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AL-SHODHANA

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BASIC AND APPLIED SCIENCES

- Anti Tumor Effect of Leaves of *Withania somnifera* on Swiss Albino Mice - **Serena D'Souza, Nidhi Abraham and Asha Abraham**
- Larvicidal Properties of Extracts of *Millingtonia hortensis* - **Niveditha K.M, Chaithra G and Smitha Hegde**
- Evaluation of Antioxidant and Antimicrobial Activities of *Ophiorrhiza rugosa* - **Bhavya D.K, Suneel Bhat, Aravindha, and Suguna P.**
- Business Analytics Over Large-Scale Multidimensional Data for an Enterprise Using Big Data™ - **Santhosh Rebello**

HUMANITIES AND SOCIAL SCIENCES

- Media and Health Care Financing - **Norbert Lobo and Priya Shetty**
- Binaries in the European Construction of the Tulu World - **Denis Fernandes**
- Saguna as a Prototype of Feminist Resistance to Evangelical Discourse - **Sylvia Rego**
- Fidelity to Land and Communities : Berry's Critique of American Cultural Crises - **Alwyn V D'Sa**
- Investor Attitudes Towards Strategic Corporate Social Responsibility of Indian Companies - **Vishal Nayak and Sajna Arvind**

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Principal's Message

Higher Education to be effective and relevant for the growth of our Nation, it is imperative that an atmosphere of creativity, reflection and fresh thinking is to be infused among the students, faculty and in the climate of the institution. An education imparted without igniting the minds for newness and reflection is not worth it's effort. New ideas must emerge. Well thought out analysis of various problems that bug our society, proposing innovative solutions to those issues that hinder or regress the growth of development - these are the needs of the hour. A positive and hopeful response to these needs can emerge only from the institutions of higher education.

In order to fulfill the goals of education, research and publication are a must in an institution of higher learning. Faculty in these institutions must realize the importance and requirement of their profession. It is not sufficient just to engage the students in class room activity. Knowledge explosion has made it easy to access information. Hence, Analysis and suggestions to approach a problem from various perspