometrics is physical or behavioral characteristic that can be used for human identification. Security plays an increasingly important role in our daily life, and biometric technologies are becoming the solution to highly secure recognition and verification of identity. Biometrics explores ways to distinguish between individuals using physical characteristics and personal traits. The most common physical characteristics explored and used are facial

features , eyes(iris and retina), finger prints and hand geometry. Handwriting and voice are examples of personal traits which could be used to distinguish between individuals. The described characteristics and traits can be used to identify different individuals; because they all satisfy specific requirements they are all universal and unique. Which means that everybody has them and that the characteristics or traits are different for any two individuals? In addition to that they are all more or less permanently, which means that the characteristics or traits should not change with time. [Referenced :Devesh Narayan, Sipi Dubey, 2014.]



Types of biometrics:-

There are number of different ways of biometric authentication. Some of them are listed as given below.

Eyes- iris recognition: - iris has its unique features which help in authentication of the individual. The use of features found in the iris to identify an individual.

Eyes- retina recognition:- retina has a pattern of vein in the back of the eye which is used for the individual recognition.

Finger print: - the uses of ridges and valley found on the surface tips of human finger to identify an individual

Hand geometry recognition: - the use of geometric features of the hand such as length of fingers and width of hand to identify an individual,

Odour: - the use of an individual's odour to determine identity

Signature recognition: - the authentication of an individual by the analysis of hand writing

Style, in particular the signature

Vein recognition: - it is a type of biometrics that can be used to identify individuals based on the vein patterns in the human finger or palm

Voice recognition: - the set of voice as a method of determining the identity of a speaker for access control

Ear: - the identification of an individual using the shape of the ear

Advantages of biometrics.

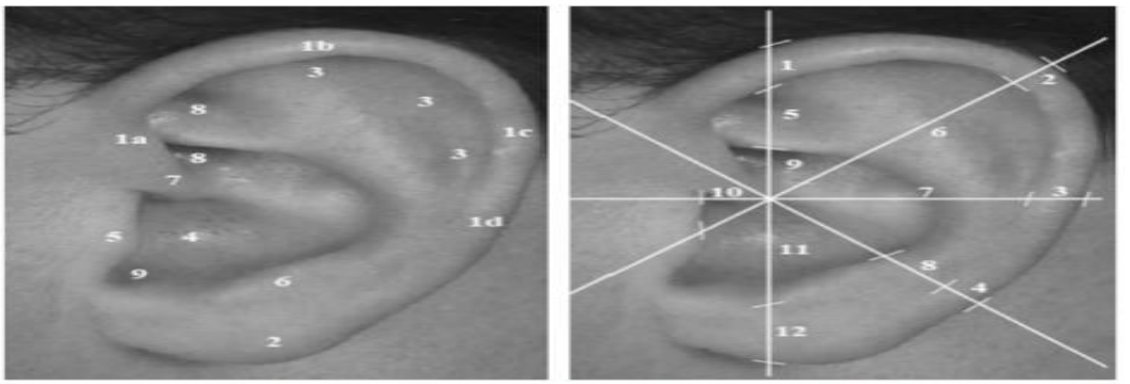
- Increase security – biometrics proves to be a promising feature for security. It proves to be confidential and trustworthy also it is low cost a additional tier for security.
- Fraud- there are almost no changes of forging the biometric data of an individual therefore the chances of fraud are completely reduced e.g. Id fraud are minimised.
- There can't be any misuse of biometric data as the loss of biometric aspect doesn't comes in picture e.g. unauthorised use of id, password will be prevented.
- It becomes very difficult to remember many password or sometimes difficult passwords as well sometimes we also tend to forget the password biometrics solves this issue by its uniqueness and also prevents sharing of passwords.
- Eliminate problems caused by lost ids or forgotten password by using physiological attributes. For e.g. prevent unauthorised use of lost, stolen or borrowed ID cards.
- Replace hard to remember password which may be shared or observed.
- Biometrics help us to verify automatically, to know who did what ,where and when
- It is the highest level of security till date because of uniqueness.
- It helps in positive and accurate identification of the individual.[Refernced: V.K. Narendira Kumar 1 and B. Srinivasan ,2012.]

Introduction to human ear:-

As other physical parts of the body are used as a biometric system, like that ear is also use for biometric system due to its uniqueness and measure ability.

every individual have different structure of their ear and due to this the ear is now a days used in biometric system. It has a special characteristics and advantages over other biometric system. Ear detection has collect little attention match up to other popular biometrics such as face, finger prints and gait. Ear is a workable new class of biometrics since the ear has desirable properties such as universality, distinctiveness and stability . Previous research has suggested the use of ears as a biometrics for human identification. Researches have advocated that the shape and appearance of the outer ear for humans is unique, and relatively unchanged throughout the life time

of an individual. Although no one has proved that each person's ears are unique, studies in gave empirical supporting evidences, face changes based on radically based on expressions, that problem does not exist with ears. In addition, the immediate background of the ear is very predictable it is always on the located on the side of the head, whereas facial recognition is typically requires a controlled background for accurate capture a situation that is obviously not always present. Unlike iris, retina, or finger print captures which are contact biometric, the ear does not require close proximity to achieve capture



(a) Anatomy (b) 12 Measurements used in 'Iannarelli System"

"Procedure of biometric authentication using human ear"Data acquisition:-

Data was acquired with a Minolta vivid 910 range scanner. One 640x480 3d scan and one 640x480 colour images are obtained near simultaneously. From 365people that participated in two or more image particularly acquisition sessions, there were 302 who had good 2d and 3d ear images in two or more sessions. No special instructions were given to the participants to make the ear images particularly suitable for this study, and 823 out of 2,342 images were dropped for various quality control reasons: 265 instances with hair obscuring the ear, 124 cases with artifacts due to motion during the scan,91 with the person wearing earrings, and 343 cases with poor images quality in either the 3d and/ or the 2d. Using the Minolta scanner in the high resolution mode that researcher used may make the motion artifact problems more frequent, as it takes 8 second to complete a scan.

Figure 3.1. The Minolta VIVID 910.

Pre-processing:-

The purpose of the pre-processing is to minimise the variation in the acquired image, while keeping the characteristic features of the subject. Different pre-processing methods were applied to 2d intensity data and 3d range data.

A] 2d data normalization

Research performed the 2d data normalization in two steps. First is the geometric normalization. Ears were aligned using two manually identified landmark point. The distance between the two points was used for scale, which means that all the extracted ears have the same distance between the triangular fossa and the incisures intertragica similarly; the orientation of the line between the two points is used for rotation. After normalization, the line between these two points is vertical in the xy plane. The second step is histogram equalization, which is used to compensate for lightning variation between images. These pre-processing steps are entirely analogous to those standard used in face recognition from 2d intensity images and those used in previous PCA based ear recognition using 2d intensity images.

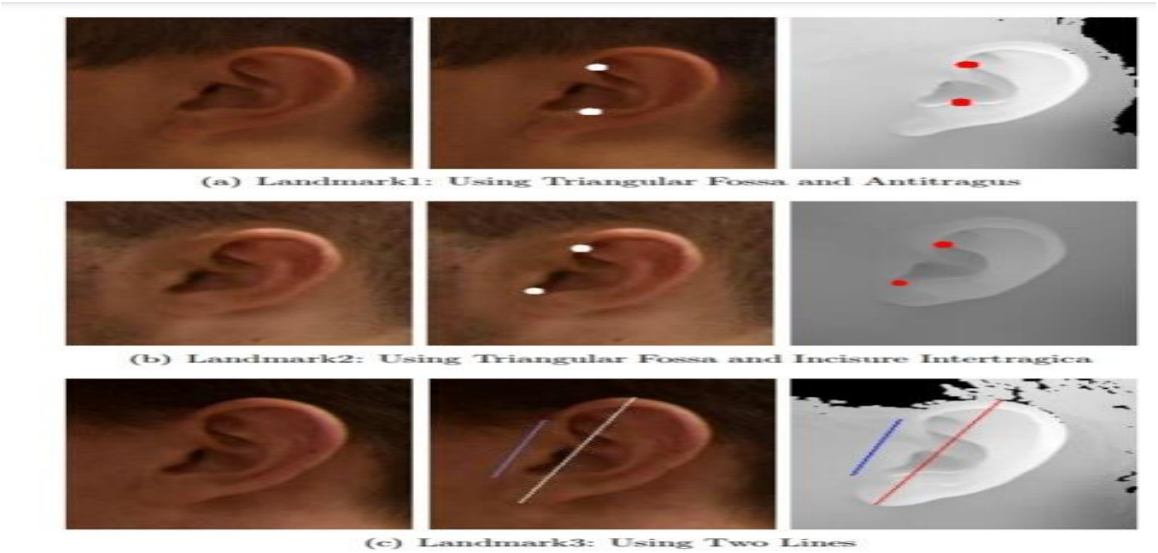
B] 3d data normalization

The normalization discussed next applies to preparing the range images from the 3d data for the 3d PAC and 3d aged-based approaches. No pre-processing is applied for the 3d ICP.[Referenced: Sukhdeep Singh, Dr. Sunil Kumar Singla (Assit.Prof.),2013]

Landmark selection:-

Researches have investigated three different landmark selection methods. The first is the two-point landmark described in a study of "eigen-ears" with 2d intensity images. The upper points are the triangular fossa and the lower point is the antitragus. However,

research found that these two points are not easily detected in all images. For instance, many ears in solve this problem; two other landmark methods were conducted. The second is similar to the first method point landmark, but researchers use the incisures intertragica instead of antitragus as the second point, as shown in figure



(a) Landmark1: Using Triangular Fossa and Antitragus

(b) Landmark2: Using Triangular Fossa and Incisure Intertragica

(c) Landmark3: Using Two Lines

Figure 3.7. Example of Ear Landmarks.

The orientation of the line connecting these two points is used to determine the orientation of the ear, and distance between then is used to measure the size of the ear. The third method uses a two-line landmark promises to find the most part of the ear.

Ear extraction:-

Ear extraction is based on the landmark locations on the original images. The original ear images are cropped to (87x124) for 2d and (68x87) for 3d ears. The normalised images are masked to "grey out' the background and only the ear is kept.

Uses:-

Unlike the use of other forms of authentication, such as passwords or tokens. Biometric recognition provides a strong link between an individual and a claimed identity. Reliable user authentication is essential. The consequences of insecure authentication in a banking or corporate environment can be catastrophic, with loss of confidential information, money, and compromised data integrity. Many applications in everyday life also require user authentication, including physical access control to offices or buildings, healthcare, immigration and border control, etc.

ADVANTAGES OF EAR BIOMETRICS:-

Finger print authentication has some drawbacks. Sometimes the cuts on the fingers may lead to changes in ridge thus effecting the verification. Also there are many privacy concerns of criminal implications. Also there may be many obstructions in some biometrics like face can be obstructed by hair, glasses, hats, etc. Also it is very sensitive to change in lighting, expression, and pose. Face also change with time. Consistency plays a very important role in biometrics authentication. Signature verification is designed to verify subjects based on the traits of their unique signature. As a result, individuals who do not sign their names in a consistent manner may have difficulty enrolling and verifying in signature verification.

Convenience is also a key aspects to be considered while authentication. The palmprint scanners are usually bulkier and expensive since they need to capture a larger area than the finger prints scanners. Large size of hand geometry device is needed and it not highly unique.[Ajay Kumar n , Chenye Wu,2012]

Conclusion:-

Biometrics is a science used for authenticating and verifying the individual's identity based on his/her physical or characteristic features.the aspects of biometrics such as uniqueness proves to be a promising feature for higher security. Many biometrics are used for verification like eye, fingerprints, voice etc. biometric authentication using human ear is a new concept in the field of biometrics. Because of its consistent nature of shape and size ear proves to be better than other biometrics. Our work in this paper demonstrates the different methods for authenticating the identity of a person using various 2D and 3D methods.

A Although it is a new class in this field but researchers prove it to be effective and promising in the near future. There are several directions for future work. Our automatic ear extraction works well for ear segmentation by employing both colour and depth information. However, the active contour algorithm may fail if there is no gradient change in either colour or depth image. An improvement might focus on using shape and texture constraints to help the segmentation. It might be possible to build in some preferred shape, like an ellipse, or to penalize small irregular parts to the outline.Even though our ear dataset is the largest to date, it is still too small to demonstrate practical use for many applications. A larger dataset is necessary to validate our work. In addition, it would be interesting to look further at partial ear

occlusion and of-angle ear experiments. The initial experimental results allow us to make some observations, but a larger dataset is required if we want to verify our observations and draw any rigorous conclusions. Speed and recognition accuracy remain important issues. We have proposed

Several enhancements to improve the speed of the algorithm, but the algorithm might benefit from adding feature classifiers. We have both 2D and 3D data and they are registered to each other, which should make it straightforward to test multi-modal algorithms. In our multi-modal biometric experiments, we considered the combination of 2D and 3D ear at the matching score level. It would be interesting to look at feature extraction level or decision level combination.

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BRAIN COMPUTER INTERFACE

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ABSTRACT

Brain-Computer Interfaces for Communication and Control- The potential to manipulate computers or machinery with nothing more than a thought. Advances in cognitive neuroscience and brain imaging technologies have started to provide us with the ability to interface directly with the human brain. Researchers have used these technologies to build brain-computer interfaces (BCIs), a direct communication pathway between the brain and an external device. In these systems, users manipulate their brain activity to produce signals that can be used to control computers or communication devices. Brain-computer interface (BCI) technology works on brain function for sending messages and commands to the external world. Wireless BCI systems would provide important new communication telepathy with which one person attached to a brain-computer interface (BCI) send words into the brain of another. Development of BCI technology will provide communication and control for those with motor disabilities and also for those without disabilities a control channel useful in special circumstances.

KEYWORDS: communication, neuroscience, brain imaging, electrophysiological, information, neuron.

INTRODUCTION

For generations, humans have fantasized about the ability to communicate and interact with machines through thought alone or to create devices that can peer into person's mind and thoughts. These ideas have captured the imagination of humankind in the form of ancient myths and modern science fiction stories.

However, it is only recently that advances in cognitive neuroscience and brain imaging technologies have started to provide us with the ability to interface directly with the human brain.

This ability is made possible through the use of sensors that can monitor some of the physical processes that occur within the brain that correspond with certain forms of thought.

Primarily driven by growing societal recognition for the needs of people with physical disabilities, researchers have used these technologies to build brain computer interfaces (BCIs), communication systems that do not depend on the brain's normal output pathways of peripheral nerves and muscles. In these systems, users explicitly manipulate their brain activity instead of using motor movements to produce signals that can be used to control computers or communication devices.

Computers touch almost every aspect of our lives, performing critical functions in diverse areas including education and training, home and entertainment, medicine, and work.

The importance of computers in our lives makes human-computer interaction one of the most critical factors.

- This basic research offers many potential insights into the brain state and mental processes of the human; insights that could potentially expand the current fundamental bounds on human computer communications and open the door to completely novel approaches to both human computer and human-human interaction.[Reference: by Desney Tan and Anton Nijholt, 2010]

DESIGN AND IMPLIMENTATION

The main features of BCI are to covert the person's intent into outside action.

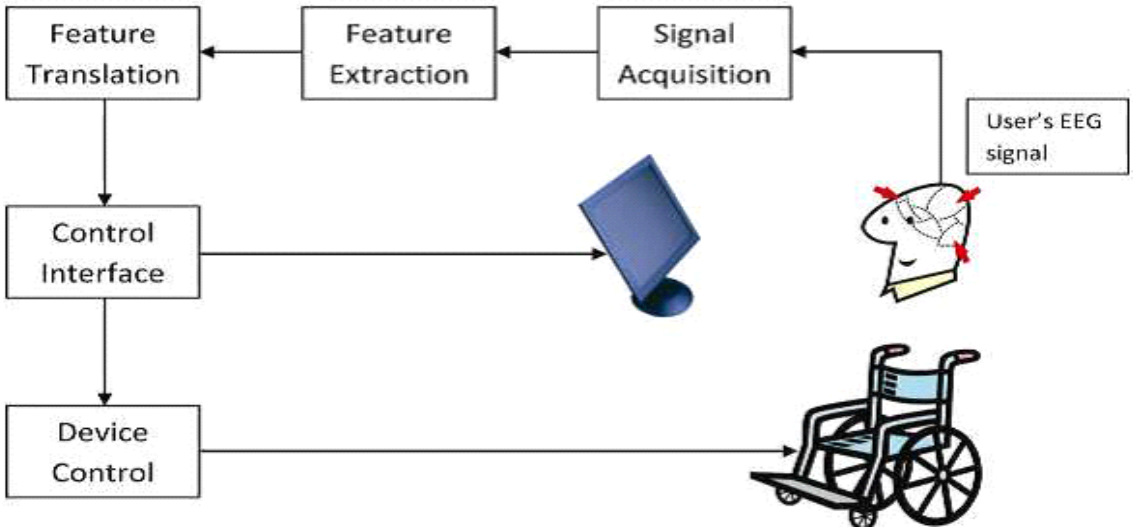
The main parts of any BCI system are:

- Signal acquisition system: involves the electrodes, which pick up the electrical activity of the brain and which the amplifier and analog filters.
- The feature extractor: converts the brain signals into relevant feature component.

At first the EEG raw signals are filtered by a digital band pass filter. Then the amplitude samples are squared to obtain the power samples. The power samples are averaged for all trials.

Finally the signal is moved by averaging over time samples.

- The feature translator: classifies the feature components into logical controls.
- The control interface::converts the logical controls into semantic controls.
- Device controller::changes the semantic controls to physical device commands which differ from one device to another depending on application.
- Finally the device commands are executed by the device.[Reference: Brent J. Lance,2012.]

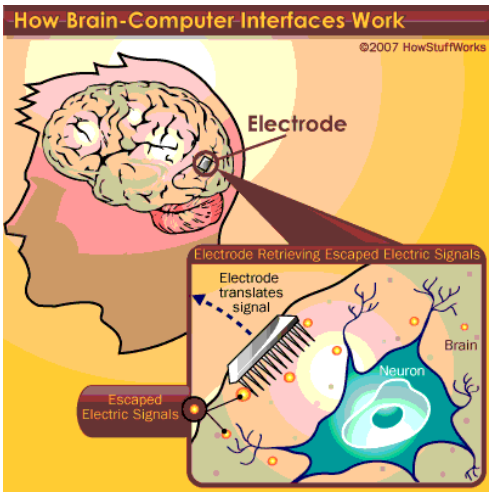


Functional components of Brain Computer Interface

WORKING:

Our brains are filled with **neurons**, individual nerve cells connected to one another by dendrites and axons. Every time we think, move, feel or remember something, our neurons are at work. That work is carried out by small electric signals that zip from neuron to neuron as fast as 250 mph. The signals are generated by differences in electric potential carried by ions on the membrane of each neuron. Although the paths the signals take are insulated by myelin, some of the electric signal escapes. EEG can detect those signals. The signal is then amplified and filtered. It is then interpreted by a computer program. In the case of a sensory input BCI, the function happens in reverse. A computer converts a signal, such as one from a video camera, into the voltages necessary to trigger neurons. The signals are sent to an implant in the proper area of the brain, and if everything works correctly, the neurons fire and the subject receive a visual image corresponding to what the camera sees.

The BCIs use single-neuron activity recorded within cortex to control cursor movement, select letters or icons. The central element in each BCI is a translation algorithm that converts electrophysiological input from the user into output that controls external devices. BCIs determine the intent of the user from a variety of different electrophysiological signals. These signals are translated in real-time into commands that operate a computer display or other device.



BCIs have maximum information transfer rate 24Mbps over the 3.2 and 3.8GHz bands to a receiver that is one meter away. [Reference : Payam Aghaei Pour, Tauseef Gulrez, Omar AlZoubi, Gaetano Gargiulo and Rafael A. Calvo ,2010.]

METHODS:

1. Electroencephalography (EEG):

Electroencephalography (EEG) is the recording of electrical activity along the scalp. EEG measures voltage fluctuations resulting from ionic current flows within the neurons of the brain.

EEG uses electrodes placed directly on the scalp to measure the weak (5–100 μV)electrical potentials generated by activity in the brain.

2. steady-state visual evoked potentials (SSVEP):

In recent years, there has been increased interest in using steady-state visual evoked potentials (SSVEP) in brain-computer interface (BCI) systems; the SSVEP approach currently provides the fastest and most reliable communication paradigm for the implementation of a non-invasive BCI.

TYPES OF BRAIN COMPUTER INTERFACE:

There are several types of brain-computer interfaces that are reported. The basic purpose of these devices or types is to intercept the electrical signals that pass between neurons in the brain and translate them to a signal that is sensed by external devices.

Invasive Brain Computer Interfaces

Invasive Brain Computer Interface devices are those implanted directly into the brain and have the highest quality signals. These devices are used to provide functionality to paralyzed people.

Invasive BCIs are also used to restore vision by

connecting the brain with external cameras and to restore the use of limbs by using brain controlled robotic arms and legs. As they rest in the grey matter, invasive devices produce the highest quality signals of BCI devices but are prone to scar-tissue build-up, causing the signal to become weaker or even lost as the body reacts to a foreign object in the brain.

Partially Invasive Brain Computer Interfaces

Partially invasive BCI devices are implanted inside the skull but rest outside the brain rather than within the grey matter. Signal strength using this type of BCI is bit weaker when it compares to Invasive BCI. They produce better resolution signals than non-invasive BCIs. Partially invasive BCIs have less risk of scar tissue formation when compared to Invasive BCI.

Non Invasive Brain Computer Interfaces

Non invasive brain computer interface has the least signal clarity when it comes to communicating with the brain but it is considered to be very safest when compared to other types.

Non-Invasive technique is one in which medical scanning devices or sensors are mounted on caps or headbands that read brain signals. This approach is less intrusive but also read signals less effectively because electrodes cannot be placed directly on the desired part of the brain. One of the most popular devices under this category is the EEG capable of providing a fine temporal resolution. It is easy to use, cheap and portable.[Reference : Clin. Neurophysiol 2006]

APPLICATIONS OF BCI

[1] VERE: The VERE project is concerned with embodiment of people in surrogate bodies so that they have the re-enter the world actively and physically through such remote embodiment. The second type of illusion that the surrogate body is their own body – and that they can move and control it as if it were their own. There are two types of embodiment considered. The first type is robotic embodiment where the person is embodied in a remote physical robotic device and controls it through a brain-computer interface. For example, a patient confined to a wheelchair or bed, who is unable to physically move, may nevertheless embodiment is virtual, where participants enter into a virtual reality with a virtual body representation. The basic and practical goal of this type of embodiment is to explore its use in the context of rehabilitation settings.

[2] ALIAS: The Ambient Assisted Living (AAL) research programme supports

projects that develop technology to compensate for the drawbacks of the aging society by applying modern information and communication technologies (ICTs). The Adaptable Ambient Living Assistant (ALIAS) project is one the projects funded by AAL. It aims to improve the communication of elderly people, thus ensuring a safe and long independent life in their own homes. A mobile robot platform without manipulation capabilities serves as a communication platform for improving the social inclusion of the user by offering a wide range of services, such as web applications for basic communication, multimedia and event search and games.

[3] BRAINABLE: The BrainAble project conceives, researches, designs, implements and validates an ICT based Human Computer Interface (HCI). Such an interface is composed of Brain Neural Computer Interface (BNCI) sensors combined with affective computing and virtual environments to restore and augment the two main shortcomings of people with disabilities. It entails inner and outer components. The inner component aims at providing functional independence for daily life activities and autonomy based on accessible and interoperable home automation.

[4] GAMES AND SOCIAL MEDIA: World of Warcraft (WOW) is a common Massively Multiplayer Online Role-Playing Game (MMORPG) in which the player controls an avatar in a virtual environment. The BCI system uses an SSVEP paradigm to control an avatar in WOW . For basic movements, selecting objects or firing weapons, four control icons are required. The bottom three icons are used to move the avatar forward and turn left or right. The fourth icon, the action icon, is located top left. It used to perform actions like grasping objects or attacking other opponents. Stimulation is done on the same 60 Hz LCD-display that also renders the game itself.

[5] BRAIN PAINTING: It is an application that allows for painting using the brain activity generated by event related potentials (ERPs) in response to maintained attention on visual stimulations.

[6] MENTAL TYPE-WRITER: March 14, 2006 scientists demonstrated a BCI that translates brain signals into computer control signals. The project demonstrated how a paralysed patient could communicate

by using a mental type-writer alone without touching the keyboard.

CONCLUSION:

The use of EEG signals as a vector of communication between man and machines represents one of the current challenges in signal theory research. The principal element of such a communication system is known as "Brain Computer Interface". It is a method of communication based on voluntary neural activity generated by the brain and independent of its normal output pathways of peripheral nerves and muscles. The neural activity used in BCI can be recorded using invasive or non-invasive techniques. We can say as detection techniques and experimental designs improve, the BCI will improve as well and would provide wealth alternatives for individuals to interact with their environment. BCIs will help creating a direct communication pathway between a brain and any external device like computers. It has increased the possibility of treatment of disabilities related to nervous system.

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DECENTRALIZED MULTITHREDED CLOUD STORAGE ARCHITECTURE

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ABSTRACT

Storing information on the cloud makes it easily accessible to users, while removing the burden of managing it; and the cloud's highly centralized nature keeps costs low for the companies providing the storage. However, centralized systems can lack resilience, meaning that service can be lost when any one part of the network access path fails.Centralized systems also give a specific point to attack for those who may want to access them illegally. Even if data is copied many times, if all the copies have the same flaw, they are all vulnerable. Just as a small gene pool places a population at risk from a change in the environment, such as a disease, the lack of variety in centralized storage systems places information at greater risk of theft.The alternative is **a decentralized system**, also known as a **peer-to-peer system or distributed system**, where resources from many potential locations in the network are mixed, rather than putting all one's eggs in one basket.In particular, we will discuss how the decentralized storage system works and how the client's data will be secured using multiple security methods and algorithms like RSA Algorithm.

KEYWORDS – distributed system, centralized control and orchestration server, RSA algorithm.

INTRODUCTION

Decentralized cloud storage system is a model of networked online storage where data is stored on multiple computers (nodes), hosted by the participants cooperating in the cloud. The total storage contributed in aggregate must be equal to the amount consumed for the viability of the co-operative. However, some nodes may contribute less and some may contribute more .There may be reward models to compensate the nodes contributing more.Hence instead of

relying on large data centres to provide the computing power for end-users, to rely on the excess computing power available on PCs everywhere. The strength of a decentralized system is that its value grows as the number of users increases: all producers are also potential consumers, so each added node gives the new producer as many customers as are already on the network.

"Since all the members of a decentralized network are giving as well as consuming resources, it quickly overtakes a centralized network in terms of its strength". .[R.Ranjith, D.Kayathri Devi, 2013]

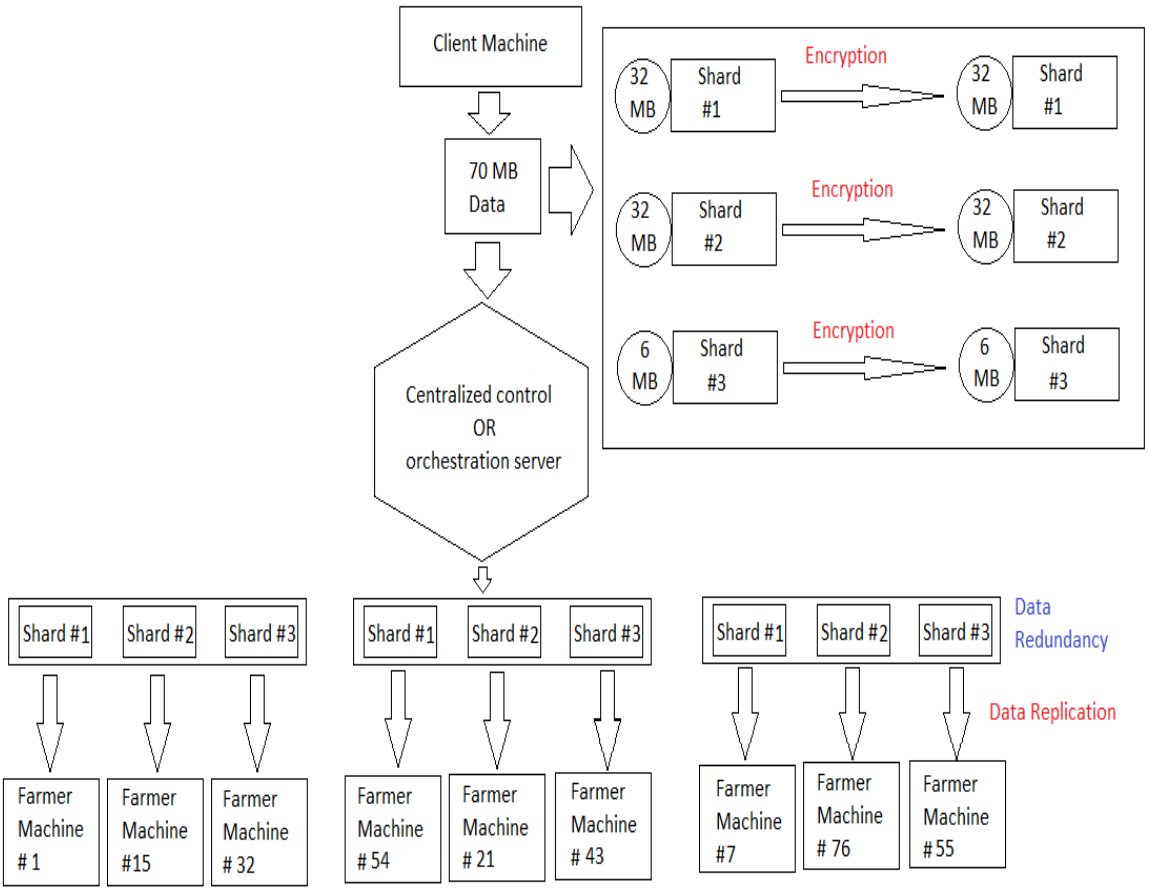
HOW IT WORKS

Imagine if there were just one million users with 100 GB spare drive space? The storage of the cloud will therefore be close to 100 petabytes that will have 0 downtime, data loss protection and access speed limited only by your connection speed. Besides that since all your data will be effectively scattered between hundreds and thousands users you will never have to worry that anyone but you can access it. All your data is perfectly safe and accessible.

When you share part of your hard disc to the cloud network you become the part of the distributed system. The currency will be used to pay for the cloud service. Anybody with this participation either share their spare hard disk drive space and receive payment for it, or buy themself cloud storage from other users. Or both.

Users have more computing capacity than they need, and they are willing to share this with others in exchange for credits, or even money.Anyone with a PC can become a provider of "cloud" computing power through a virtualization platform. [Sunita Sharma, Amit Chugh, 2013].

Unlike a traditional storage cloud, a **cooperative** does not employ dedicated servers for the actual storage of the data, thereby eliminating the need for a significant dedicated hardware investment. Each node in the cooperative runs specialized software which communicates with a **centralized Control and orchestration server**, thereby allowing the node to both consume and contribute storage space to the cloud. The centralized control and orchestration server requires several orders of magnitude less resources (storage, compute and bandwidth) to operate relative to the overall capacity of the cooperative.



Rough Design of Decentralized Data Storage

A shard is an encrypted portion of a file that we would like to store on this network. Splitting the file into shards allows for better data security so that no one farmer will have a complete copy as long as the file being stored is above a standardized shard size. We define a farmer as a user that is leasing hisor her hard drive space to the network. We define a standardized shard size as abyte multiple such as 8 MB or 32 MB. These are kept at pre-set sizes to dissuade any attempt to determine what is being stored. Sharding also allows large files to be more manageable as they are distributed throughout the network.

IS IT SECURE?

It covers three major goals of data security over the cloud storage:

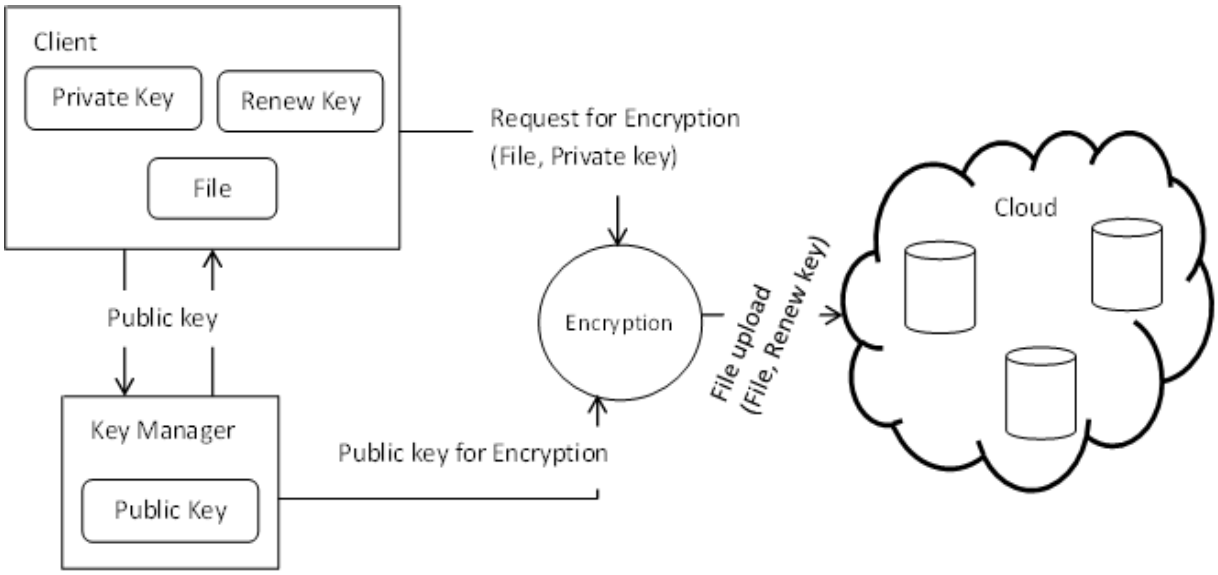
- Confidentiality - Preserves authorized restrictions on information access and disclosure through encryption.

- Integrity - Guarding against improper information modification or destruction.
- Availability - Ensures timely and reliable access to and use of information as your data is stored on local nodes.

Files hosted in the distributed system are fragmented and encrypted before leaving the local machine. They are then distributed randomly using a load balancing and geo-distribution algorithm to other nodes in the cooperative. Users can add an additional layer of security and reduce storage space by compressing and encrypting files before they are copied to the cloud.

Encryption protects against internal and external threads. There is lot of techniques introduced to make secure transaction and secure storage. The encryption standards used for transmit the file securely. The assured deletion technique aims to provide cloud clients an option of reliably destroying their data backups upon requests. The encryption technique was implemented with set of key operations to maintain the secrecy.

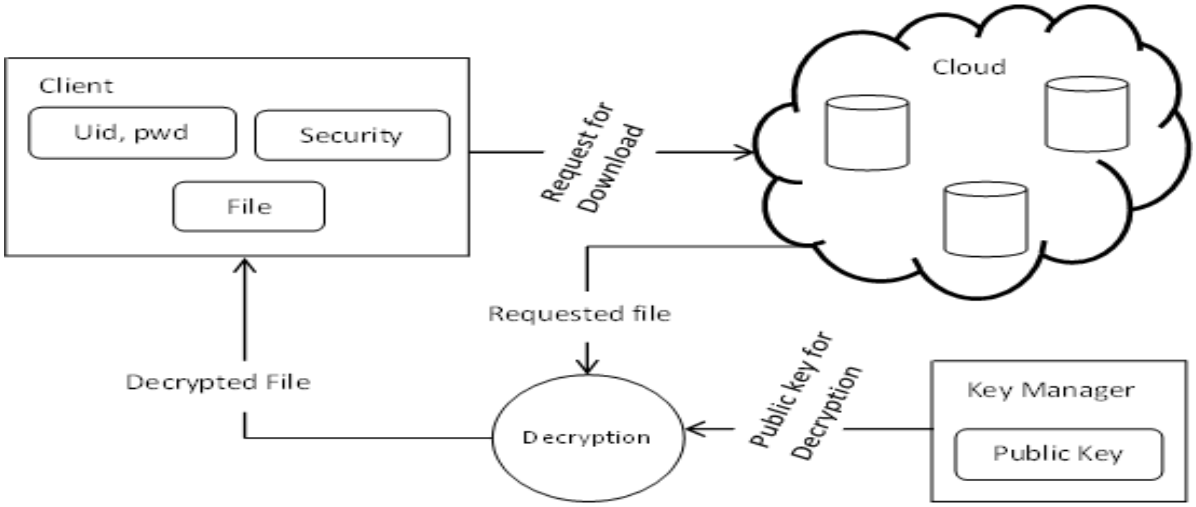
The most trusted algorithm for encryption/decryption is **RSA algorithm**. This algorithm is the proven mechanism for secure transaction. Here we are using the RSA algorithm with key size of 2048 bits.[Referenced : Cryptography and Network seccuity by Atul Kahate] The keys are split up and stored in four different places. If a user wants to access the file he/she may need to provide the four set of data to produce the single private key to manage encryption/decryption.



The client made request to the key manager for the public key, which will be generated according to the policy

Associated with the file, Different policies for files, public key also differs. But for same public key for same policy will be generated. Then the client generates a private key by combining the username, password and security credentials. Then the file is encrypted with the public key and private key and forwarded to the cloud.

The client can download the file after completion of the authentication process. As the public key maintained by the key manager, the client request the key manager for public key. The authenticated client can get the public key. Then the client can decrypt the file with the public key and the private key. The user's credentials were stored in the client itself. During download the file the cloud will authenticate the user whether the user is valid to download the file. But the cloud doesn't have any attributes or the details of the user.



ADVANTAGES

1. Ensure Privacy – The data stored at distributed cloud system is encrypted using public and private keys so the owner of the file can only decrypt it and can have access to that file which ensures the privacy.
2. Prevention of Data Loss – Each file is copied four times and replicated in encrypted format to different nodes so if any node fails to response then the data is recovered from other nodes with the copy of that file.

3. Data Redundancy - In order to maintain data integrity and high availability across a relatively unreliable set of computers over a wide area network like the Internet, the source node will add some level of redundancy to each data block. This allows the system to recreate the entire block even if some nodes are temporarily unavailable. The Service provider run periodic checks on a data source to make sure the file available and unmodified. If the data source fails these checks or is unavailable, the data can be recovered from another data source.
4. Flexible Contribution - Due to bandwidth or hardware constraints some nodes may not be able to contribute as much space as they consume in the cloud. On the other hand, nodes with large storage space and limited or no bandwidth constraints may contribute more than they consume, thereby the cooperative can always stay in balance.
5. Geographic distribution - N data fragments are stored on N unique devices in different locations around the globe. The data fragments are distributed over parallel Internet connections, resulting in faster transfer speed.
6. Resilient Storage - Most hard drives end up getting recycled with 50 percent of their disk space unused. This means that there's a lot of data storage capacity going to waste. The Resilient Storage Architecture harnesses this existing unused capacity and turns it into valuable cloud storage. Contribute unused, already-paid-for local drive space, and in return you receive highly secure RAID cloud storage
7. Resilience to failures good - Multiple paths are explored and data is replicated.
8. Safer - Because data is encrypted, broken into blocks, further shred into fragments, protected with patented secure cloud storage RAID-96 redundancy and then spread throughout the p2p storage system, it is nearly impossible for anyone besides the data owner to gain access to it. Traditional cloud backup providers have an eggshell security design which, once compromised from either outside or in, gives access to all of your data.
9. Greener - Datacentres take massive amounts of land and materials to build, and an amazing amount of energy to power and keep cool. The decentralized peer-to-peer backup solution allows users to get more out of the power, cooling and real estate they already have. Plus, with decentralized

system, you are not adding to the already huge carbon footprint created by cloud computing data centres. .[Referenced : SeongHan Shin and Kazukuni Kobara,2010]

CONCLUSION

Decentralized cloud storage system is a cloud shared by the community. It's potentially largest, cheapest and most secure cloud storage available. What you share is what you get.

This architecture is based on the peer-to-peer system. Every participant shares as well as get access to highly secure cloud storage. Every participant get paid for the storage he shares. The data that is uploaded is encrypted, replicated and can only be accessed by the owner using private and public encryption keys managed by key manager. It is incremental as it depends upon the storage shared by the PCs. It is high performance, fault tolerance and low cost system with data integrity, data redundancy, no data loss and complete privacy.

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DEFENCE AGAINST THE DIGITAL ART OF HACKING

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ABSTRACT –

This paper gave us a glimpse about What is the term Hacking is all about .and what can a skilled hacker do by using just his laptop and an broadband connection some of the eg - of famous hack are also mentioned in this paper what preventive masseurs we can take to protect yourself .it also mentions about the three different kind of hacker and the difference between them .In addition to that it mentioned about an useful browser called tor an how by using it user can get the protection that other browsers lack

KEYWORDS- hacking, tor , stuxnet ,morris worm, Phone Phreaks, Spoofing attack, Rootkit

INTRODUCTION TO HACKING

Hacking is the gaining of access (wanted or unwanted) to a computer and viewing, copying, or creating data (leaving a trace) without the intention of destroying data or maliciously harming the computer

HISTROY OF HACKING

PREHISTORY

1960s: The Dawn of Hacking

Original meaning of the word ―hack started at MIT; meant elegant, witty or inspired way of doing almost anything;hacks were programming shortcuts

ELDER DAYS (1970-1979)

1970s: Phone Phreaks and Cap'n Crunch: One phreak, . John Draper (aka ―Cap'n Crunch), discovers a toy whistle inside Cap'n Crunch cereal gives 2600-hertz signal, and can access AT&T's long-distance switching system. Draper builds a ―blue box used with whistle allows Phreaks to make free calls Steve Wozniak and Steve Jobs , future founders of Apple Computer, make and sell blue boxes.

THE GOLDEN AGE (1980-1991)

1980: Hacker Message Boards and Groups Hacking groups form; such as Legion of Doom (US), Chaos Computer Club (Germany).

1983: Kids' Games

Movie ―War Games‖ introduces public to hacking.

THE GREAT HACKER WAR

Legion of Doom vs. Masters of Deception; online warfare Legion of Doom vs. Masters of Deception; online warfare

1984: Hacker 'Zines

Hacker magazine 2600 publication; online zine Phrack

CRACKDOWN (1986-1994)

1986: Congress passes Computer Fraud and Abuse Act;

Crime to break into computer systems.

1988: The Morris Worm

Robert T. Morris, Jr., launches self-replicating worm on Arpanet. 1989: The Germans, the KGB and Kevin Mitnick.German Hackers arrested for breaking into U.S.

Computers; sold information to Soviet KGB.

TYPES OF HECKERS

WHITE HAT HACKERS –White hat hackers are the good guys, working for an organization although the working of the white

Hats and the black hats are the same the main difference is that the White hats do so with the permission of the organization .

Grey Hat Hackers-A grey hat hacker is someone who is in between these two concepts. He may use his skills for legal or illegal acts, but not for personal gains. Grey hackers use their skills in order to prove themselves that they can accomplish a determined feat, but never do it in order to make money out of it. The moment they cross that boundary, they become black hackers.

Black Hat Hackers - Make a living by breaking into systems and selling the information A black hat hacker, also known as a cracker or a dark side hacker is someone who uses his skills with a criminal intent. Some examples are: cracking bank accounts in order to make transferences to their own accounts, stealing information to be sold in the black market, or attacking the computer network of an organization for money.[Reference: Dhamija, Rachna Tygar, J.D. Hearts, Marti Why Phising 2006]

TOP THREE ALL THE TIMES

Year: 2014 Target: EBay

EBay went down in a blaze of embarrassment as it suffered this year's biggest hack so far. In May, eBay revealed that hackers had managed to steal personal records of 233 million users. The hack took place between February and March, with usernames, passwords, phone numbers and physical addresses compromised. Despite eBay not confirming who was behind the attack, the notorious Syrian Electronic Army

claimed responsibility. Despite the huge data breach and the sensitivity of the data, the SEA said that it was a "hacktivist operation" and that they "didn't do it to hack people's accounts".

Year:2010

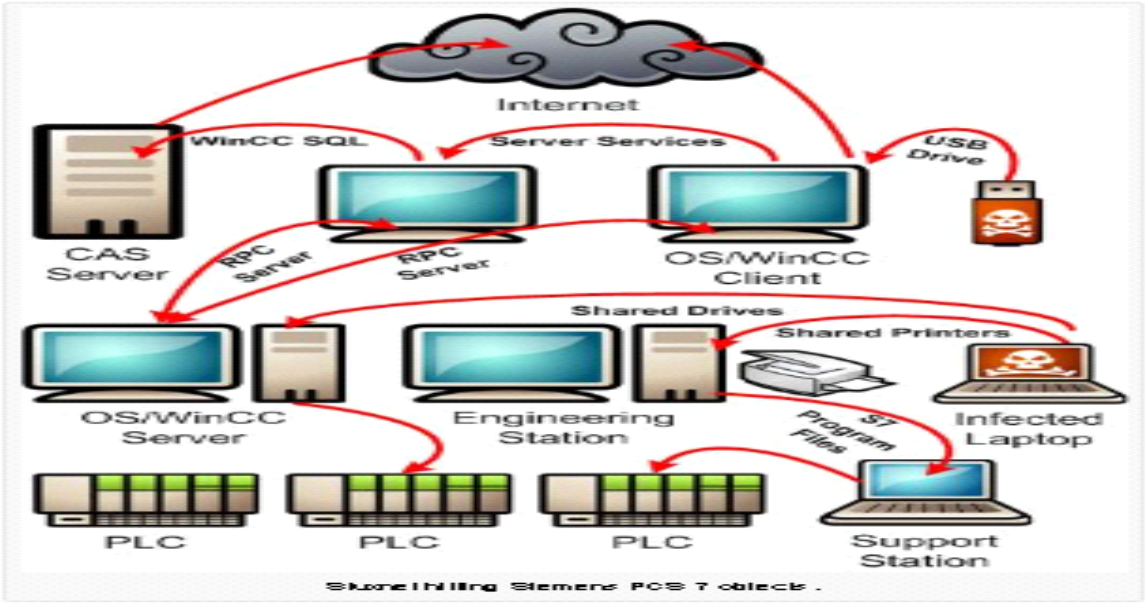
Target - Iran's nuclear centrifuges.

Stuxnet is a computer worm that was discovered in June 2010. It was designed to attack industrial programmable logic controllers (PLCs).

Stuxnet reportedly ruined almost one-fifth of Iran's nuclear centrifuges.

Stuxnet has three modules: a worm that executes all routines related to the main payload of the attack; a link file that automatically executes the propagated copies of the worm; and a rootkit component responsible for hiding all malicious files and processes, preventing detection of the presence of Stuxnet.

Stuxnet is typically introduced to the target environment via an infected USB flash drive. The virus then propagates across the network, scanning for Siemens Step7 software on computers controlling a PLC. In the absence of both criteria, Stuxnet becomes dormant inside the computer. If both the conditions are fulfilled, Stuxnet introduces the infected rootkit onto the PLC and Step7 software, modifying the codes and giving unexpected commands to the PLC while returning a loop of normal operations system values feedback to the users



Year-1998

Target – Internet

The Morris worm or Internet worm of November 2, 1988 was one of the first

computer worms distributed via the Internet. It is considered the first worm and was certainly the first to gain significant mainstream media attention. It also resulted in the first conviction in the US under the 1986 Computer Fraud and Abuse Act. It was written by a graduate student at Cornell University, Robert Tappan Morris, and launched on November 2, 1988 from MIT.

- According to its creator, the Morris worm was not written to cause damage, but to gauge the size of the Internet. The worm was released from MIT to disguise the fact that the worm originally came from Cornell [Reference: my.safaribooksonline.com/.../introduction-to-ethical-hacking-ethics-legality.]

Defensive and Offensive Hacking Techniques

Here are some of the techniques that hacker use . some of this technique may have only offensive use but some can be used for defense purpose to .I mean that a whit hat hacker can use this techniques to protect the network whereas a black hat hacker can use the same technique to attack the network

Techniques used by White hats/Black Hats

Vulnerability scanner-

A vulnerability scanner is a tool used to quickly check computers on a network for known weaknesses. Hackers also commonly use port scanners. These check to see which ports on a specified computer are "open" or available to access the computer, and sometimes will detect what program or service is listening on that port, and its version number. (Firewalls defend computers from intruders by limiting access to ports and machines, but they can still be circumvented.) eg Nmap , Nessus , Nikto

Password cracking-

Password cracking is the process of recovering passwords from data that has been stored in or transmitted by a computer system. Common approaches include repeatedly trying guesses for the password, trying the most common passwords by hand, and repeatedly trying passwords from a "dictionary", or a text file with many passwords.eg John The Ripper

Packet analyzer-

A packet analyzer ("packet sniffer") is an application that captures data packets, which can be used to capture passwords and other data in transit over the network.

TECHNIQUES USED BY BLACK HATS

Brute-force attack

Password guessing. This method is very fast when used to check all short passwords, but for longer passwords other methods such as the dictionary attack are used, because of the time a brute-force search takes.

Spoofing attack (phishing)

A spoofing attack involves one program, system or website that successfully masquerades as another by falsifying data and is thereby treated as a trusted system by a user or another program — usually to fool programs, systems or users into revealing confidential information, such as user names and passwords.

Rootkit

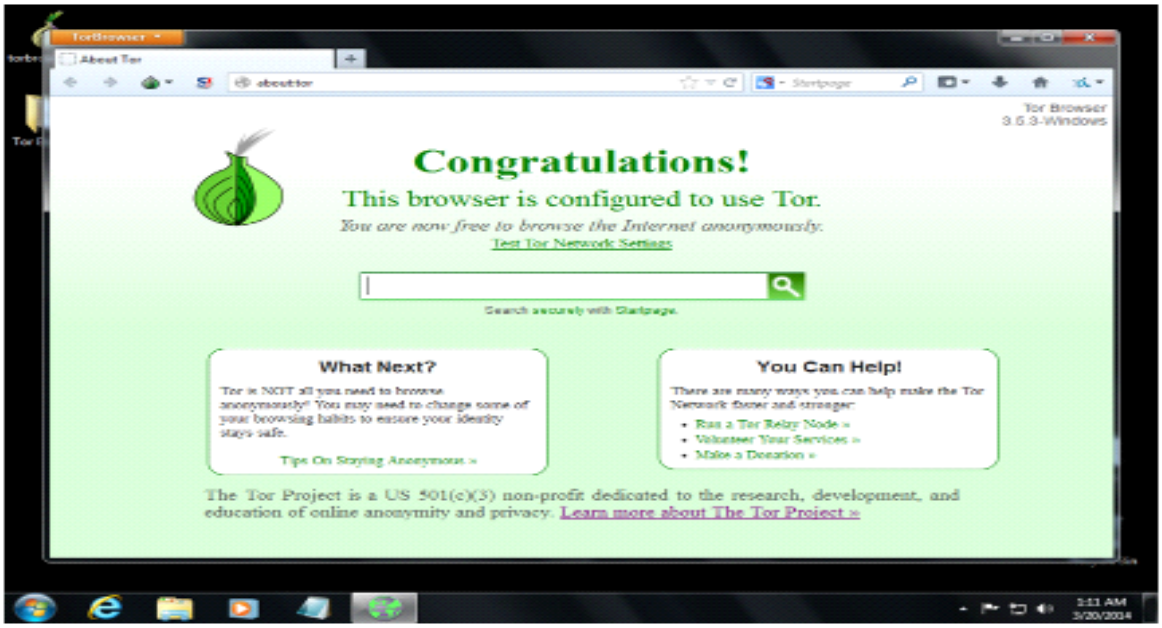
A rootkit is a program that uses low-level, hard-to-detect methods to subvert control of an operating system from its legitimate operators. Rootkits usually obscure their installation and attempt to prevent their removal through a subversion of standard system security. They may include replacements for system binaries, making it virtually impossible for them to be detected by checking process tables.

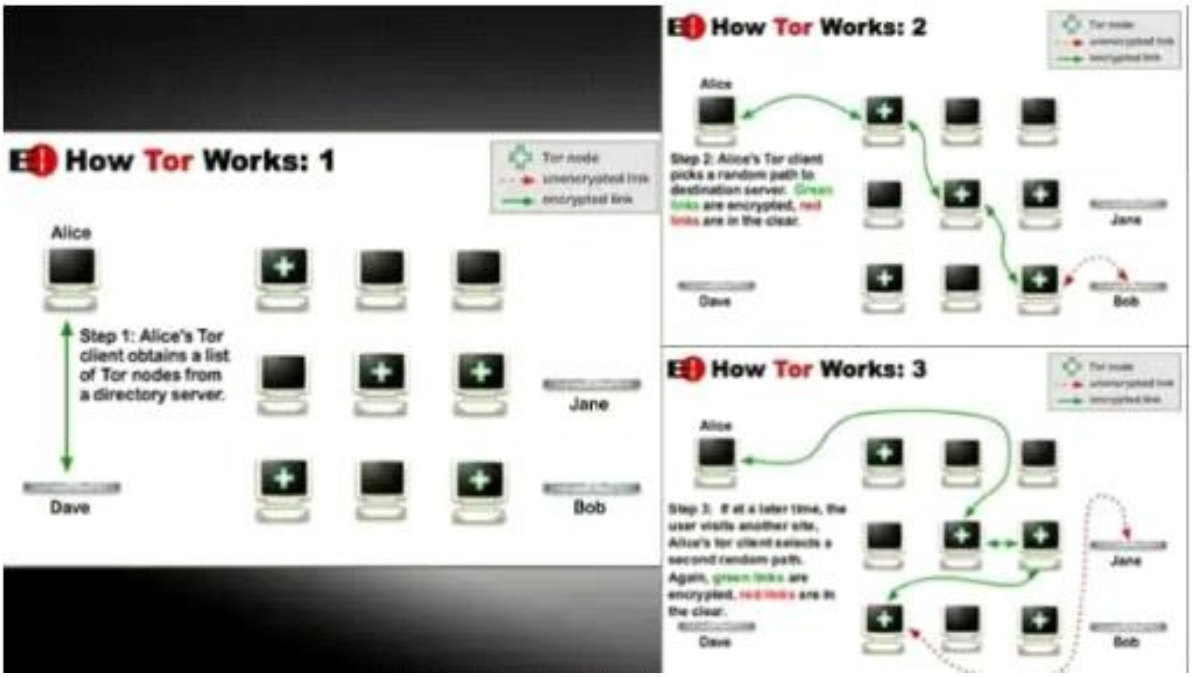
Social engineering

In the second stage of the targeting process, hackers often use Social engineering tactics to get enough information to access the network. They may contact the system administrator and pose as a user who cannot get access to his or her system. This technique is portrayed in the 1995 film Hackers, when protagonist Dade "Zero Cool" Murphy calls a somewhat clueless employee in charge of security at a television network. Posing as an accountant working for the same company, Dade tricks the employee into giving him the phone number of a modem so he can gain access to the company's computer system. [Reference: Goldman, David 2011]

BROWSER TO PROTET YOUR IDENTITY Tor Browser-

The Tor software protects you by bouncing your communications around a distributed network of relays run by volunteers all around the world: it prevents somebody watching your Internet connection from learning what sites you visit, it prevents the sites you visit from learning your physical location, and it lets you access sites which are blocked. The Tor Browser lets you use Tor on Windows, Mac OS X, or Linux without needing to install any software. It can run off a USB flash drive, comes with a pre-configured web browser to protect your anonymity, and is self-contained.


Congratulations!
This browser is configured to use Tor.
You are now free to browse the Internet anonymously.
Test Tor Network Settings
What Next?
You Can Help!
The Tor Project is a US 501(c)(3) non-profit dedicated to the research, development, and education of online anonymity and privacy. Learn more about The Tor Project »


How Tor Works: 1
Alice
Step 1: Alice's Tor client obtains a list of Tor nodes from a directory server.
Jane
Dave
Bob
How Tor Works: 2
How Tor Works: 3

Advantages of Cyber Security

- Risk Free environment for online user
- Secured online transaction
  - Security from identity theft , spasm , malware,virus

Focus Cyber Security Research Areas for Governments

The governments around the world are eyeing continuous research in the field of cyber security to safeguard against the emerging and future threats. Some of the cyber security research areas that are in focus by various countries like Australia, Japan, Canada and USA are briefly mentioned below.

The Cyber Security Research Roadmap released by the Department of Homeland Security (DHS) in the US, identifies the following eleven hard problems that require R&D efforts:

a. Scalable trustworthy systems (including system architectures and requisite

b. development methodology)

c. Enterprise-level metrics (including measures of overall system trustworthiness)

d. System evaluation life cycle (including approaches for sufficient assurance)

e. Combating insider threats

f. Combating malware and botnets

g. Global-scale identity management

h. Survivability of time-critical systems

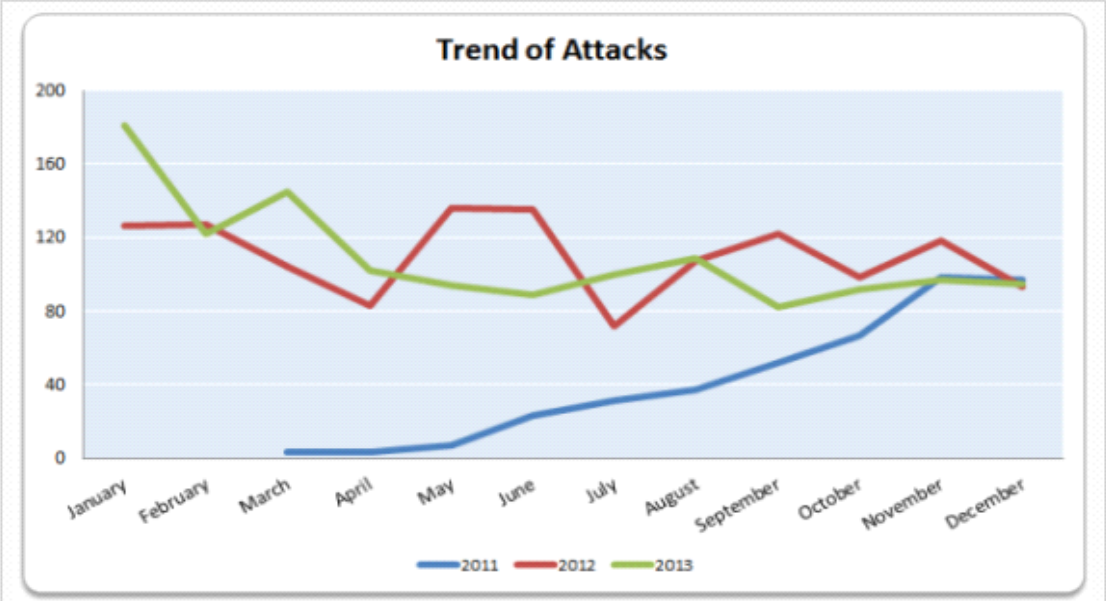
i. Situational understanding and attack attribution

j. Provenance (relating to information, systems, and hardware)

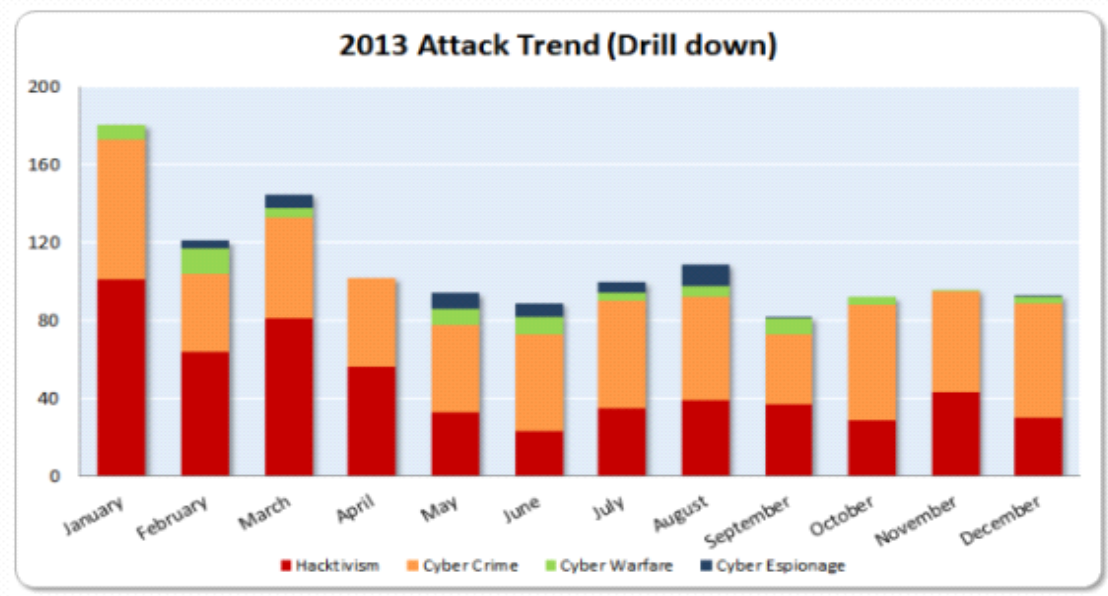
k. Privacy-aware security

l. Usable security

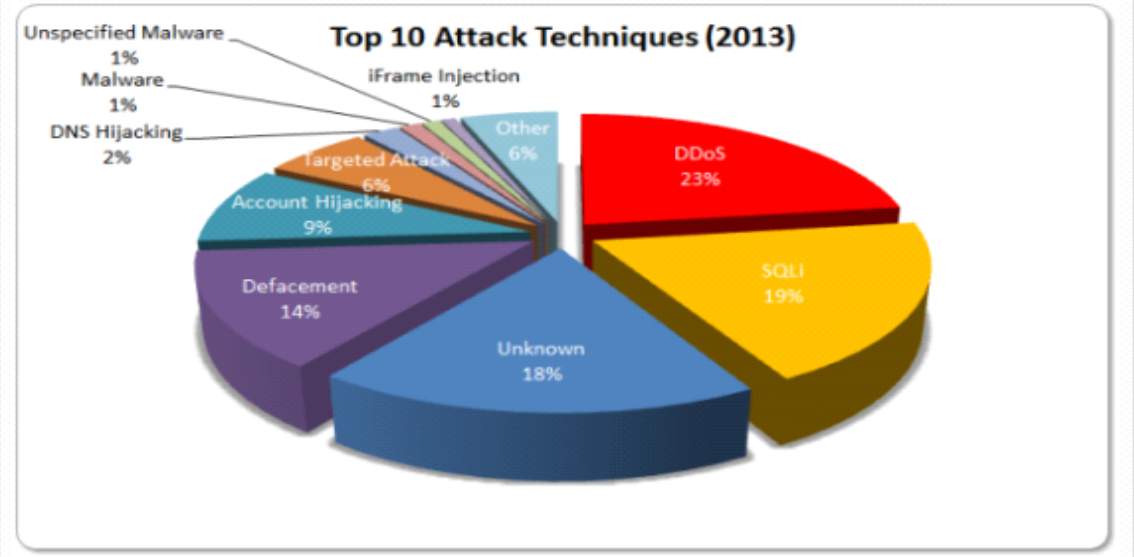
Digramatic Representation of Growth in computer Hacking



2011-2013 Data Trend (data for 2011 consolidated starting from September)

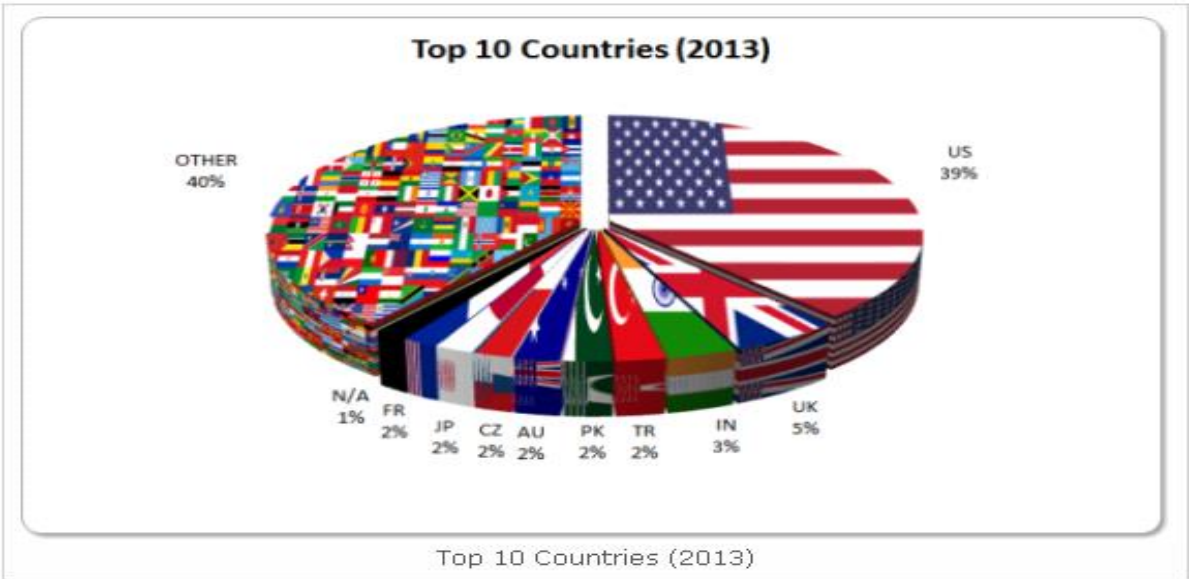


2013 Attack Trend with the Drill-down of Motivations



Top 10 Attack Techniques (2013)

p 10 Countries chart is lead by US which suffered nearly 1 attack on 2, well ahead of UK (5%) and India (3%).



Top 10 Countries (2013)

CONCLUSION

Cyber security education is lacking Security experts have a good grasp on what systems are secure, what protocols need development or change, and other large scale problems with our information infrastructure. These problems require fundamental changes to these old protocols and existing technology.

On the other hand, there are much vulnerability that exist purely from programmer ignorance or error. As a part of an education institution, we can make the largest impact in this realm.

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Germination studies *Capsicum* varieties: A source of Capsaicin

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Abstract:

The genus *Capsicum* belongs to the family Solanaceae. Chilli occupies an important place in Indian diet. Some varieties of chillies are famous for red colour because of the pigment 'capsanthin,' others are known for biting pungency attributed to 'capsaicin. Chillies are rich in vitamins, especially in vitamin A and C. Natural dietary agents including fruits, vegetables and spices have drawn a great deal of attention from both the scientific community and the general public owing to their demonstrated ability to suppress cancers. The present study was aimed to understand germination rate of six varieties viz., Bedgi, Pandi, Sankeshwari, Lavangi, Piri-Piri and Gundu in four different mediums and their viability till they convert into healthy seedlings. The higher germination percentage and a faster rate of germination of seeds of different varieties of *Capsicum* were observed in petriplates followed by cocopeat, vermiculite and soil.

Key words: Capsicum, Germination study, Capsaicin.

Introduction:

Capsicum is commonly called as "Chillies." It belongs to family Solanaceae. The genus *Capsicum* consists of about 25 wild and 5 domesticated species. The domesticated species are *Capsicum anum* L., *Capsicum fruitescens* L., *Capsicum chinense* Jacq., *Capsicum baccatum* L. and *Capsicum pubscens* R & P.

(George and Giraddi, 2007).

Among the spices consumed per head, dried chilli constitutes a major share. India is not only the largest producer but also the largest consumer of chilli in the world. India contributes about 36% to the total world production. In India, chillies are grown in almost all the state throughout the country. Andhra Pradesh is the largest producer of chilli in India and contributes about 26% to the total area under chilli, followed by Maharashtra (15%), Karnataka (11%), Orissa (11%), Madhya Pradesh (7%) and other states contributing nearly 22% (Karpate and Saxena, 2009).

In Indian subcontinent, chillies are produced throughout the year. Two crops are produced in a year, in each dry and wet season in the country. The dry season extends from mid-March to August, in which the rainfall level is much lower than other parts of the year. On the other hand, wet season starts from August and ends in December (Subbiah and Jeyakumar, 2009).

It is well known that natural phytochemicals widely present in certain daily consumed fruits and vegetables have inhibitory effects on various types of cancers at molecular and cellular levels. Currently, chillies are used throughout the world as a spice and are also used in making beverages and medicines. Some varieties of chillies are famous for red colour because of the pigment 'capsanthin (Subbiah and Jeyakumar, 2009).' Capsaicin, one of these naturally occurring phytochemicals, is the major pungent constituent of hot chili peppers of the genus Capsicum, which are extensively used as a food additive (Lin *et al*., 2013).

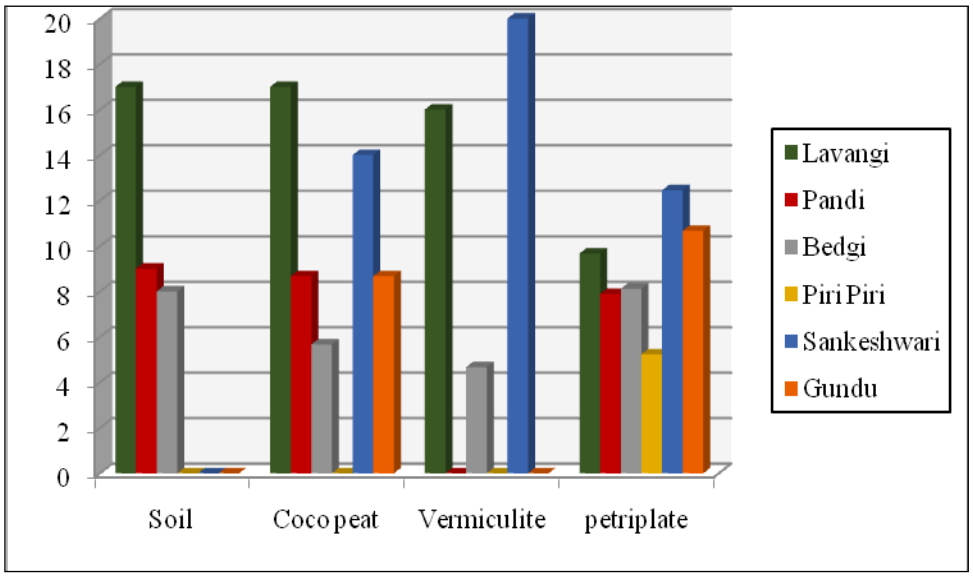

Figure 1a: Effect of different media on days required to germinate seed of different varieties of *Capsicum*

It has been shown that capsaicin is involved in several physiological and pharmacological effects. For example, several reports show that the use of capsaicin can relieve inflammation and pain associated with some diseases and cancer. In addition, accumulating studies have shown that capsaicin has anti-proliferative effects on various human cancer cell lines including those derived from leukemia, multiple myeloma, cutaneous cell carcinoma, glioma, tongue cancer, nasopharyngeal carcinoma, esophageal carcinoma, gastric cancer, pancreatic cancer, hepatocarcinoma, colon carcinoma, non-small cell lung cancer, breast cancer and prostate cancer. The capacity of capsaicin to suppress the growth of these cancer cells is primarily mediated through induction of apoptosis. Additionally, the activities associated with capsaicin-induced anti-cancer effects include the arrest of cell cycle progression, regulation of transcription factor expression, and suppression of growth signal transduction pathways (Lin *et al*., 2013). Capsaicin had a profound anti-proliferative effect on human prostate cancer cell in culture. Another research showed that orally administered capsaicin reduced pancreatic tumors in mice (Bai *et al*., 2011).Thus the present study was aimed to confirm the presence of capsaicin in six varieties of chillies viz., Bedgi, Pandi, Shankeshwari, Lavangi, Piri-Piri and Gundu and also to understand germination rate in four different mediums and their viability till they convert into healthy seedlings.

MATERIALS AND METHODS:

Collection of Plant material: The six different varieties of chillies were collected from local market of Thane and stored in air tight containers separately.

Thin Layer Chromatography

Preparation of extract: 1gm of dried chilli powder was extracted by heating under reflux for 10 minutes with 10 ml chloroform. The filtrate was evaporated to 3 ml and used for TLC (Wagner and Bladt, 1996).

Chromatographic plate: Silica gel 60 F_{254}-precoated TLC plates (Merk, Germany) **Solvent system:** Diethyl ether (100)

Different medium used for germination:

To germinate the seeds of capsicum of seven different varieties were 4 different medium used.

1. Petri plate with wet blotting paper

2. 2. Soil, 3.Vermiculite ,4 Coco peat

The seeds of different varieties of chillies were placed on water saturated blotting papers inside petriplates and cups containing soil,

vermiculite and cocpeat. Water was sprayed twice in a day in petriplates and cups to maintain moisture during experimentation. Seedlings growth was measured after 3 weeks in terms of shoot length (cm), root length (cm) and number of root laterals.

Results and Discussion:

The TLC of chilli powders showed the presence of capsaicin in all the chilli samples used with Rf 0.2.

Results showed that different medium influenced significantly the germination percentage and number of days taken to initiate the germination (Table 1a and 1b). The germination percentage and rate of germination of different varieties of *Capsicum* seeds were observed maximum in petriplates followed by cocopeat, vermiculite and soil. The maximum percentage of seed germination was observed in Lavangi variety (100, 100, 86.67 and 80 % respectively) in all the media, however less germination percentage was observed in Piri-Piri variety (36.67, 0, 0 and 0 % respectively) (Figure 1a and 1b).

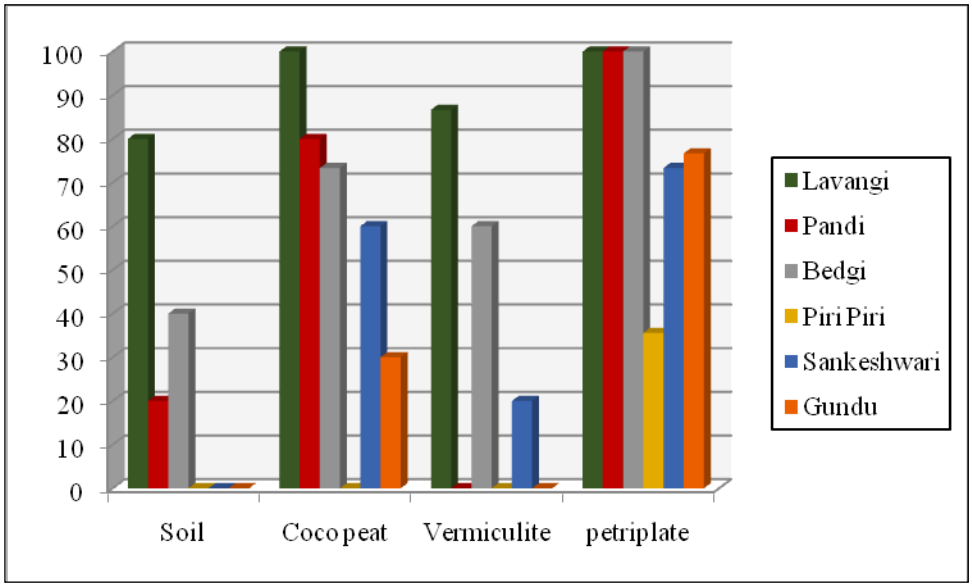

Figure 1b: Effect of different media on percentage of seed germination on different varieties of Capsicum

Table 1a: Effect of different media on days required to germinate seed of different varieties of *Capsicum*.Values are mean of three replicates. Each set with 10 seeds

Media / Varieties	Soil	Coco peat	Vermiculite	Petriplate
Lavangi	80±34.64	100±0.0	86.67±11.54	100±5.77
Pandi	20±0.0	80±20.0	0	100±0.0
Bedgi	40±28.28	73.33±23.09	60±56.56	100±0.0
Piri-Piri	0	0	0	35.57±1.92
Sankeshwari	0	60±40.0	20±0.0	73.33±7.70
Gundu	0	30±14.14	0	76.67±1.92

Media / Varieties	Soil	Coco peat	Vermiculite	petriplate
Lavangi	17±0.0	17±0.0	16±0.0	9.67±1.85
Pandi	9±8.5	8.67±1.15	0	7.89±1.16
Bedgi	8±9.1	5.67±2.31	4.67±4.16	8.12±1.89
Piri-Piri	0	0	0	5.23±4.59
Sankeshwari	0	14±5.19	20±0.0	12.45±0.95
Gundu	0	8.67±8.50	0	18.56±1.73

. **Table 1b:** Effect of different media on percentage of seed germination on different varieties of *Capsicum* Values are mean of three replicates. Each set with 10 seeds.

Plate 1: Different varieties of *Capsicum* A – Lavangi; B – Bedgi C – Shakeshwari D – Pandi ; E – Piri-Piri; F – Gundu.

Small chili (*Capsicum.annuum annuum)* that is used for cooking is having more capsaicin content than in bajji chili (*Capsicum.annuum grossum*) and pericarp is having more capsaicin content than seeds of both the chilies (Bhuvneshwari *et al*., 2013). Chilli dried by sun and mechanical drying at 37^0C were recorded higher vigour index, germination, Root length, Shoot length, seedling dry weight and lower electrical conductivity, moisture content. High moisture content reduced seed germination, and its leads to the seed spoilages (Christinal and Tholkkappian, 2012). Temperature had a major impact on seed germination. High levels of salinity affected germination throughout the incubation period (Flynn *et al*., 2002).

Conclusion:

Chillies are rich in vitamins, especially in vitamin A and C. They are also packed with potassium, magnesium and iron. Chillies have long been used for pain relief as they are known to inhibit pain messengers, extracts of chilli peppers are used for alleviating the pain of arthritis, headaches, burns and neuralgia. It is also claimed that they have the power to boost immune system and lower cholesterol. They are also helpful in getting rid of parasites of gut. Capsaicin was present in all the chilli samples used when tested using TLC. In the present

study higher germination percentage and a faster rate of germination of seeds of different varieties of *Capsicum* were observed in petriplates followed by cocopeat, vermiculite and soil. Therefore to circumvent this problem further investigation will be carried out by using plant tissue culture technique.

Acknowledgments:

Authors are thankful to Botany Department, B. N. Bandodkar College of Science, Thane for providing the laboratory facilities.

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HENNA ADULTERATION, A MAJOR PROBLEM IN MEHNDI

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Abstract:

Lawsonia inermis L. is commonly known as henna. Henna is an important adornment for Indian women especially during wedding. Henna has medicinal benefits and is used as a remedy for the treatment of various diseases. Although widely used for hair dyeing and temporary tattooing, henna body art has popularized over the last 20 years and changed from being a traditional bridal and festival adornment to an exotic fashion accessory. The naphthoquinone, lawsone, is one of the main constituents of the plant and is responsible for its dyeing property. Adulteration of henna is done with various chemicals such as p-phenylenediamine (PPD), p-methylaminophenol, p-aminobenzene and p-toluenodiamine to produce a variety of colours. PPD is mixed with the natural henna and sold as "black henna." PPD has resulted in serious health problems, including allergic reactions, itching reactions etc.

Key words: Henna, black henna, P-phenylenediamine

Introduction

Henna also called Mehndi, is essentially a womens art. Indian henna designs are ceremonial traditions that women of the Southern Asian and some Arabian cultures used to beutify and adorn themselves for special events. *Lawsonia inermis* L., commonly known as Henna or Mehndi. It is a much branched, glabrous shrub or small tree and it belongs to the family Lythraceae. The plant is a native of North Africa and South-west Asia and is widely cultivated as an ornamental as well as dye plant in India. Lawsone is the chief constituent responsible for the dying properties of the plant. Dried powdered leaves of henna contain 0.5-1.5% lawsone, traditionally used to produce colour fast orange, red and brown dyes (Kokate, 2001).

Henna is also an important medicinal plant of Indian Systems of Medicine, leaf and other parts of the plant are used in the indigenous systems of medicine (Phirke and Saha, 2013). There have been scattered mention of henna in arthopological, botanincal, medical, economical and historical literatures, but there has never been an integrated multidisciplinary study of what henna is (Jones, 2006).

Traditionally for skin dyeing, a paste of ground henna (either prepared from a dried powder or from fresh ground leaves) is placed in contact with the skin from a few hours to overnight. Henna strains can last a few days to a month depending on the quality of the paste, individual skin type and how long the paste is allowed to stay on the skin (Singh *et al.*, 2005). Natural henna stains only a rich red brown colour. Recently however, a fast-acting, cheap, widely available chemical dye, P-paraphenylenediamine, substitute for henna is in vogue.

Pre-mixed henna body art pastes may have ingredients added to darken stain, or to alter stain color. The health risks involved in pre-mixed paste can be significant. The United States Food and Drug Administration (FDA) considers these to be adulterants and therefore illegal for use on skin (Singh *et al.*, 2005). Some pastes have found to include: Silver nitrate, Carmine, Pyrogallol, disperse orange dye, and Chromium. (FDA, 2009) These have been found to cause allergic reactions, chronic inflammatory reactions, or late-onset allergic reactions to hairdressing products and textile dyes. (Kang *et al.*, 2006; Dron *et al.*, 2007)

In India suppliers add green coloured dye to henna powder in order to enhance its appearance. Major adulterant in henna leaves are stem, plant waste and other leaves. However in case of henna powder mixture of dyed sand is observed as an adultrant. The extent of adulteration is variable according to the price of the powder. Unlike Lawsone, the natural colour of henna, synthetic azo-dyes added may have an adverse effect on the skin. It is therefore, necessary to ensure that these artificial dyes are not present in the herbal products (Jones, 2002).

Products sold as "black henna" or "neutral henna" do not contain henna, and may be derived from indigo (in the plant *Indigofera tinctoria*) or *Cassia obovata* and may contain unlisted dyes and chemicals. (Singh *et al.*, 2005) "Black henna" may contain p-phenylenediamine (PPD), that can stain skin black quickly but can cause severe allergic reactions and permanent scarring. The FDA specifically forbids PPD to be used for that purpose. PPD can cause severe allergic

reactions, with blistering, intense itching, permanent scarring and permanent chemical sensitivities. Estimates of allergic reactions range between 3% and 15%. Henna does not cause these injuries. Henna boosted with PPD can cause lifelong health damage. PPD sensitivity is lifelong and once sensitized, the use of synthetic hair dye can be life threatening (Hema *et al*., 2010).

Para-phenylendiamine (PPD) is a well known contact sensitizer, particularly presenting hair dyes and in black henna tattoos. Undeclared concentrations between 1% to 63% PPD have been demonstrated in dyes used for henna tattoos. This may result in active sensitization in young individuals with long-term sequelae and consequences. An unusual irritant reaction from a black henna tattoo without sensitization to PPD but residual hypopigmentation (Kind *et al*., 2012).

Addition confusion about henna comes from the addition of lead, copper and iron sulphates and acetates, used to create tones of hair dye. These are also usually undeclared ingredients in a package simply labeled “Henna” (Jung *et al*., 2006).

Conclusion:

There is a scarcity of reliable information on henna, its adulterants and its adverse effect on Henna. There has been no organized study of henna. There is no such plant as black henna. PPD is usually the causative factor in various injury.

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CHEMICALS IN COSMETICS AND ITS EFFCT ON WOMEN HEALTH

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Abstract: Due to the modernization, the community endeavor to boast a glamorous and well defined took, hence increasing demands of cosmetics by the women, several formulations of cosmetics used chemical ingredients for enhancement of products, has an adverse effect on human outlook. Certain deficit in the black hairs convert grey at an early age and to avoid the different marks on skin of face people exercise various type of creams and powders available in the market that responsible for diversified diseases. Hence present paper taskforce on the Cosmetics and Its Effect on Women Health and introduce the chemicals that reduce of age cosmetics as well as applicant and advanced effect on beautification.

Keywords: Mascara, nail polish, lipstick

Introduction: For beautification and appearance of human body without affecting the body's structure and functions several beauty products were developed by cosmetic industries. Due to increasing in demand the in the modern in society, cosmetic industries were exhibited number of applications of chemicals but it showed an adverse effect on human appearance such as faultiness in the black hairs become white at an early age, hence to avoid shameless, application of mehndi, hair dye, highlighters was increased. For fleece the skin marks, diversified creams, powders, Kajal, lipstick and nail polish become part of women life for attractive and charming look. But presence of impurities and metals in the cosmetics is taking tolls on human body especially on women (Table 1.) Hence need to use natural sources to positive glamorized on health such as Guanine from fish scales used in mascara and nail polish while Tallow in eye makeup, lipsticks, makeup bases, foundations, shampoos, shaving soaps, moisturizers and skin care products. Tallow is

made by rendering animal/ carcasses fat. Cochineal dye has been used in lipstick, ice cream, candy, yogurt, and eye shadow. (http://www.oddee.com)

Table : Chemicals used in cosmetic industries showed diversified effect on women health.

SN	Chemicals	Effect on women health	Used in	Reference
1	Phthalates	Reproductive and thyroid systems. phthalates to diabetes risk and asthma	skin care products and nail polish	(Bornehag 2004; Stahlhut 2007; Kolarik 2008).
2	Triclosan	Increase the effect of thyroid hormones. estrogenic and androgenic effects on human breast cancer cells	Liquid hand soaps, toothpastes, deodorants, acne treatments and increasingly in cosmetics.	(Fiss 2007) (Gee 2008)
3	Parabens (methyl-paraben, ethyl-paraben, propylparaben, isopropyl-paraben and butyl-paraben.)	Disrupt reproductive hormones. Irritation of the skin or causing allergic reactions. reproductive health problems Breast Cancer	Preservative in many cosmetics and personal care products .e.g Mascara	Mikula 2006; Pugazhendhi 2007. (Gomez 2005; Mikula 2006; Pugazhendhi 2007.
4	Sodium lauryl sulfate	increase the permeability of the skin barrier and cause irritation,	creams	
5	Salicylic acid	skin irritation, dryness, or soreness, hyperpigmentation	skin care, sports pain relief creams pain relief medications, mouthwash, and toothpaste.	Roberts, W. E. (2004)
6	Bismuth oxychloride	Sensitive skin	irritation	
7	Hg (mercury)	Skin rash, erythema on the palms and soles, hypersalivation, intention tremor, emotional liability, weakness, and insomnia urine and blood fatigue, nervousness and/or irritability , severe headaches insomnia , memory loss , loss of strength in the legs, tingling or burning sensations , tremors or shaking of the hands, depression , and a metallic taste in the mouth .	skin care products toothpaste	Tang HL 2006

Chemistry of Mascara:

Mascaras used to lengthen or curl the eyelashes. It contains nylon and rayon microfibers and for stiffness ceresin, gum tragacanth, and methyl cellulose are steadily added.

Pigments are responsible for different color. Black mascara contains Carbon black, instead of soot or ash, While as Brown mascaras has iron oxides for typical color depending on brands. Some of the mascara formulas have pigment of ultramarine blue and various oils such as mineral oil, linseed oil, castor oil, eucalyptus oil, lanolin oil, sesame oil and turpentine oil.

Water resistant mascaras have basis in substances that rebuff water like dodecane, Biothional, choloroform, halogenated, salicylanilides, hexachlorophene, methylene chloride, vinyl chloride and mercury compounds. Sometime mercury compounds may use as a preservative in eye make-up. Inorganic mercury is absorbed through the skin by the transport of mercury across the epidermis and also via sweat glands, sebaceous glands, and hair follicles (Chan TY(2011)

Mercury salts inhibit melanin formation by competing with copper in tyrosinase (Engler DE. 2005) resulting in skin lightening.

Waxes:

They are composed of primarily long chain esters. By combining wax with different property such as high shine, flexibility and brittleness optimal cosmetic performance can be achieved. Often waxes are combined with compatible oils to achieve the desired softness. Some common waxes are used in cosmetic are beeswax, candelilla, carnauba, polyethylene and paraffin. Waxes are particularly useful in hand creams and mascara emulsions for their thickening and waterproofing properties.

The allergic reactions stimulated due to attribution of methylparaben, aluminium powders, ceteareth-20, butylparaben or benzyl alcohol or any of the compounds present in mascara.

Natural Mascara: It composes antioxidants derived fruits and vegetables that give the same beautifying effect as commercial mascara without the harmful chemicals.

GEL: Gels are mostly liquid/ semisolid and defined as a substantially dilute cross-linked system, which exhibits no flow when in the steady-state. Though gels are liquid, they behave as solids due to a three -dimensional cross-linked network within the liquid. Hence these are nonfluid colloidal network or polymer network that is expanded throughout its whole volume by a fluid. Due to its covalent network, develops surface tension resulted physical bonds (physical gel) or chemical bonds (chemical gel) as well as crystalline or other junctions that remains intact within the extending fluid.

MOISTURISER

Moistures are polar material; are hygroscopic in nature. It measures the trans-epidermal water loss (TEWL).After moistures are applied to skin it softens the skin and after several minutes the moisture level is reduced due to natural tendency of the skin to release moisture overtime. As skin becomes drier in the winter months it may be necessary to incorporate material that better seal the moisture in the skin. Glycerine is help to reduce TEWL sorbitol, sucrose and other sugar are used to hydrate the skin. Aloe vera is a natural exeunt moisturizer which contains polysaccharids carbohydrates and minerals.

Natural Moisturizer: Snail ooze used in several moisturizers because it contains the glycolic acid and elastin that protects its own skin from cuts, bacteria, and UV rays, making it a great source for proteins that eliminate dead cells and regenerate skin. It is also helpful for removing scars, stretch marks and curing acne.

Lanolin is extracted from sheep wool and is used in vitamin supplements as a water-proofing agent in beauty products. Lanolin is commonly-used to soothe sore nipples in breastfeeding mothers, oiling up a baseball glove.

SUNSCREENS

Sunscreens are a class of compound that protects the skin from ultraviolet radiations. Wavelengths between **290-400nm** are particularly damaging the skin .Sunscreens ability to absorb or reflect these damaging wavelength are rated by their SPF-sun protecting factor**.** For instance a person protected with factor-15 sunscreens will be able to stay in the sun fifteen times longer than if unprotected.

Octyl methoxy cinnamate, octyl salicylic, titanium dioxide and avobenzene are some important topical sunscreens. They can be classified as either **UVA** or **UVB sunscreens** depending on the wavelengths they absorb. Benzophenone a water soluble UV filter is commonly used to protect the color of cosmetics products.

Natural Sunscreen: Squalane is extracted from the liver of sharks. Due to its greasy reliability, it is absorbed by the skin. Hence it is used in lip balm, sunscreen, and moisturizers. Though many companies have stopped using Shark Liver Oil due to environmental concerns, it is still a widely-used ingredient in beauty products.

NAIL POLISH

Nail polish consists of film-forming polymer dissolved in a volatile organic solvent. Nitro cellulose that is dissolved in butyl acetate or ethyl acetate is common. Plasticizers (Dibutyl phthalate and camphor) are required to yield non-brittle films. Nail Polish are typically made for Base coat, Top coat and Gel polish. Dyes and pigments such as chromium oxide greens, chromium hydroxide, ferric ferrocyanide, Stannic oxide, titanium dioxide, iron oxide, carmine, ultramine and manganese violet and Opalescent pigment that required for the glitter / shimmer look in the color some industries are using mica, bismuth, oxychloride, natural pearls and aluminumpowder. Adhesive polymers ensure that the nitrocellulose adheres to the nail's surface. One modifier used is to sylamide –formaldehyde deresin. Ultraviolet stabilizer resist color changes when the dry film is exposed to sunlight. A typical stabilizer is benzophenone-1.

NAIL POLISH REMOVER

Nail polish is removed with volatile organic solvent compounds; acetone. It is powerful and effective, but marks rashes on skin and nail. Some of nail polish remover may also include oils, scents and coloring. Less toxic is ethyl acetate, the active ingredient in non-acetone nail polish removers, which also often contain isopropyl alcohol. Ethyl acetate is generally the solvent in nail polish itself. Acetonitrile has been used as nail polish remover. It is toxic and potentially **carcinogenic**. It has been banned.

Nail polish formulations may include ingredients that cause cancer in humans, or are toxic to the central nervous system, including phthalates, toluene, and formaldehyde. Several companies agreed to phase out dibutyl phthalate which had been linked to problem in the endocrine system and increased risk of diabetes in women.

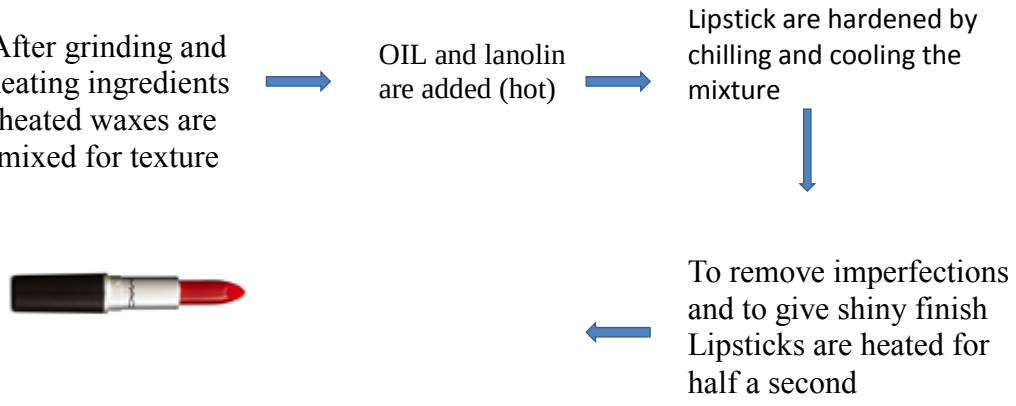
Absorbed organic solvents such as Glycol, Ether and CS_2 may be human reproductive toxicants , responsible birth weight ,low birth weight , miscarriage , preterm birth etc.

LIPSTICK:

Lipstick contains different variety of waxes such as Beeswax, carnauba Ozokerite and candelilla wax, oil, antioxidants and emollients wax provides the structure to the solid lipstick. US composed Lipstick have pig fat or castor oil whereas they also consist of olive oil, mineral oil, cocoa butter, lanolin and petrolatum. Pink lipstick constitute of titanium dioxide. Lipstick are given colours by pigments and lake dyes consisting of bromo acid including D and C Red no.21, calcium lake such as D and C Red no.7 and D and C Red34 and D and C orange no. 17. Matte lipstick required silica ,crème required Waxes in excess and less oil while as Long Lasting required Silicon oil, Sheer and Glossy - Lot of oil, for Shimmering Mica, Silica and Synthetic pearl such component included.

PROCESS OF PREPARING LIPSTICK:-

To remove imperfections and to give shiny finish Lipstick are heated for half a second.



DISADVANTAGE

Red lipstick consists of lead when tested in proportion as 0.03 to 0.65 ppm while few of them exceeded 0.1 ppm. The lipstick also includes waxes, oils, organic dyes and inorganic pigment that are separated on TLC. Lipsticks are soluble in toluene; used as mobile phase that are separated different pigments. Lipstick act as clue or the suspect for the forensic scientist as the lipstick marked a thin smear on drinking cups, glasses, cigarette butts, tissue paper or on

clothes, parts of body, tissue or cigarette at the time of sexual harassment, rape cases i.e. the homicide so that the smear comparison may be prepared by the forensic scientist to identify the victims. Lipstick may also act as a good sign for the Extract saliva DNA test by the saliva present on lipstick.

Conclusion:

Modernization of society is responsible importance of cosmetics. Hence to fill demand supply gap; industries were formulated cosmetics synthetically. To beautify and to groom those women are using cosmetics that made toll on the women health. Henceforth, natural resource may utilized/or replaced to minimize the health effect.

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ALLERGIC REACTIONS OF HAIR DYE

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Abstract:

Hair fiber and an emerging understanding of dye diffusion pathways and the factors influencing the process dyeing are very much important for the allergic reactions. The oxidative process is remain dominant in dyeing process .Dyes are used in the textile, medicine, cosmetics, food and beverages, paint, paper, leather industry and also in photography. However special properties are required for the desired effect on hairs that are composed of protein/ keratin. Hence, the present article focused on the hair dressing materials and it's involvement in dermatitis /an inflammatory skin reaction.

Key words: para-phenylenediamine (PPD); quinonediimine; Hair - PPD Interaction;

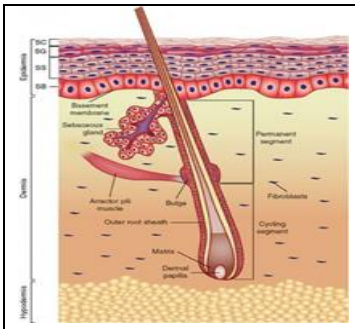
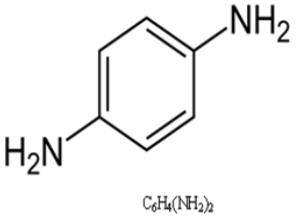
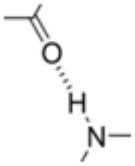
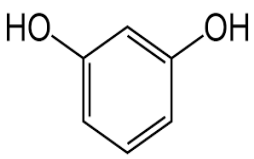
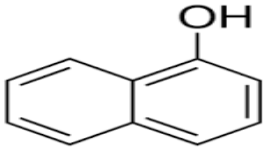
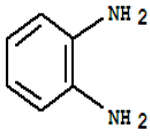
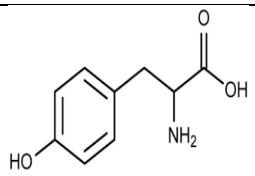
Introduction

Immune system is responsible for defending the body against foreign particles/ allergen; typically do not pose a threat to the human body that causes an allergic reaction. Allergies appear to be inherited or temporary. It may be food, insects, pollen grains, certain plants or chemicals/ medications etc. Allergy may vary from mild to severe. Mild allergy caused itchy red spots on the skin, itching nasal congestion, rashes, watery or itchy eyes while as Severe allergic reactions causes abdominal cramping or pain, pain or tightness in the chest, diarrhea, difficulty swallowing, dizziness/vertigo, fear or anxiety, flushing of the face, nausea or vomiting, heart palpitations, swelling of the face, eyes, or tongue, weakness, wheezing, difficulty breathing, unconsciousness etc. these allergen can be tested by skin tests, challenge (elimination-type) tests ,blood tests and these are may be treated by medically.

Dyes are the chemical substances that imparts the color hence it commodities in our everyday life such as in food, medicine, cosmetics, cloths/textile, leathers, plastic, paper, beverages and paint etc.

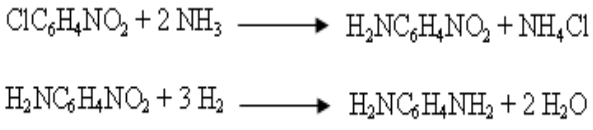
Hair is one of the defining characteristics of mammals. For healthy hair growth, texture, types required care of because this biomaterial is primarily composed of protein, notably keratin. Keratin proteins in the hair shaft form sturdy, insoluble, intermediate fibers. Heath of hair indicates the person's personal beliefs or social position, such as their age, gender, or religion. Hence hair coloring is the practice of changing the color of hair, regarded as more fashionable or desirable, or to restore the original hair color after it has been discolored by hairdressing processes or sun bleaching.(Keogh EV1965)

Paraphenylenediamine (PPD) is a derivative of aniline that is widely used as a permanent hair dye hence it is popular (Morel,2011). PPD is a colorless substance that requires oxygen for it to become coloured. It is mainly used as a component of engineering polymers and composites. This intermediate is partially oxidized state that may cause allergy in sensitive individuals and involves dermatitis to the upper eyelids or the rims of the ears, reddening and swelling of the scalp and the face.

		NH_2, H_2O_2	
Anatomy of Hair. Source: Wikimedia Commons, Wong, D.J. and Chang H.Y., CC BY 3.0. (Wolfram LJ 2003)	P- Phenylenediamine (PPD)	Developer	H bond between couplers and developers
			
Yellow green coupler	Red Coupler	Blue Coupler	Tyrosine key precursor Of natural colour of hair

Hair - PPD Interaction:

PPD is produced via three routes. Most commonly, 4-nitrochlorobenzene is treated with ammonia and the resulting 4-nitroaniline is then hydrogenated: (Smiley 2002)



$$ClC_6H_4NO_2 + 2\,NH_3 \longrightarrow H_2NC_6H_4NO_2 + NH_4Cl$$

$$H_2NC_6H_4NO_2 + 3\,H_2 \longrightarrow H_2NC_6H_4NH_2 + 2\,H_2O$$

In the DuPont route, aniline is converted to diphenyltriazine, which is converted by acid-catalysis to 4-aminoazobenzene. Hydrogenation of the latter affords PPD.

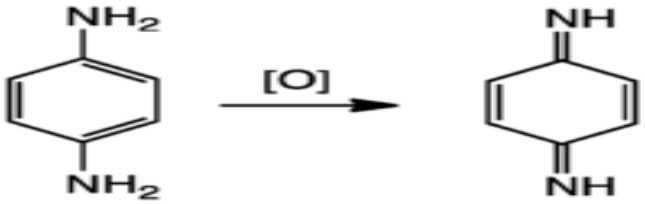
Material and Methods

Oxidative reaction of PPD and electrophilic aromatic substitution reactions of quinonediimine were selected for the present study for its allergic reactions to hair dyes. There are occasional reports in the media of people experiencing allergic reactions suspected to have been triggered by hair dye. For some people, these reactions have the potential to be severe and, on very rare occasions, even life-threatening. This article is intended to help and inform those people who have suffered a reaction to hair dye, and also those who have not suffered a reaction but wish to know more about this subject.

Dyeing Process:

Aniline analogues and its derivatives such as 2, 5-diamino (hydroxyl ethylbenzene and 2, 5-diaminotoluene including other popular derivatives; tetra-amino,pyrimidine and indoanilines and indophenols are very much used for dyeing oh hairs. Derivatives of diaminopyrazole give red and violet colors. Monochrome dye precursor oxidizes to the dye at pH is 9-10; because ionization of diacidic amino acid residues take place. Hair will have stronger affinity for cationic than for anionic dyes by virtue of its negative charge. At alkaline pH, hair may have stronger affinity for cationic than for anionic dyes by virtue of its negative charge. In permanent hair coloration is an oxidative process.

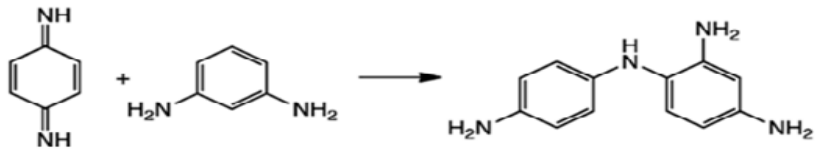
1



oxidation of p-phenylenediamine to the quinonediimine ($C_6H_4(NH)_2$)

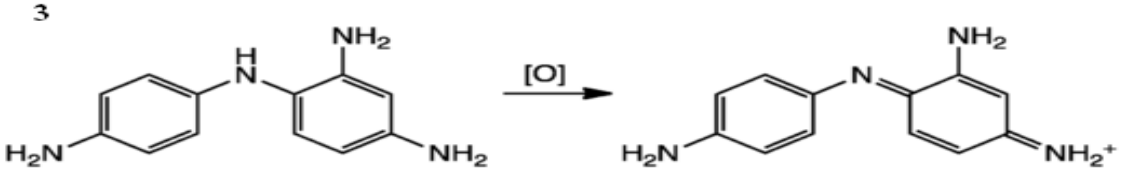
This species exists in equilibrium with the monoprotonated form (C_6H_4 (NH) $(NH_2)^+$) (not shown).

2



Electrophilic aromatic substitution involves the attack of this quinonediimine on the coupler.

3

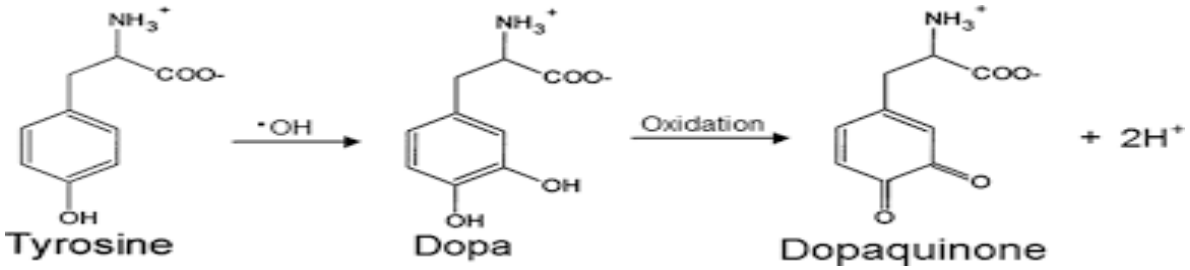


the product from the quinonediimine-coupler reaction oxidizes to hair dye.

Dye formed in this reaction bonded to hair permanently but the reaction imparts a permanent color on hair due to production of distinct dye molecule which is encapsulated inside the hair. The same reaction exit due to application for gray or light human hair of a

Natural color of hair:

Abundance color of hair was observed across the world that all depends on following reaction.



mixture of lead oxide and calcium hydroxide in a small amount of water produces lead sulphide crystals with a size of ~5 nm. Sulfur is provided by the amino acids of hair keratins (Huang, X 2007).

Result and Discussion:

Tyosine is precursor of natural pigment/melanin of biomaterials which is formed in pigment producing cell/ melanocytes in granular form. Granules mature, the protein binds increasing amounts of melanin, which is then transferred from the melanocytes into adjacent keranocytes. Thus, as hair grows, it acquires its color, lasting throughout the lifetime of the hair. A melanocyte produces essentially two types of melanin: eumelanin and the less prevalent pheomelanin (Morel, 2011). The wide color range arises from not only the concentrations of pigment but level size, structure pattern of granules. They are all formed from a series of enzymatic reactions, with common precursor, tyrosine. Hydroxylation followed by oxidation to form dopaquinone, that are responsible for red to brown color and tyrosine is responsible for gray colour.

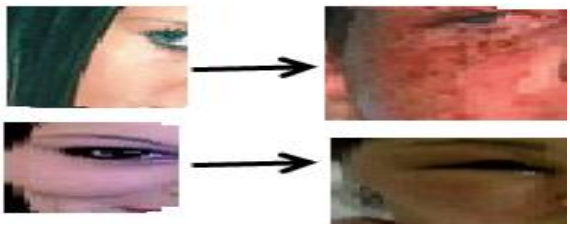
para-phenylenediamine (PPD), which is used in many permanent or oxidative dyes to darken hair or cover grey hair according to EU laws covering cosmetic product safety (Cosmetics Regulation EC No. 1223/2009). Reactions can also occur to a similar hair dye known as PTD (para-toluenediamine). Although other chemicals in hair dye may also have the potential for triggering allergic reactions, this article will concentrate on PPD.

Allergic Reactions:

It is due to number of impurities of hair dye ingredients. Only few papers have been published about impurities in hair dyes, such as p-toluidine and p-toluidine sulfonic acid as well as lead, arsenic and mercury in the hair colorant acid violet 43. Purity of hair dyes. p-Toluenesulfonic acid methyl ester was found in the range 80 - 109 ppm and 4-methyl-2-nitroaniline was found as an impurity in a range from 17 - 483 ppm.

Symptoms of Allergic Reactions:

People become allergic to PPD at any time, even if they have been exposed to it before without problems. A mild reaction to PPD might involve dermatitis /an inflammatory skin reaction at the point of contact also causes life-threatening anaphylaxis.



Determination of allergic to chemical hair dye:

The symptoms get worse every time when dye applied on hair; feeling itching or burning. On average, after sixty times application on hair it develops an allergic. It's depending on the darkness of the dye, age and adulterants of the applicant. People often think chemical dye must be harmless because it's widely sold. Repeatedly use of dye and allergic to para-phenylenediamine or from dyeing hair with chemical hair dye, next application may cause severe injury.

Lethal Dose of p-phenylenediamine:

Hair dye is responsible for cancer, non-Hodgkin's lymphoma, multiple myeloma, acute leukemia, and bladder cancer (J.D. Heyes ,2013) but those associations were not consistently observed across studies. A formal meta-analysis was not possible due to the heterogeneity of the exposure assessment across the studies. Hence the effective aquatic LD50 of PPD is 0.028 mg/L shall be used for the application on hair *(*Lamb, James (Feb 1997).

Side Effects of Hair Dye:

Poor quality, bad effects of chemicals or impurities improper application, highlighting process, over treating, under treating, improper washing affects the hair badly and bad impact on the health of the hair. Hence patch test before applying the color is necessary

Types of Hair Damage:

Short-term hair damage is not dangerous and cause damage to hair that can be rectified. However, there are long-term effects of these hair dyes shows allergic reactions even after have used it for a long time. Permanent damage is done to a women's hair when hair straightens and colours hair. Apart from this, overuse of dyes or leaving the dye for longer period of time and so on, also has bad impact on hair and its health.

Conclusion:

Chemical and physical properties of hair structure, of the mechanisms involved in the hair dyeing process. more recent developments in nanotechnology are providing new possibilities for permanent dye hair applications. Chemically functionalized and physically modified carbon nanotubes are claimed to impart a thin black coating that results in a smooth feel to the hair while also producing a volumizing effect. Nevertheless, there remains considerable scope for research toward new technologies for permanent hair coloration though to prevent the allergic reaction due to a hair dye, it is obligatory to read the

ingredients on the written cosmetic products. Avoid applications of dyes which contain impurities in it, carefully follow the instructions provided by the manufacturer else it causes allergic reactions.

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Hindu Rituals and Psychological Health of Women in India

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The statistics are alarming when it comes to mental health of women in India. Though India is progressing economically so as stress and other mental health related issues. In Post globalization era the Indian society is going through dynamic change affecting lives each and every citizen. The women work force is constantly on hike contributing to the stressors affecting mental health of women.

Mental health and well being of women is a serious concern as women take up dual responsibilities- at home and at work place. If the woman in the house is not healthy, it adversely affects entire family. Thus, it is posing serious challenge to policy makers in India.

The research suggests that, women are at greater risk, including in low- and middle-income countries; where a review of the possible explanations for this found no evidence to support a hormonal or biological mechanism (Piccinelli & Wilkinson,2000).Thus, causes of stress and other factor are the result of societal conditions affecting the psyche of women.

According to the World Health Organization report(1997), Gender differences have been noticed particularly in the rates of common mental disorders - depression, anxiety and somatic complaints. These disorders, in which women predominate, affect approximately 1 in 3 people in the community and constitute a serious public health problem. Unipolar depression, predicted to be the second leading cause of global disability burden by 2020, is twice as common in women. Depression is not only the most common women's mental health problem but may be more persistent in women than men.

Statistics from WHO report

Depressive disorders account for close to 41.9% of the disability from neuropsychiatric disorders among women compared to 29.3% among men. Leading mental health problems of the older adults are depression, organic brain syndromes and dementias from which majority are women.

Depression, anxiety, psychological distress, sexual violence, domestic violence and escalating rates of substance- use affect women to a greater extent than men across different countries and different settings. Pressures created by their multiple roles, gender discrimination and associated factors of

poverty, hunger, malnutrition, overwork, domestic violence and sexual abuse; combine to account for women's poor mental health.

Epidemiological studies report prevalence rates for psychiatric disorders from 9.5 to 370/1000 populations in India. Meta analysis in India has estimated the prevalence of depression in community samples and the prevalence rates have varied from 1.7 to 74 per thousand population. Where as Studies done in primary care clinics/center have estimated a prevalence rate of 21-40.45%. Studies done in hospitals have shown that 5 to 26.7% of cases attending the psychiatric outpatient clinics have depression. The weighted prevalence rates of different anxiety disorders were 4.2% (Phobia), 5.8% (GAD), 3.1% (Obsession) and 4.5% (Hysteria)

The prevalence of mental illness in the community (both rural and urban), in rate per thousand shows higher prevalence among women across studies done in different parts of the country. However, a comparison between males and females in the occurrence of severe and common mental disorders (in rate per thousand at risk of adult population) shows a higher prevalence of severe mental illness among males (13.10 for males vs. 11.50 for females) as opposed to common mental illness where the reverse is true (68.0 for males vs. 103.50 for females). (Journal of international women's studies, vol. 3, no. 1, November 2001)

Societal Factors Responsible For Common Mental Disorders

As cited in the study by Grover, Dutt, Avasthi (2010); compared to patients with mild depression patients with moderate and severe depression tend to use avoidance as a coping strategies more frequently for the stressful life events, suggesting that it may be a maladaptive way to cope with the situation, which is responsible for development of depression.

According to Patel *et al,(2002)* poverty (low income and having difficulty in making ends meet), being married as compared with being single, use of tobacco, experiencing abnormal vaginal discharge and reporting a chronic physical illness were associated with risk of developing a common mental disorder. Studies have also reported that economic and interpersonal relationship difficulties, partner violence, sexual coercion by the partner as the common causal factors related to development of depression in general and depression during antenatal and postnatal period. It has been shown that gender of the newborn child is an important determinant of postnatal depression.

It has also been seen that patients with neurosis, including depression, have poor social interactions and reports of more interactions of unpleasant type and less of pleasant type of social interactions as compared with healthy controls.

Reported Protective Factors

Research shows that there are 3 main factors which are highly protective against the development of mental problems especially depression. These are:

- Having sufficient autonomy to exercise, some control in response to severe events.

Access to some material resources that allow the possibility of making choices in the face of severe events.

- Psychological support from family, friends or health providers is powerfully protective.

Indian Socio-cultural Scenario

In India, Rituals play an important role in the cultural and religious lives of the people.

In Indian social scenario, various rituals are practiced. Many festivals celebrated with women centered from childhood onwards. They are celebrated marking developmental milestones and change in role. The following paper make an effort to understand whether ancient Indian / Hindu rituals are effective in maintaining the psychological well being of women.

Childhood Rituals

According to Psychoanalytic theory, first five years of in child's life are most important years for his or her psychological, emotional and social development. According to Goleman (1995), a critical period for the development of emotional intelligence is pre-puberty similar to language acquisition phenomena. The neural circuits for language and emotion retain plasticity in most of the childhood, although the most sensitive period for neurological development is within first two to three years of life. (Balberbie, 2001)

Emotional development is supported by the learning of connections between the systems like between feelings and verbal labels. (Izard, 2001) The family environment is commonly viewed as a major force in the socialization of emotions with peers and teachers playing an increasingly important role as the child grow older. (Saarni, 1999)

Therefore socialization processes, attention, positive reinforcement are important for attaining developmental milestones at usual developmental age. Celebrating various festivals are opportunities to interact with one's extended family, caregivers and so on. The important Hindu rituals especially designed for girls during childhood include raksha bandhan and bhaubij, bhondla, kumarika pujan.

Raksha bandhan and Bhau bij are celebrated annually. It celebrates the relationship between brother and sister. Both these celebrations give a girl opportunity to interact with opposite and getting acquainted to their thoughts and expressions. It plays crucial role in socialization process. These rituals are celebrated during the lifetime and can build the strong support system for girl and woman in the form of brother and his family.

Bhondla is celebrated during the festival of Navaratri. It is a celebration of womanhood where women are worshiped as a Shakti (power). In the celebration of Bhondla or Hadga girls are gathered and they sing songs depicting maternal and paternal homes, songs based on counting, songs depicting future rituals, the roles and relations the girl would be acquainted to in future . It also gives situation to learn socialization, how to work in a group, cognitive stimulation in the form of counting.

Kumarika Pujan is done before girl attains menarche .In this ritual, girl is worshipped as a symbol of goddess of productivity. As she is given importance in this process; it might work as positive factor for gaining self-esteem and as she meet people it helps in socialization process as well.

Puberty Rituals

With respect to contextual issues unique to middle childhood and adolescence, children face new challenges as they interact more frequently with peers, place a more premium on friendship and social acceptance, and begin to face the issues associated with the development and maintenance of romantic relationships. (e.g.Steinberg and Silk, 2002) Developmentally adolescence /puberty is regarded as the most stressful and challenging period of the human life because of rapid physical, psychological changes as well as academic challenges, acceptance of new social roles.

When the girl attains menarche, the stage is celebrated. It is an indicator that the girl is able to conceive a child. In ancient times, it was used as an indicator that the girl has attained a marriageable age. It was acceptance of the girl as a so called suitable woman for marriage. Also there was practice of not touching the girl during menstruation. It might have positive and negative effect on the psyche of a girl. When she was not allowed to touch anything and work, it might have acted as a break from routine where she used to work the whole day and got some time for self. In modern days it has changed its pattern and is psychologically disturbing for woman than helping her as she has to work and manage her profession, work

at home but was not allowed to perform Pooja or worship the God; which might act as a distraction from hormonal change, mood changes and also physical pain and discomfort the woman is facing during the menarche.

Marriage

Marriage was and is considered as an important part of the rituals in the life. Many rituals in marriage could be designed in such a way to prepare the bride for the married life and responsibilities associated with it. Also some rituals give advice about the relationship and family. Some rituals involve bride and groom touching each other, helping them in getting acquainted with the touch of each other.

The mother of the bride was not allowed to see her daughter's wedding ceremony. It might act as prevention from trauma of daughter leaving the house/ sorrow. The ritual of Rukhvat is a display of talents of the bride. It might have helped her in getting acceptance and praise in the new family as well social approval and acceptance from relatives of the bridegroom as well.

Post marriage Rituals

Various celebrations till one year can help the newlyweds to know and accept each other and so as to learn to be in a relationship. It is important for women as she is the new member in her husband's family. The celebration of the occasions was designed in such a way that some celebrations to be celebrated at wife's maternal house and some at her in-laws house. This arrangement might give the woman opportunity to go to her maternal house which acts as a de-stressor. It might give her break from the routine and facilitate sharing problems, emotions.

Mangalagaur is celebrated during the rainy season, every Tuesday in the Hindu month of Shravan. It includes worshipping a Goddess. It includes playing physical games along with songs. The physical games are good way of exercising as well as it can be good stress busters. Also another notable thing is, it is celebrated during rainy season where physical and outdoor activities are limited due to rain and absence of the Sun may create dizziness or dsythymia like symptoms. It gives opportunity to socialize and share one's emotions. The songs and games are designed in a way depicting relationship between the woman and her in-laws, especially her mother –in- law. This was a healthy way of expressing emotions-positive as well as negative and facilitates thought sharing.

Pre-Pregnancy and Pregnancy Rituals

Research has establishes that maternal experiences during pregnancy have extensive

effects on the fetus and offspring, persisting throughout the lifespan. There are fetal and Neuro-developmental effects of parental stress and anxiety, resilience resources in pregnancy and multilevel analysis of pregnancy and birth outcomes. Stressors that may affect women in pregnancy are financial problems, strain in intimate relationships, family responsibilities, employment conditions, and pregnancy related concerns.

Extended family members may live with the pregnant woman or close by and may have important roles in expectant mother's life; depending on the cultural and socioeconomic contexts.

Though there is a small body of observational studies on the effects of social relationships and social support on birth outcomes, some show effects on inadequate prenatal social support on shorter GA/GL or PTB; but most report that greater prenatal support predicts more optimal fetal growth, higher birth weight or lower risk of low birth weight. (Hedegaard et al,1996, Mutale et al, 1991)

According to Pryor et al (2003), lack of social support, especially family support, and low involvement in social groups among mothers were significantly associated with having SGA infants.

The study done by Campos et al (2008) substantiate that social relationships and socio-cultural context together are important in understanding maternal health and well-being in pregnancy.

It is hypothesized that pregnancy anxiety is likely to be higher in women with fewer resources, but the specific types of resources that most influence pregnancy anxiety are not yet known. It is also hypothesized that predisposition to general anxiety, neuroticism or preexisting anxiety and medical risk conditions influencing the current pregnancy that are communicated clearly to the expecting mother.

According to Campos et al, 2007, Scimshaw et al, 1997), cultural beliefs about birth and hospital settings are also hypothesized to influence pregnancy anxiety and woman's health care experiences. This study is may be best applicable in Indian situations as well where culture, religion and societal rituals guide the action of people than scientific facts or research.

The Pre-pregnancy rituals include Garbhadhan sanskar which is done after the 16 days of first menstruation cycle post marriage, thus in the ovulation period of the woman. It is performed to protect the zygote from impurities and to get blessings from the God. It might be the

signal to start the active sexual life and acceptance to conceive the baby. It creates positivity in the family and woman as well as to prepare the future parents and family for prospective pregnancy and parenting responsibilities. It might work on the basis of Neuro-linguistic programming.

Punsavan is performed two to three months after the woman conceives a baby. This Sanskar might be effective in creating positive and welcoming atmosphere in the family and home for soon to be born.

Simattonayan is performed in the 4th month after conception. Along with rituals with the use of medicinal plants, it includes musical chants praising Somraja. It included imagining a river which is near to one's house that can help the conceiving woman to relax. Also like other rituals it creates positive energy and positive thinking in the pregnant lady. Simmantonayyan include singing or performing a story of the mighty king which can have positive effect on the child and pose a role model for him. It instills positive feelings in the mother through Neuro-linguistc programming. Beale M defines NLP as a way to develop physical strategies that aspects of behavioural psychology, linguistics, hypnosis, modeling and common sense. NLP is a powerful vehicle for personal and business change, used by many thousands of people around the world.

Dohale jevan is performed in the last trimester of the pregnancy. It is wish fulfillment ceremony especially for food. It is celebrated with the pregnant woman's favorite food or what she wants to eat during her pregnancy. It facilitates the positive atmosphere and acceptance for the baby in the house and boosts the self-esteem and self-worth of the woman.

According to 'buffering hypothesis', social support buffers the effect of stress on birth outcomes for pregnant woman. The study done by Rini and Dunkel Schetter (2010) affirm the benefits of a strong relationship and social support from a women's partner to subsequent maternal well-being. Social support interacted with stress in effect of birth weight, but only in low socio economic group. Emotional support in various forms may operate differently to influence birth outcomes via reduced anxiety and physiological arousal. Greater optimism in pregnant women was associated with higher birth weight after controlling stress and medical risk. Also optimistic women had lower anxiety and distress in pregnancy, which mediated effects on birth outcomes (Lobel et al, 2000).Optimistic pregnant women are more likely to avoid risks such as smoking (Park et

al,1997), to exercise, and to cope more adaptively than pessimists (Lobel et al,2002)

Post delivery Rituals

According to the study done by Dunkel Schetter et al (2010 b, Rini et al, 2006); women's prenatal reports of the extent to which the quality and quantity of parental support met their needs (social support effectiveness) prospectively predicted lower anxiety in mid-pregnancy and reduced anxiety and depressive symptoms from pregnancy to postpartum. Further mother's perceptions of the quality, intimacy, and equity of the partner relationship predicted their perceptions of effective support from the partner.

Post delivery rituals in Hinduism are mainly performed for welcoming a child and maintaining positive atmosphere in the home. It might save the woman from post partum depression as she socializes with her family and at the same time gain approval from them. Naming ceremony and worshipping rituals work for creating a healthy atmosphere and importantly support system for the mother.

Monthly birthdays of the child play important role for marking the developmental milestones of the child. It praises the child and mother for the development of the child. And keep the mother busy and happy which can be a preventive measure in post-partum depression.

Post- death rituals

Post death rituals include various specificities to be fulfilled to perform the ritual. It distracts the family members from grief and gives them opportunity to socialize. It might help in preventing depression and post traumatic stress disorder as grief in properly expressed and support is provided from the family and friends.

As rituals become more arousing, they trigger hormones that stimulate the reward systems of the brain. Sensations such as pain or fear, typically thought of as negative, can be transformed into pleasurable experiences – akin to the sharp thrill experienced by the bungee-jumper – through a spike in the neurotransmitter dopamine. An increase in neuropeptides called endorphins, Recent research suggests that rituals may be more rational than they appear. Even simple rituals can be extremely effective. Rituals performed do in fact reduce anxiety and increase people's confidence. Rituals appear to benefit even people who claim not to believe that rituals work. While anthropologists have documented rituals across cultures, this earlier research has been primarily observational. Recently, a series of investigations by psychologists have revealed intriguing new results demonstrating

that rituals can have a causal impact on people's thoughts, feelings, and behaviors.

Durkheim reported that the critical factor in determining suicide was the degree of social cohesion of the groups and the way the group affected the individual. In their book The Healing Brain (1988), the authors, Drs. Ornstein and Sobel, cite other studies which report that the greater the social disorganization of a group, the higher the incidences of death from heart disease and high blood pressure (1988:121).

Conclusion

The careful observation and understanding of the Hindu rituals suggests that it has a potential to facilitate the socialization process and emotional development during childhood and adolescence. It gives opportunity to increase group cohesion as well as strong family and/or bond between friends which can act as a strong support system during all phases of life of women. These rituals have potential to prevent disorders like post partum depression, stress related disorders, anxiety disorders and to provide needed social support in playing various roles, going through different phases and aided coping strategies. This fact could be considered and further research in awareness of the disorder, prevention of the disorder, supporting the person facing the disorder and thus facilitating the management of the disorder and effective coping can be done.

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J BNB

INDIAN WOMEN TRADITIONS: JEWELS AND RITUALS- A REVIEW

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Abstract:

Traditionally Indian women love sporting ornaments. They wear ornaments not solely to adorn themselves as some ornaments are traditionally worn only by married women. Traditional jewelries and adornments include sindur, maang tikka, nose ring, earring, bangles, anklets, toe ring etc. This study illustrates that a number of the standard jewellary and few rituals particularly practiced by women may have a scientific reasoning.

Key words: traditional jewels, rituals etc.

Introduction: There have been thirty six forms of essential jewelry and ornaments used throughout Vedic era, each signifying a body mechanism. Tradition ornaments imbibe divine consciousness (Chaitanya); obstruct negative energies (www.speakingtree.in). Indian women wear ornaments not solely to adorn themselves however ornaments were symbol of wedding for married women whereas the widows had no right to wear an ornament (Sinha, 2014).

Maang tikka: It's an ornament worn on the top in order that the hanging pendant places itself over the forehead. The purpose where it falls is believed to be the Ajna chakra, which in Sanskrit suggests that "to apprehend or perceive" (www.speakingtree.in). It symbolizes the Indian bride; however the scientific belief is that it controls the warmth of our body (www.walkthroughindia.com). Point of contact on the forehead conjointly acts as active point of acupressure (Ramdev, 2006).

Sindoor: Sindoor contains turmeric, lime and mercury. Sindoor provides warmth to the pituitary glands placed close to the thalamus. However adulterants in Sindoor (vermilion) like zinc, lead, mercury, Rhodamine B dye, mercury sulphite and industrial dyes can cause carcinoma, edema, hair loss and hereditary disorders (Banerjee, 2004).

Bindis or Tilak: It helps to observe correct flow of blood mixed with oxygen (Shreenivas, 1999). A tilak is believed to

prevent the loss of energy and retain this to regulate varied levels of concentration. Moreover, the act of applying tilak ensures that the points on the mid-brow region and Adnya-chakra are pressed, facilitating blood supply to the facial muscles (*www.indiatimes.com/author/*rishabh-banerji).

Nose ring: It is referred to as nath or nathni in Hindi. With reference to Ayurveda, piercing the nose close to a specific node on the naris helps in lessening the pain throughout monthly periods in women. Nerves leading from the left naris are related to the feminine reproductive organs.

Earrings: Earrings are usually worn by each women and man. It is available in different forms like tops, baali, jhumke and latkan. There is a nerve that connects 3 main components of our body excretory organ, brain and cervical, which passes from the ear lobe (www.walkthroughindia.com). The father of Western medicine, Hippocrates, wrote concerning ear piercing and jewelry wearing around 470 B.C. as a remedy and treatment for menstrual issues. Ancient folks treated diseases of female yin organs via earrings within the left ear and diseases of the male principle organs via the right ear (www.speakingtree.in).

Mangalsutra: It is the identification of a married woman in India. It is placed above the heart therefore it helps to regularize the blood circulation within the body (www.walkthroughindia.com). The gold wire of the Mangalsutra destroys the distressing vibrations present within the Universe through its Energy of absolutely the fireplace part. The black color of the beads is claimed to soak up all negative vibrations (www.speakingtree.in).

Armlet: It is also known as arm ring or armband, a ring of precious metal worn as ornament round the biceps by Indian women's. The arm ring facilitates blood circulation in arms and make correct amount of resistance to make arm comfortable (www.walkthroughindia.com).

Bangle: Bangle is circular formed ornament that is worn in hands by woman. As there is a nerve in our wrist that tell us the heart beat rate, these bangles increases the blood circulation within the body and it doesn't let the charges of the body to go out (www.walkthroughindia.com). The sound generated by the glass bangles keeps negative energies at bay (www.speakingtree.in).

Application of Henna: *Lawsonia inermis* L., is commonly known as Henna or Mehndi (Phirke and Saha, 2013). Fresh henna leaves

(Lawsonia inermis L.) crushed or dry henna leaf powder is widely accepted as an herbal dye (Phirke and Saha, 2010). *Lawsonia inermis*is L. is not only a dye plant, but it is also an important indigenous medicinal plant (Phirke and Saha, 2013). It has strong soothing and antiseptic properties. Its cooling effect helps in relieving stress, headaches and fever. Mehendi additionally protects from varied infective agent or fungous infections (Bail, 2008). Mehendi could be a very powerful healthful herb and its application on hands and feet will stop stress throughout wedding. It cools the body and keeps the nerves from becoming tense. An Indian bride will never be considered complete without mehendi (henna) on her hands and feet. It's also helpful for the growth of nails.

Hipbelt: The waist ornament called as Kardhani or Kamarband is worn round the waist by married Indian women. Silver Kardhani helps to regulate the extra fat of belly from all sides (www.walkthroughindia.com).

Anklet: It is referred as payal in Hindi which is formed of silver and is worn in ankle. Silver may be a good conductor of energy and work as a mediator between the two kinds of energy, earth and human body and so it makes one feel energetic. A scientific reason given for sporting anklets is that by sporting the anklets, one's energy is not wasted however re-vibrated back to one's own body (www.speakingtree.in).

Toe ring: Toe ring which is also referred as bichiya is formed of silver and Indian girls ordinarily wear toe rings on the second toe of each foot (Hesse, 2007). The nerve within the second toe connects to the heart whereas passing through the female internal reproductive organ. The toe ring makes the female internal reproductive organ stronger and regulates the menstrual cycle (www.walkthroughindia.com).These rings conduct the polar energy from the earth to body, as they are fabricated from silver, which may be a good conductor.

According to scientific principles, silver reacts well with the Earth's energy, whereas gold reacts well with the body's energy and aura. Therefore, silver is worn as anklets or toe rings whereas gold is employed to adorn the upper components of the body (www.speakingtree.in). But now days even the hallmarked gold ornaments may well be adulterated with iridium and ruthenium. This can be as a result of the fact that these two metals, from the platinum family, simply resemble gold once mixed with the latter and therefore the testing machines at several of

the hall marking centers are still not calibrated to notice them. And both the metals are carcinogenic and thus a health hazard (www.thehindu.com).

Tradition of keeping women away from kitchen and temple during menstruation: It was based on giving them rest (creative.sulekha.com). Due to blood-loss, weakness, stomach cramps it becomes very difficult for women to do the household works. But people thought that a woman during menstruation becomes impure and should stay away from household and religious works.

Worshiping of tulsi: The worshipping of tulsi has been going on since ancient times. Tulsi leaves contain volatile oil called basil. This oil purifies air by killing the bacteria (Bail, 2008). Whenever the wind scented by tulsi blows it purifies all direction and makes life full of zest and spirit (Dwivedi, 2002).

Conclusion: Women of all region, places and times are fond of ornaments. In acupressure it's thought-about to be most imperative to stay all active and positive points pulled, for correct and alert functioning. One vital side is that the ornaments worn ought to be product of metal and not the other material otherwise it will not hold any significance. Incidentally same benefits are enjoyed by women sporting ornaments on their body provided the ornaments are created with precious metals. So once religious beliefs are analyzed scientifically they may help in bringing tradition and science closer.

Acknowledgement: Authors are grateful to Principal and HOD Department of Botany, B.N. Bandodkar College of Science.

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Available online www.vpmthane.org

J BNB

NANOTECHNOLOGY IN DEFENCE AND WOMEN SECURITY & SAFETY

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ABSTRACT

Nanotechnology (NT) is emerging fields of science and technology that are witnessing the emergence of an increasing number of new ideas and applications. Many states are seriously looking at military applications of this technology. This paper analyses the impact of nanotechnology on defence that allows military stakeholders the ability to "get more" performance, functionality, and lifespan "with less" weight, size, maintenance, power, and cost.

INTRODUCTION

Nanotechnology entails the measurement, prediction and construction of materials on the scale of atoms and molecules. A nanometer is one-billionth of a meter, and nanotechnology typically deals with particles and structures larger than 1 nanometer, but smaller than 100 nanometers. To put this into perspective, consider that the width of human hair is approximately 80,000 nanometers. A nanometer-size particle is twice the diameter of a gold atom and a very small fraction of the size of a living cell. Such a particle can be seen only with the most powerful microscopes. While nanotechnology has not yet enter into the mainstream, many observers and scientists believe that this new technology will become a greater revolution force.

Nanotechnology has its application in many fields one of which is defense. All major world powers are now investing and researching into the use of nanotechnology for materials and systems for military use. Countries are showing increasing focus on developing nano-products to be used in today's Warfare. This paper will give you a overview of application of nanotechnology in defence. [Referenced:

Altman & M.A. Gubrud: Military, Arms Control, and Security Aspects of Nanotechnology 2010]

APPLICATIONS:

NANO AIR VEHICLE (N.A.V)/NANO-DRONE

Nano-drone will play an important role in defence and police force. N.A.V will be integrated in future Air Force. This N.A.V can be air dropped or may be hand launched depending upon the mission. The small craft allows remote observation of hazardous environments which is practically inaccessible.

Features:

Size: Size ranges from 7.5cm-12cm.The small size of N.A.V allows it to be hidden and remain undetected.

Battery: It can harvest the power through environmental resources such as sun, wind or through man-made sources such as power life or vibrating machineries.

Flapping wing: For compensating the wind flow.

Optical flow sensor: To avoid collision, altitude control, landing without using GPS or IMU

Onboard camera: To stabilize and navigate the N.A.V to the ground station pilot. [Referenced: M.A. Gubrud: Military 2012]

Working:

Nano-drone can be used for women security like a gadget cop patrolling a specified area. They are building with inspiration of nature such as an insect. The small size leaves it undetected and gives the feel of just an insect wondering around. These nano drones have an onboard camera which will give all the continuous footage of the area they are patrolling. They are designed with flapping wings. The drone senses the oncoming gust as thus flaps the wing asymmetrically thus controlling the flight. This drone has in in-built battery. The drone can also gain the energy from natural's resourses such as wind or sunlight. They use optical flow sensor for their vision when GPS is unavailable.

To control this drone we can set up a control unit after every specific distance. This unit will be in touch in a nearby police station so that if any crime or any violence of law takes place the control room can contact and alert the police in no time. We can employ only the female staff in this unit. The benefit is that it can raise the employment opportunity for females. There is no such physical fitness required so any female who wish to serve the country can enter into this field.

This nano drone can help us to give alert of the crime taking place in our locality. Also due to the presence of drone the criminal will always

be in the threat before committing any crime. We can also have a recorded footage of crime thus having a proof against the criminal

Hoping this small drone solves our big problem of women security and safety

NANO FABRICS

A fiber that has a width of less than 1000 nanometer is generally defined as a nanofiber. Nan fabrics are currently being researched for use in military camouflage. Protecting soldiers in combat while maintaining their mobility is a big concern for military leaders and nanotechnology has already produced lighter, stronger body armor by using nanofibers. The newest generation of Improved Outer Tactical Vest (IOTV) can stop rifle rounds and shrapnel more effectively and can also monitor a soldier's health, help compress wounds and administer first-aid drugs, and immediately sense and react to chemical and biological threats.

Features: Active camouflage: Allows the wearer or object to blend into its surroundings.

A bullet-resistant jumpsuit: Can stop a 9mm bullet. Can also monitor a soldier's health, help compress wounds and administer first-aid drugs, and immediately sense and react to chemical and biological threats.

Water resistant: uses a technique called Chemical Vapour Deposition (CVD).

With CVD they could deposite nanolayers of Teflon to resist water. [Referenced: Welsher, K.; Liu, Z.; Sherlock, S. P.; Robinson, J. T.; Chen, Z.; Daranciang, D.; Dai, H.2009]

INVISIBILITY CLOAK

A cloak of invisibility is a method of rendering physical objects undetectable or invisible. The words "invisibility cloak" tends to summon images of fantastic adventure, magical espionage and otherworldly deception.

Components:

Retro-reflective material: Reflects all light that falls on it.

Combiner: completely reflective, bounces the projected image toward the person wearing the cloak.

Projector: receives the enhanced image from the computer and shines the image through a pinhole-sized opening onto the combiner.

Computer: processes the captured image and makes the calculations necessary to adjust the still image or video so it will look realistic when it is projected.

Digital video camera: captures the scene behind the person wearing the cloak. [Referenced: Law M, Greene L E, Johnson J C, Say ally R and Yang P 2005]

CONCLUSION

Like any other technological revolution, promises and opportunities driven by scientific advances in nanotechnology must be balanced with the new vulnerabilities future breakthrough might create. It would be a terrible mistake to wait for the first applications of nanotechnology before initiating prospective studies regarding their impact on international security.

Past revolutions in military affairs showed that the effects induced by new technology were largely underestimated and incorrectly anticipated. New control and verification mechanisms have to be conceived and should not rely on incremental adaptations of the existing ones.

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SPIRITUAL AND MEDICINAL VALUES OF *AEGLE MARMELOS* IN RELATION TO WOMAN HEALTH

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Abstract:

The ripe fruit and unripe fruit, as well as the roots, leaves and branches have all been used in traditional medicine. Indian *Aegle Marmelos* as an ingredient in respective herbal formulations for boils, dysentery, earaches, discharge from the ears, and fever/cold. Hence present study focused on biomolecules present in leaves fruits related to Spiritual values and medicinal values. These sources are utilizing by tribal woman for their health issues.

Keywords: Antifertility; Yajur Veda; Phytoconstituents

Introduction:

Aegle marmelos,(*Rutaceae)* commonly known as bael. Bael is a medium-sized, armed, deciduous tree from the family Rutaceae. This tree was originated in India and is presently growing in most of the countries of Southeast Asia[1]. It is generally used for Hinduism worship, Bengal quince, golden apple, stone apple, wood apple, bili, Elephant Apple, Monkey Fruit or Curd Fruit[2] is a species of *aromatic* tree native to India, Nepal, Bangladesh, India, Pakistan, Sri Lanka, and southeast Asia east to Java. In the traditional culture of Nepal, the bael tree is part of a fertility ritual for girls known as the "Bel baha". The fruit is used into a variety of beverages and desserts, or preserved as jam. The pulp of fruit produces soothing and cooling effect. Due to these characteristics tribal women used it to clean their body.

Morphology of *Aegle marmelos*:

Spiritual values:

It was found that about 80 plant species are used in socio-cultural festivals. Many of the major deities have a number of different forms, each requiring ritual worship at different times and in different ways. The plants products of their parts are utilized for worshiping. The devotees of Lord Shiva commonly offer tri-foliate form of bael leaves to the deity, especially on Monday and Shivaratri. Hindus also believe that ghosts live on bael trees. The fruit is also used in religious rituals .The fruit is also called as *seer phael* because it looks like a skull with a white, bone-like outer shell and a soft inner part. Hence it is used in place of coconuts. Another belief associates its leaves to goddess Lakshmi. The Yajur Veda mentions the bael tree, but the Charaka Samhita, an Ayurveda treatise from the 1st millennium BC, was the first book to describe its medicinal properties.

Chemical Composition and medicinal values of Aegle *marmelos*:

Different parts of the plant have resulted in the isolation of a large number of novel and interesting metabolites. Some of the compounds have been screened for bioactivity. Alkaloids, coumarins, terpenoids, fatty acids and aminoacids have

been isolated from its different parts. Broadly, *Aegle marmelos* leaves contain alkaloids,[1] Phenylpropanoids, terpenoids and other miscellaneous compounds however many Indian researchers worked on broadly, *Aegle marmelos* leaves contained γ-sitosterol, aegelin, lupeol, rutin, marmesinin, β-sitosterol, flavone, glycoside, O-isopentenyl halfordiol, marmeline and phenylethyl cinnamamides etc.[2,3] Potential pharmacological activities of the leaves are hypoglycemic, anti-inflammatory, antimicrobial, anticancer, radioprotective, chemopreventive and anti-oxidative activity. Anhydroaegeline can be used as marker to standardize the plant material with respective to its potential anti diabetic activity.[1-4] The infusion of dried unripe fruits has been used as antidiarrhea[7] and antidysentery agents, also in used for piles treatment. The juice from crushed leaves has been used for the treatment of bronchitis, and the decoction of root barks has also been used as anti-malarial drug.[4] The bright green leaves are alternate and trifoliolate (rarely five-foliolate). The juice from crushed leaves has been used for the treatment of bronchitis; In addition, young leaves are used as vegetable in rural place.

Nutritional values of *Aegle Marmelos* :

Green fruits are used in preparing 'murabbas'. The leaves and small shoots are eaten as salad greens. Fruit contains carbohydrate, protein, iron, phosphorus, calcium and rich in beta-carotene, a precursor of Vitamin A; B vitamins thiamine, riboflavin and small amounts of Vitamin C niacin,, kerotene, citric acid, oxalic acid, tonic acid while as Wild bael fruit more tannin that depletes the body of precious nutrients, and evidence suggests it can cause cancer. The bark is soft, light grey and exfoliating in irregular flakes. The decoction of root barks has also been used as anti-malarial drug.[4] The flowers are greenish white and sweet-scented, fruits are yellowish grey and globose with woody rind and seeds are numerous, oblong and compressed.

Women were used unripe fruit as an astringent, in diarrhoea and dysentery hiccup and affections of the throat. In villages, Leaves, bark, roots and fruit pulp are all used against snakebite. The roots are fairly large, woody and often curved Fresh leaf juice is used in asthmatic complaints and jaundice. The Chinese used the leaves and young fruits to adulterate Opium. In Bengal it is used for dysentery. In Konkan, small

and unripe fruits and juice of bark is a remedy for poverty of seminal fluid.

Material and methods:

Ethanolic extracts of *Aegle Marmelos* fruit have been carried out by the method. In wet and dried powder of fruits are used for extract. Alkaloids were tested by using Mayer reagent. Protein measurement was carried out by the method of Lowry[5] and carbohydrate by phenol sulphuric acid method[6].

Result and Discussion:

When (100 gm) of *Aegle Marmelos* fruit pulped and extracted with ethanol it changes its original colour greenish to brown. Fruits contain 31 gm of carbohydrate and two gm of protein while as its leaves showed only 16 gm and 0.18 gm of protein but it shows variation at 280 nm and 260 nm. Its ratio is more than 1 indicates that protein may be glycoprotein. Hence fruits added more calories when eaten. Hence tribal woman used fruits for antifertility, cough and piles treatment. Indian *Aegle Marmelos* leaves have been traditionally used to induce abortion and to sterilize women. The concentration of carbohydrate is increases by increasing it ripening while as protein steady change. May be due to presence in ripe fruit is rich in beta-carotene, a precursor of Vitamin A; it also contains significant quantities of the B vitamins thiamine and riboflavin, and small amounts of Vitamin C it is medicinally important.

Ethanolic extracts of the leaves of *Aegle Marmelos* contain alkaloids aegeline and aegelenine[8], may lower blood sugar level and interact with thyroid extracts or anti-thyroid herbs but it need to study well in human in vivo. The dried powder extract colour was turbid brown but easily separated while as wet extract color was percolated throughout the measurement.

As per literature, presence of tannin in fruits depletes the body of precious nutrients, and evidence suggests it can cause cancer.

Conclusion:

A*egle marmelos* contains a number of phytoconstituents which reveals its uses for different therapeutic uses. It is clear that without the use of plants and their products the religious rituals and cultural values are not completed. Without completing rituals and cultural values life of a Hindu is not completed. The maintenance of religious forest especially in hilly regions has positive impacts on soil conservation and microclimate conservation. Establishment of small processing plants at forest community

level may create employment opportunity and Ecological implications. To exploit their therapeutic potential to combat various diseases near future bael may play a very important role in modern system of medicine.

Note: This monograph is intended for informational purposes only. Don't consider / make therapeutic decision.

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Available online www.vpmthane.org J BNB

THE FACILITATION OF TECHNOLOGY FOR ADVANCEMENT WOMEN ECONOMY

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Abstract:

To conquer the preliminary financial barrier of women and impeding ability to access the technology and its knowledge is to raise economic opportunity. Technology also is an engine for economic growth that has worked to clarify many mysterious secrets. There is a need to encourage the hidden talent and potential of women and remove the gender inequality particularly in the field of science and technology. Hence, article represents the technology, that women can easily access it and to apply new ideas, the opportunity to leverage technologies and strengthening sustainability.

Keywords: Advancement of humanity; Human Right; Agricultural; gender discrimination

Introduction:

To overcome the initial financial barrier, it is necessary to impedes women's ability to access technology and knowledge increase economic opportunity. A supply chain exists to scale up the technology and that women can access it goes a long way toward strengthening sustainability. Hence article taskforce towards the facilitation of technology for the advancement of women economy.

Women and Technology Development:

Technology also is an engine for economic growth that majorly categories for the Growth Environment Scores With no gender discrimination. Women and men have worked to unfold many unknown secrets of nature, earth and space. Science

and technology are the integral part of human society and culture since the inception of human civilization. Hence showcasing the equal contribution of women and men in ancient mathematical research was, Themistoclea and Pythagoras; major contributors in the development of early Pythagorean philosophy. In his religious but mystical School, Pythagoras made important contributions to mathematics, musical theory and astronomy and acquired the greater part of his ethical doctrines from Themistoclea, the Priestess of Delphi From the same school of Pythagoras, Aesara of Lucania , applied the normative principle of harmonia to geometry, arithmetic, music, and the cosmos. In the 4th century AD, Hypetia Alexandria, an eminent neo-platonic philosopher and mathematician of Egypt, headed the prestigious institution for 15 years and taught geometry, mathematics, the works of Plato, Aristotle, neo-Platonism. History indicates that women were undoubtedly great thinkers and contributors in all the spheres of technical advancement of humanity and philosophy but unfortunately remained untapped resource compared to men contributors of science and technology until 19 th century. In 1945 the first female member of The Royal Society of London was elected though this society was founded in 1662. Similarly the first female representation in the Academie des Sciences of Paris which was founded in 1662 was given in 1962. These societies were important meeting places for the observation of new experimental results and the discussions of new ideas. This is how, the women and technology relation was reestablished in European countries in spite of the fact that half of the world's population is constituted by women.

Human Rights: On this back ground the suggestion of equal rights of men and women by the Universal Declaration of Human Rights in 1948 was prominent. However, in 1985 the United Nations Development Program (UNDP) reported that no society treats its women as equal as men, in spite of the facts that women perform two third of the world's work hours, earn one tenth of the world's income yet they own less than one

hundredth of world's property, provided with less resources and less positions of power [Barber, L. A. (1995). There was a need to promote the hidden talent and potential of women and remove the gender inequality particularly in the field of science and technology.

The Third World Organization for Women in Science (TWOWS) launched in 1993, turned out to be the first international forum to unite eminent women scientists and scientific institutions in the South. It worked with the objective of strengthening the role of women in the science and technology development and their leadership in these strategic areas.

Women's economic advancement matters: This paper builds on research and program work on the realities of what it takes to enable women to increase their resources and economic opportunities, and strengthen their ability to compete in market economies. Most important, it speaks to the growing number of actors driving innovation from the public, private, and social sectors with practical recommendations on how to improve the way technologies are developed and deployed so they benefit women and enable them to be more successful economic actors, stronger leaders, and greater contributors to their families, communities, and domestic economies.

Empowering women and improving the efficiency of their work is critical for reducing poverty. Mounting evidence confirms that women's improved economic status produces many positive economic and welfare outcomes for children, families, and societies.

A mother's social and economic status is considered one of the best indicators of whether her children will complete their education and enjoy healthy, poverty-free adulthood.

Agricultural: Most low-income women in developing countries are primarily employed in agriculture [Mehra, R., & Rojas, M. H. (2008); Klasen, S. (2002]. Agricultural technologies in developing countries and agricultural innovations have been designed specifically for men's use. Simply, investing in women can transform the trajectory for children and families and can lead to widespread economic growth.

Computer Technology, Assets, Capacity, opportunities and environment: Education, health, water, and agriculture these sectors are widely recognized for their positive impacts on women and their families-energy and ICTs are particularly promising because they have the potential to benefit all women. ICTs, including mobile phones and computers with Internet connections, have allowed women to develop new careers as village phone owners while also giving communities access to these services.

Hard" technologies: Tangible machines, hardware, or utensils that can be touched. "**Soft" technologies:** Internet access and telecommunication devices that facilitate the flow of information and knowledge.

Women have income, property, savings, and financial capital to work productively and foster well-being Women have the education and skills to get jobs or prosper in business. Opportunity for women has access to credit, property, financial, labor, and commercial markets.

Women's economic advancement reveals one common strategy: It is necessary to identifying the problem, designing the technology, researching the market to test and increase use by target populations, and also need to address barriers to access and arrangement of training for women to operate, repair, and maintain the technology. Supply-distribution chain is includes the technology to ensure access, creating and maintaining market linkages for women's technology-generated goods and services. Assessing and evaluating the entire process to gauge and strengthen each phase of technology development definitely improve women's ability to access technology.

Women are often seen only as "users" or "receivers" of technology, not as innovators (Samson, A. E. (2006). and are underrepresented in higher education programs in science, technology, and engineering (Berbar1995) This is partly because women don't have the basic educational foundation for a successful scientific career.

TECHNOLOGY HELPS WOMEN ADVANCE ECONOMICALLY:

At home, improved fuel-efficient cook stoves, such as the Upesi stove in Kenya,

reduced the time rural women spend on household cooking tasks. Alternative household power, which uses diesel engines to power food processing and carpentry tools, increased the productivity of women's domestic and income-generating activity. Motorized scooters provided large numbers of urban women in countries with a safer and more reliable mode of transportation, making it easier for them to access employment and educational opportunities.

Treadle water pumps enabled women farmers to irrigate small plots from underground or surface water sources and, in turn, to increase their harvests and incomes.

Solar dryers to process fruits and vegetables, such as those used by rural women's groups in Uganda, increased the efficiency of processing dried fruits for export.

Village mobile phones facilitated women's roles as entrepreneurs who operate businesses that require communications services or who even own the pay phone center serving a community.

ICT educational academies, such as those promoted by Cisco Systems and UNIFEM in the Middle East, trained women in technical and career skills to enter and compete in the high-skilled ICT labor force. Outsourced ICT services in Asian countries such as India, China, and the Philippines generated many new employment opportunities for women. ICT telecenters and kiosks provided relatively affordable means of accessing vital business skills and market information relevant to women's income-generating activity, so that women could start small businesses.

Conclusion: Initiations, wisdom of experience, demonstration of technologies if effectively applied and distributed, can fabricate significantly economic gains for women, their families, communities, and societies. By taking the time and effort to apply new ideas, the opportunity to leverage technologies in a way that puts women in developing countries on a higher route toward economic advancement while also benefiting the aims of programs and businesses.

Table:

Branch	TECHNOLOGY	Its working
ıergy	Solar Dryers	Dryer chamber to dry fruits and vegetables
	Multifunctional Platforms	Diesel engine plus tool attachments, like battery charger, grinding mill, etc
	Upesi Cookstoves	Energy-efficient stove with lower smoke emissions
IFORM ATION AND DMMUNICATION	Mobile Phones	Women entrepreneurs sell mobile phone usage to other women and men Village
	ICT Telecenters	Fee-based ICT products and services at community center
	ICT Academies	High-skilled IT training for women in national universities
	Outsourced ICT Services	Outsourced IT jobs, such as medical transcription and software support

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Socioeconomic Status of Adivasi and Katkari People Living in the Villages around River Gadhi and Deharang Reservoir

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Abstract

Adivasi is the group of underprivileged people living still in old style. Katkari is also a primitive tribal group living in various regions of Maharashtra. Bothe groups are mainly located in Thane and Raigad districts. However, Adivasis are also found in other districts of Maharashtra. The main profession of Katkari is collecting *kath,* gum of *Acacia catechu.* Both are hard working tribes but are economically and culturally deprived. The paper throws light on the socioeconomic status of these people from Panvel tahsil of Raigad district.

Panvel is a town place bounded by a small river, Gadhi having stretch of 17 km. The river originates from a reservoir, Deharang and the flows down at the outskirts of the town to meet the creek. Reservoir has a catchment area 2719.487 hectar and storage capacity 64.22 million cubic feet and the water remains available throughout the year. The indigenous fishes found in this river and reservoir form the part of the diet and economy of Adivasi and Katkari who reside at the bank of the river and the area near the reservoir. The water quality and the indigenous methods that they apply for fishing affect on the health of the fisherman. The lifestyle of these men depends on the fish catch. As the potential of the river for fisheries is ignored by the government, the local fisherman's financial status remains low. During the study period the efforts are made to estimate the nutritional status of their staple food and their social economic status as well as the impact of the water quality on their health.

Key Words: nutritional value of fish, fishing methods, educational status, economic status

Introduction

Fish and fisheries – both marine and inland – are an intrinsic part of the livelihoods of many in developing countries. Recent work indicates the important contribution to food security made by fish caught as a part-time occupation of essentially agricultural households.

Inland waters also have significant capture fisheries. They are often difficult to record, owing to their relatively diffused nature, but they currently produce at least 10 million mt each year[1]. With regard to rural development, generally inland fisheries can have the most impact. Fishery contributes about three percent of our gross Domestic Pelt[3]. It is a powerful income and employment generator for the large mass of backward and economically weaker sections of rural and coastal community as it stimulates the growth of a number of subsidiary industries with the rising pressure on food production from land and sea due to population explosion.

The protein deficiency becomes more serious problem for which the development of unexploded and under exploited fisheries resources offer promising solution. In floodplains, for instance, many – including women and children – engage in casual fishing which makes a significant addition to the high-grade animal protein available to a household.

India has the great potential for fresh water aqua culture because it consists of big reservoirs (29700 hectares), rivers (8253 kms) and natural lakes (21900 hectares).

In India full potential of fish culture is yet to be fully exploited. Extensive development of aquaculture needs to be given priority after green revolution to feed growing population.

The Indian reservoirs being largely tropical to subtropical regime are highly productive from biological point of view. This productivity can be optimally utilized by stocking a right mix of Indian major carps[2]. However, no account of existing fishery condition of Dehrang Reservoir and Gadhi River is available. Besides having a good potential of fish and fisheries the area is neglected. The fishery potential is underutilized. The local fishermen staying nearby area are neither

skilled nor educated. Thus, they cannot optimally utilize the natural source of income which is very handy to them.

Description of the study area

Panvel city and municipal council lie in Raigad district in India in state of Maharashtra. It is situated at longitude 18°58' N and latitude 73° 12' E. Panvel is located on the Mumbai Pune Expressway about 22 kilometres from Mumbai. The present study is on Deharang reservoir located in Panvel tehsil and Gadhi river which flows along the boundaries of the Panvel covering the distance of about 17 km. The Dehrang reservoir supplies drinking water to the Panvel city and Gadhi river runs downstream and finally drains into Panvel creek.

Deharang reservoir and Gadhi River are used for indigenous fisheries. The local fishermen (locally called Katkari and adivasis) do fishing by traditional methods. Besides having great potential, the reservoir is not utilized to its extent neither the support services are provided to do fishing in reservoir nor in the river. The reservoir used to be auctioned earlier but now the residential people capture the fishes for their dietary as well as financial fulfillment.

Materials and Methods

To understand the socioeconomic status the survey was done and the impact of local fishing on the life style, health and economy of the people who survive by catching the fishes found in the river was studied. For this purpose a questionnaire was made the answers were obtained from the people.

Nutritive values of fishes were calculated by estimating carbohydrate, protein and lipid content of the fishes. The total lipid content from dry tissue samples were estimated by the method of Folch[5]. Protein estimation was done by Lowery's[6] method. Glycogen was estimated by Anthrone reagent method[7].

Results and Discussion

Socioeconomic Status of the Fisherman

Generally the fishermen are characterized by low living standard and hence belong to the weaker sections of the society. They are mostly illiterate and unaware of the government policies regarding fisheries. The daily income they get is spent on

liquor which is the weakest part of their livelihood.

There are around 500 families on the bank of the river who have fishing as their traditional business, though it is no their full time job now. Their economic condition is very pity. Few of them work as fourth class labour in Government and Non-government organization having maximum earning upto Rs. 4000 per month. Some others have small pieces of land where they grow only rice in the rainy season. The rice gained from this field is not even sufficient to feed their own family. Many others are engaged in labourious work of sand dredging or on brick kiln. Thus they are below poverty line. The women and children also contribute in the income of the family by helping their parents in fishing or any other kind of casual labour. Earning daily bread is the only aim of their life. The habit of liquor is very common in men and thus they spend half of their wedges on liquor.

The income earned by the local fishermen through fishing and other sources is as indicated in table 1.

Table 1: Income of the Local Fishermen Community

Category	% of people engaged in fisheries	Approx. income Rs/day	Approx. income Rs@anum
Full time fishing job	31	170/-	24000/-
Part time fishing job	12	280/-	40,000/-
Fishing only for household purpose	28	-	32,000/-
Other jobs	29	-	42,000/-

The housing conditions are very poor. They live in huts made of sticks and mud. Hardly anybody of them has a permanent house made of bricks and concrete. The lack of electricity and sanitary condition are live problems. Though potable water is available from the wells and borewells, because of illiteracy regarding safe drinking water, the water is consumed unsafely.

Education and literacy are the indicators of socioeconomic status of the people. The

fishermen in this area are illiterate. The children of school going age leave the school in the half way without completing their education. The women have never seen the school. However, the education is now given to the girl students also which at least makes them able to read.

Unhygienic living style, poor sanitary condition, malnutrition and unawareness regarding medication are the major problems. Early marriages in the girls are one of the reasons for abnormal and underweight infants in this society. The diseases like fever, headache, dysentery and skin itching are common problems to them. The skin diseases were commonly seen in the people who go for fishing. As they remain standing in the water for long time during fishing, their skin gets soaked in water. The fishing is done at the sites that receive sewage and thus there is a chance of various kinds of skin and other infections.

Rice and fish is the only part of their diet. Though the fishes they catch found to be highly nutritious and even the small fishes are eaten along with bones, they get most of the nutrients through them. However, unhygienic life style and unawareness regarding other kinds of nutritive food makes it difficult to maintain the good health. The habits of narcotic substances are common in men and women are also victim of it which ultimately affects on their health status.

The people do not approach to the doctors, instead they believe on superstitions.

Nutritive value of fish

It is unfortunate that, in spite of the great advances made in the knowledge of food and nutrition and in its application to raise the level of nutrition, the majority of the human population is still living on a suboptimal nutritional level in the light of the dietary standards recommended by appropriate international and national bodies.

The consumption of fish, whenever available in sufficient quantities, can be expected to help considerably in correcting the state of malnutrition so widely prevalent in the world today. Fish is a highly nutritious food. It is particularly valuable for providing proteins of high quality comparable with those of meat, milk or egg[8]. Different species and variety

of fish vary in regard to the percentage of proteins, minerals and vitamins[9]. There are varieties of freshwater fish which contain as low as 0.6 % fat. On the other most fish contain higher proportion of fat[8]. It is also a fairly good source of calcium and phosphates[10], particularly small fish which are eaten with the bones.

During the present study, the fishes were made available from the local fisherman and were analyzed randomly to estimate the proximate value of nutrients from their muscle. The species *L. laubuca* was found to be caught in adult as well as young forms and young ones are eaten as palatable one. Therefore, the nutrient content was analyzed separately for both the stages. The data for each species was then pooled together.

Table 2: Proximate Composition of Nutrient in Body Muscles of Fishes Found in the River (gm / 100 gm wet weight)

Name of the fish	gm/100 gm of wet tissue				Energy Cal/lb
	Moisture	Proteins	Carbohydrates	Lipids	
Laubuca laubuca (Adult)	69	20	2	4.2	544.00
Puntius spp.	70	32	1.5	3	715.95
Garra bicornuta	80	15	0.005	2	360.40
Channa punctata	78	14	3	2	342.00
Laubuca laubuca (Young)	65	2	5	5	246.15

It was found that the proximate composition of moisture was 65 to 80%. The protein content varied from 2 to 32 % where as carbohydrate ranged from 0.005 to 5% (Table 2). The percent composition of carbohydrates might be less due to the usage of muscle glycogen by the fish. The active fish is deficient in carbohydrates; however it has rich sources of energy in the form of proteins and oils. The lipid content varied from 0.05% t0 5% (Table 2).

Among the fishes caught the protein content was high in *Puntius* spp. and was recorded 32%. The lowest protein content was recorded in *Laubuca laubuca* (young) (2%).

In case of lipid content the lowest lipid content was noted in *Garra bicornuta* and *Channa punctata* (2%) where as high lipid

content was recorded in *Laubuca laubuca* (young) (5%).

In the terms of energy Puntius spp.ranked first yielding 715.95 Cal/lb and *Laubuca laubuca* (young) ranked last yielding only 162.8 Cal/lb energy.

Eating fish from degraded water bodies effect human health[11].

Mitigation Strategies

According to D'Cruz[12] the formulation of a course of action with the understanding of previous history and with the better awareness of specific needs and aspiration of the sector is essential for the upward mobility of the artisanal fisherfolk, who belong to the lowest strata of the society. Although the river and the reservoir are perennial, very rarely it gets dry. However, the sites where fishing is done are perennial. It was found that being a rich source of good aquaculture, reservoir's potential in this area is underutilized. By following particular strategies it is possible to make proper use of reservoir for generating employment and good source of income. Same is applicable for the river also. Only the creekward site of the distance approximately 1 km is used fruitfully for fishing but the river side is neglected. The area of around 8 km of stretch of river was found to be really productive where applying good fishing practices may generate income. In brief, recommendations to address the situation of the adivasis and katkari of the study area are education for children and other community members, institutional and organization support, government support and organizational services.

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HYDROBIOLOGICAL STUDY OF THANE CREEK

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ABSTRACT: The Physico-Chemical Parameters of Thane creek was studied and Microbiological analysis of Thane creek was done by estimating coliform bacteria in the creek water. Certain microorganisms, including various bacteria, viruses, and parasites, are well-known water contaminants, of which several may lead to waterborne disease and epidemics. The aim of the present study is the prevalence of bacterial contaminants from creek water and associated risk factors. The results suggested that the creek could contribute to the high load of bacterial burden coming from the streams flowing into it. Over a period of time, creek has been subjected to human interference regularly and water quality is found getting deteriorated profoundly especially due to release of treated or untreated sewage. Therefore to control the spreading of pathogens transmitted by contaminated water.

KEY WORDS: Thane Creek, Coliforms, Physico-Chemical Parameters, Pollution.

INTRODUCTION: The present investigation involves the analysis of Thane creek located near Mumbai, India it has shown increasing pollution due to various anthropogenic discharges from the surrounding areas. In recent years there is degradation of the creek due to pollution & population of Thane city. A microbiological monitoring was conducted by studying the presence and quantity of coliforms (Faecal coliforms- FC).

STUDY AREA: The study was carried out at one station of thane creek which is situated at (Long 72° 55' to 73° 00'E and Lat 19° 00' to 19° 15' N) is 26 km long.

MATERIALS and METHODS: However different parameters were studied by standard methods. Sample was collected from the creek and was carried immediately in the laboratory. The coliform study was done by MPN method. Refer table 1.

TEMPERATURE: Temperature of water may not be as important in pure water because of the wide range of temperature tolerance in aquatic life, but in polluted water, temperature can have profound effects on dissolved oxygen (DO) and biological oxygen demand (BOD).The fluctuation in river water temperature usually depends on the season, geographic location, sampling time and temperature of effluents entering the stream (Ahipathy, 2006) .Temperature of present study area was found to be 27°C**.**

pH: pH is an important factor that determines the suitability of water for various purposes, including toxicity to animals and plants. In the present study, pH was found to be 7.5, slightly alkaline. It was performed by universal indicator method.

DO: Its deficiency directly affects the ecosystem of a river due to bioaccumulation and bio magnifications.

The oxygen content in water samples depends on a number of physical, chemical, biological and microbiological processes. DO values also show lateral, spatial and seasonal changes depending on industrial, human and thermal activity? Oxygen is the single most important gas for most aquatic organisms; free oxygen (O_2) or DO is needed for respiration. DO levels below 1 ppm will not support fish; levels of 5 to 6 ppm are usually required for most of the fish population. For DO analysis Azide modification of Wrinkler's method was used.

HARDNESS: Hardness is caused by the concentration of multivalent metallic cations in solution. The principle hardness causing cations are divalent Mg^{+} and Ca and hardness range above 300m/l is considered very hard.

SALINITY: It is the measure of concentration of dissolved salts. Excess concentration of salts is harmful for aquatic life.

TURBIDITY: It is caused by wide variety of suspended materials. Define as interference to the passage of light by suspended particles in water.

COLIFORM: Coliform bacteria are called indicator organism of faecal pollution. Sources of these organisms are mainly municipal and domestic sewage.

It comprises all the aerobic & facultative anaerobic, gram negative, non-spore forming rod-shaped bacteria, which ferment lactose with gas formation within 24 hr. Most probable number (MPN) test was performed to determine coliforms in the creek. Where dilutions of 0.1ml, 1ml of single strength and 10ml of double strength were used. 9 tubes consisting of 3 tubes per dilutions was inoculated with the sample and incubated for 24 hr at 37°c.
With the positive tubes, the inoculation of bacterial suspension from water samples were streaked for the growth of isolated colonies on MacConkeys agar containing Triphenyl Tetrazolium Chloride (TTC). TTC supports the growth of coliforms. Then the plates were incubated at 37 °C for 24 hrs. for bacteria growth. After 24 hrs the plates were examined and colony characteristics were studied. This study has strongly suggested that the microbiological standard of creek water must be noted to confirm the health standard. This study has clearly indicated that the creek area is highly contaminated. Faecal coliforms counts recorded (>2400 as per Mac-Carty's Chart)is higher and is not suitable for any purpose without proper treatment refer table 2 and 3.

RESULT AND CONCLUSION:

Sample	**No.of Positive Tubes**			**Mpn/100ml**
	10ml	1ml	0.1ml	
Creek Sample	3	3	3	≤2400

TABLE: 2, referring to fig 1. Comparing with McCarty's chart

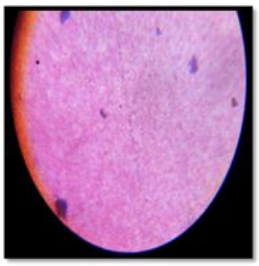

Fig.1.MPN Tubes **Fig.2. MacConkey's plate including TTC.** **Fig.4. (100x resolution)**

Characterization of Bacterial species- The isolated bacterial culture was further identified and characterized by using standard Microbiology methods.

TABLE.3.

COLONY CHARACTERISTIC	SIZE	SHAPE	COLOR	MARGIN	OPACITY	ELEVATION	CONSISTENCY	GRAM NATURE
WATER SAMPLE	2mm	Circular	Pink	Regular	Opaque	Raised	Smooth	Gram-negative rods

CONCLUSION:

Thus the present study concluded that creek water of the study area was highly polluted with respect to physico- chemical assessment as DO was found to be absent which do not support living organisms as compare to earlier study where many organisms use to survive, now the percentage of their survival is seen less and bacteriological studies suggested higher coliforms counts, which require continuous monitoring and treatment process to avoid spreading of diseases among living organisms.

ACKNOWLEDGEMENT:

We are thankful to the Principal Dr. (Mrs.) Madhuri Pejaver and Management of B. N. Bandodkar College of Science for providing all the necessary requirement and lab facilities for the study

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BOTANICALS TRADED IN THANE CITY BY ADIVASIS (TRIBALS) FROM SURROUNDING RURAL AREAS DURING THE NAVRATRI FESTIVAL SEASON

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Abstract

The Navratri festival is one of the most prominent of Hindu festivals, comprising nine days of worship and celebrations. The adivasi tribal populations, mainly restricted to the remote rural, hilly and forested areas, with their own distinct ethnic cultural beliefs and traditions give a special blend and essence to the otherwise much more advanced and highly urbanized parts of Thane and Palghar districts. These simple folks converge during festivals on the original district place viz. Thane city, to sell simple offerings of worship gathered from their natural surroundings, to the city dwellers. Their items are much different from those offered by the traditional flower merchants. Eight plant items viz. mango (*Mangifera indica*) leaves and twigs, rice/ paddy (*Oryza sativa*) panicles, dwarf reed grass (*Arundinella pumila*) panicles, water lily (*Nymphaea alba*, *N. rubra*, *N. stellata*) flowers, aapta (*Bauhinia racemosa*) leaves, kurdu (*Celosia argentea*) and bachelor button (*Gomphrena globosa*) inflorescences and marigold (*Tagetes erecta*) flowers were recorded in the current study of botanicals marketed by adivasi tribals in Thane city during Navratri festival. Besides, trade in locally grown vegetables and fruits such as *Cucumis* sps. as offerings to the Goddess was also noted.

Key Words: Navratri, Plant offerings, Adivasi (tribals), Thane

Introduction

Nature has always featured prominently in traditional Indian worship since ancient times. Indian literature has exalted some trees and plants as sacred (Mehra, 1996; Ghanekar, 2010). The practice of using simple plant offerings for religious rituals has also been recorded since ancient times. India has a very rich cultural and religious heritage and is a land where several festivals are celebrated with gaiety, pomp and splendor. The Navratri festival is one of the most prominent of Hindu festivals (Wagh, 1990) in which people of all castes and creeds participate and celebrate; contributing to national and cultural integration. The nine day celebrations mark the worship of nine incarnations of Goddess Shakti. The rituals and religious traditions of expression of worship and celebration may differ according to geographic regions but the basic concept and theme is much the same.

Thane district of Maharashtra state in India is known for its large proportion of local

tribal (adivasi) populations. Recently the district was bifurcated into Thane and Palghar districts for administrative purposes. The tribal populations, mainly restricted to the remote rural, hilly and forested areas of the districts, with their own distinct ethnic cultural beliefs and traditions give a special blend and essence to the otherwise much more advanced and highly urbanized parts of Thane and Palghar districts. The cultural, social and economic differences between the remote rural and modern urbanized belts of the districts are markedly visible. Residing in the lap of nature and being culturally and socially closer to vegetation, these simple folks converge during festivals on the original district place viz. Thane city, to sell simple offerings of worship gathered from their natural surroundings, to the city dwellers. Their items of sale, exhibited and hawked from small road side units during the festival period, differ markedly from those of the local traditional flower merchants. The present investigation focuses on the plants and plant parts marketed by the local tribal population from surrounding areas, in the city of Thane during the Navratri festival.

Material and Methods

The survey technique was employed to study the adivasi tribals coming from surrounding villages for selling their gathered plant material religious offerings to city dwellers in the district place viz Thane city; for use in Navratri rituals. The study was carried out during the Navratri festival for two consecutive years 2013 and 2014 in the Chendani area of Thane city. The plants were identified in the Department of Botany, B.N.Bandodkar College of Science, Thane, using standard literature (Cooke, 1967; Deshpande and Singh, 1986; Kirtikar and Basu, 2008).

Results and Discussion

The Chendani area of Thane city was apparently the favourite hot spot for the tribals coming from nearby villages and remote rural areas for selling their plant materials; obviously due to its proximity to the local state transport bus stand; offering arrival and departure facilities; as well as its being an extended part of the traditional weekly market. This area, with its lanes and bylanes has remained the favourite hawking zone for this tribal population year after year, for several generations; wherein they set up temporary road side units and stalls during the festival season. Proximity to the railway station and temples in the vicinity add to the business. The tribals, mostly womenfolk, bring their limited stocks of collected and gathered plant parts in gunny bags or wicker baskets, arriving early in the morning by bus, and spend the day selling the produce, returning back in the evening to their villages, to come back the next day with fresh stock of flowers and foliage. The menfolk generally trade in bulk flowers such as marigold; business of which picks up as the nine days of Navratri draw to a close, ushering in the festivals of Dassera and Diwali; facilitating brisk trade in the traditional religious flower commodity. The various floral and foliage items traded by the tribal community for use as religious

offerings during Navratri are listed in Table 1.

Mango leaves have an auspicious significance as the tree is considered sacred and personifies several Gods, deities and spirits. Bunches or strings (*toranas*) of mango leaves at the main door are believed to absorb negative energies, eliminate negative effects of the evil eye, control evil spirits, cleanse the atmosphere, remove harmful bacteria and prevent health hazards. The long lived hardy mango leaves are also believed to generate oxygen. Besides symbolizing divine knowledge and natures hope for realization, the leaves are also said to symbolize the bond between man and nature. The tree is attributed with ethnobotanical values (Ayyanar and Ignacimuthu, 2010; Narayanan *et al*., 2011). Rice being the staple food of people in the area, its panicles always had an auspicious significance in religious ceremonies. *Arundinella pumila* (Hochst.) Steud., a common weed in agricultural and disturbed lands (Rajendra Kumar *et al*., 2011; Ram Kumar *et al*., 2013), recorded as a common annual grass in Thane and Palghar districts (Mahabale, 1987), has value as a lean fodder plant (Oedra, 2009). The lotus lily has been a choice flower for offering in temples since ancient times and is believed to symbolize divine consciousness and all forms of wealth. Similarly the *Bauhinia* leaves traded as the traditional *sona* or *aapta* are said to symbolize stability and contentedness (Sri Aurobindo, 2000).

The simple and beautifully coloured long lived inflorescences of *Celosia argentea* L. are said to symbolize aspiration for immorality and joyful expressions, while those of *Gomphrena globosa* L. are said to symbolize immortality. Both these plants, found as common weeds of waysides, wastelands and croplands, have traditional uses as temple decoration flowers during festivals and also have ethnomedicinal and ethno-veterinary medicinal values (Lans, 2006; Satpathy *et a*l., 2012). Their inflorescences have indefinite longevity, during which the natural colours are retained, most probably throwing light on their symbolism of immortality. *Gomphrena globosa* is known as a popular test plant for scientific experiments (Nagasawa and Matsuda, 2015), besides being a source of phyto-chemicals (Heuer *et al*., 1992) and natural dye (Selvarajan *et al*., 2015). Marigold has been the largest selling traditional flower in India in terms of bulk, representing a large proportion of the trade in conventional flowers in the country and a common offering in Hindu worship (Ayyanar *et al.*, 2010). Besides the religious importance of its flowers as an offering to God, marigold is a plant of versatile importance (Vasudevan *et al*., 1997; Raveesha and Sudhama, 2015; Sujatha *et al*., 2015).

Eight major items of trade by the tribal population were recorded in Thane during the Navratri festival. Besides, trade in locally grown vegetables and fruits such as *Cucumis* sps. as offerings to the Goddess was also noted. The inclusion of all forms of plants, herbs, shrubs, trees, climbers, cultivated as well as weed specimens, land and aquatic plants as offerings to the

Goddess, as marketed by the tribals, is significant. Some enterprising tribals were recorded to add value to their items by stringing garlands and toranas which were sold in terms of length measured in 'hands'. The simple items of traditional offerings during puja, marking the festival of Navratri, marketed by the local tribals apparently has a lot of significance and symbolism.

Acknowledgements

The author gratefully acknowledges co-operation and inspiration received from Vidya Prasarak Mandal, Thane and the Principal, VPM's B N Bandodkar College of Science.

Table 1: Plant items traded by tribal from surrounding rural areas in Thane city during Navratri

S.N.	Vernacular names of plant material	Botanical name and family	Parts sold by tribals	Units of marketing	Significance
1.	Amba, Aam, Mango	*Mangifera indica* L. (Anacardiaceae)	Leaves	Bundles of leaves/ Twigs, *Toranas*	Considered auspicious and sacred. Symbolizes divine knowledge
2.	Bhaat, Paddy, Rice	*Oryza sativa* L. (Poaceae)	Panicles	Small bundles, *Toranas*	Considered auspicious
3.	Chirali, Dwarf reed grass	*Arundinella pumila* (Hochst.) Steud (Poaceae)	Panicles	Small bundles	Considered auspicious and bountiful
4.	Kamal, Indian water lily, white water lily, red water lily, blue water lily	*Nymphaea alba* Linn, *N. rubra* Roxb. ex Andrews, *N. stellata* Willd. (Nymphaeaceae)	Flowers	Single flowers	Considered sacred. Symbolizes all forms of wealth
5.	Kanchan, (Shami) Aapta, Sonpatti	*Bauhinia variegata* L. *Bauhinia racemosa* Lam. (Fabaceae)	Leaves	Twigs	Symbolizes stability and contentment
6.	Kurdu, Kombada	*Celosia argentea* L. (Amaranthaceae)	Inflorescences	Small bundles	Symbolizes joyful expression and aspiration for immortality
7.	Supariche phul, Gol phul, Globe amaranth, Bachelor button	*Gomphrena globosa* L. (Amaranthaceae)	Inflorescences	Small bundles	Symbolizes immortality
8.	Zendu, Gonda, Marigold	*Tagetes erecta* L. cultivars and hybrids (Asteraceae)	Flowers	Portions, or by weight Garlands, *Toranas*	Conventional and traditional flower used in religious rituals and offerings. Symbolizes supramental plasticity

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International Women's Day

TRULY PROUD TO BE WOMEN
WHO IS SYMBOL OF GOD SHAKTI, LOVE, COMPASSION ,DIGNITY, STRENGTH,FINEST AND SO ON……
THE LIST OF HER QUALITIES IS ENDLESS SO HATS OFF TO ALL WOMEN IN THE WORLD

8th March 2015

Happy women's Day

- TRULY PROUD TO BE WOMEN
- WHO IS SYMBOL OF GOD POWER, FINEST AND BEAUTIFUL CREATION WHITHOUT WHOM NO CREATION IS POSSIBLE , THE ONE WHO GIVES BIRTHE AND NURTURES.
- THE LIST OF HER QUALITIES IS ENDLESS SO HATS OFF TO ALL WOMEN IN THE WORLD

Happy Women's Day

Women are amazing. She can put a smile on her face, act like everything is fine. When in reality, the world is on her shoulder and her life is slipping through the cracks of her fingers.

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"Jnanadweepa",Chedani,

Thane(W)-MS,PIN 400601.

OUR VISION: IMPARTING QUALITY EDUCATION IN SCIENCE

Vidya Prasarak Mandal‟s B.N.Bandodkar College of Science, Thane (Maharashtra) Research Committee , Women Development cell and IQAC organizing State Level One Day Seminar on **Women in Science and Science for women (WSSW)** on **March 7th 2015**. On this occasion, we take a great pleasure of welcoming you. Many eminent Authorities, Scientist and academicians will attend this seminar in our lake city; Thane on the outskirts of Mumbai, the teeming Metropolis.

VPM campus is the beautiful location to visit as it called **Jnanadweepa** (**Island of knowledge**).

Preamble:

This gives us immense pleasure to inform you that the upcoming State Level One Day Seminar on " **Women in Science and Science for women"** will be held on **March 7th 2015**. For the said seminar, we take opportunity to invite original unpublished research work and research related articles from venerated researchers/academicians/NGOs professionals of scientific, medicine and technological area. The research papers will be published in JBNB online journal**.**

Science in India has a 'diversity problem' with Indian women and minorities represented inadequately. The good news is that there are an increasing number of women receiving an education in the sciences in India. Working in science has not been easy for women, with its long hours, societal biases, and the need to get married and have children in between. Number of women have made great contributions to science and paved the way for others.

Call for Papers

Papers are invited taking into consideration the motto, theme and sub- themes of the Seminar.

Who can participate?

Academicians, scientists, policy makers and students from recognized academic, research institutions and registered scientific societies, NGOs can participate at this seminar.

Objective of the Conference:

1. To provide a forum for the studies on the newly evolved in science and technology,
2. To highlight the scientific contribution and achievements of women.
3. To the dissemination of scientific knowledge concerning to all aspects of science for women.

Subject for paper:

1. Physics, Chemistry, Maths, Statistics, Biology, Medical, Ayurveda, Cosmetic Sciences, Herbal sciences, Biotechnology, Microbiology Biochemistry, Pharmacy, Nanotechnology, Bio and Chemo informatics , Technology, Drug Design; Pharmacy, Food and agricultural science and all allied braches of sciences.
2. Specific Problems related to women and Science behind it.
3. Social challenges for women and its remedy.

Registration Charges:

All delegates: 750/- and Students-Rs. 500 /-per head.

DD in favour of Principal, B.N. Bandodkar College of Science, Thane-1 .

Please note that prior registration is mandatory to attend this seminar. In order to register, if paper presentation; please email your interest to wsswatbandodkar@gmail.com anitagoswami@rediffmail.com your participation will be confirmed within 48 hrs.

Last date for paper submission: 28th February 2015
(Spot registration for participation may be entertained)

Conference Venue:

Patanjali Sabhagrah, VPM"s B.N. Bandodkar College of Science,

(building 6)Thane (W) - 400 601. Maharashtra.

Entitlement of Registered Delegates

- Entry to all sessions of the seminar, seminar programme , seminar bag/tag,
- publication in online journal - JBNB,
- Invoice / receipt of payment,• Technical support
- Certificate of Participation/presentation

Information for Authors:

1. English is the official language of the seminar.
2. The paper should be A4 format. Left, right, top and bottom margins should be 2.00 m each.
3. **Title:** 14-point. Times New Roman, all in capital letters, bold and centred.
4. **Font size of paper:** 12-point in Times New Roman, in single space, and justified.
5. A blank line should be left after the title. Names of authors, affiliations and e-mails should be provided after the title.
6. **Abstract**: maximum 200-word along with five keywords. Full length paper: (Max.5 pages)
7. Graphics and pictures should be prepared in black and white.
8. One blank line should be allowed between the components of the paper (i.e. introduction, methods and procedures, results, conclusion, references.). The second level of headings should be title case and bold. The third level should be italicized and upper- and lower-case heading.
9. For titles of tables, graphics and pictures, sentence case should be used. (Font size 10 pt.).
10. **References:** At the end of the paper and listed alphabetically. References and citations within the text should be prepared in the APA format.
11. Abbreviations should comply with the standard use. They should be given in full format at the first place they are used. SI unit should be employed where applicable
12. All submissions must be by email attachment preferably in MS words.
13. All papers must adhere to this template in format. No paper can be processed if not formatted according to the stated rules and regulations. Papers submitted after **February 2015** may be presented at the conference but they may not be published in the journal.
14. **Registration:** All Participants must register for seminar. Authors should register at the time of submission of paper and **signed Copyright Agreement** for the seminar.

State Level One Day Seminar on

Women in Science and Science for women

Registration form

Title of the scientific manuscript .....**.....**

.....

Sections:

1. Pure and applied Science ; Engineering/ Technology, Medicine ,
2. Specific Problems related to women &Science behind it.
3. Social Challenges for women scientist and remedy

Name of the Author: **Male /Female** **Signature**

1.....

Email.....MB.....

Institutional /College Address: ....

.....

Presenting Author:……

Corresponding Author:.....

D.D.No:.....Dated .....of Bank.....

Transfer of copyright agreement:

Herewith Manuscript submitted for publication in special issues of e- journal JBNB on the occasion of "**Women in Science and Science for women**" **.** It has not been published before, and it is not under consideration for publication, or otherwise contrary to law. When the article is accepted for publication, I/We, as author/authors, hereby agree to transfer to this state level seminar organized by B.N.Bandodkar College of Science Thane (W)-1. all rights, including those pertaining to electronic forms and transmissions, under existing copyright laws.

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Conferences/Seminars/Workshops conducted at VPM Campus:

Events	Department	Topics
2014-2015		
National Conference	Department of Botany & Research Committee	New and emerging trends in Bioinformatics & Taxonomy
2013-2014		
National Conference	Zoology & Environ.Science	Biodiversity: status and Challenges in conservation .
2012-2013		
National Conference National Conference National Conference	IT Chemistry (UGC sponsored) Mathematics	FUTECH Phytochemistry: Recent Trends and Challenges Recent research Trends in Mathematics
2011-2012		
National Conference	Biotechnology	Biotechnological diagnosis
National Seminar	Chemistry & Research committee	Avenues on Scientific Research Proposal Grants.
National Seminar	Botany (CSTR sponsored)	"Evolving of Scientific terminology in Environmental Science in regional Language."
National Conference	Information Technology	Cloud Technology
2010-2011		
National Conference	Information Technology	"Intelligent System"
2009-2010		
National Conference	Botany	"Orchid Genetic Diversity: Conservation &Commercialization"
State level seminar	Library (UGC sponsored)	"Re-engineering of Libraries"
Seminar	BARC & Bandodakr College of Science.	"Dr.Homi Bhabha commemorative seminar "New Vistas in research in Physics"
2008-2009		
National Seminar	Zoology	"Wonderful world of insects"
2007-2008		
National Seminar	Chemistry	"Contaminants in food and beverages"
2006-2007		
National Conference	Information Technology	"Linux Thane 2006"
Univ. level Workshop	Information Technology	"Linux Training Programme for Faculties"
Univ. level Seminar	Maths and Statistics	"Financial Mathematics"
Workshop	Chemistry	"Refreshing chemistry for biologist 2006"
2005-06		
National Conference	Physics	"Einsteins theories and present Scenario"
Workshop	Physics	"Vedic Mathematics"
Univ. level Workshop	Statistics	"Statistics for Non-statiscians"
2004-05		
National Conference	Botany	Human health and nutrition : A Biotech Approach
State level seminar	Physics	"Indian Mathematics"
2003-2004		
Workshop	Chemistry	"Laboratory safety"
2002-2003		
National seminar	Zoology, UGC sponsored	"Creeks, Estuaries and amngroves: Pollution and Conservation"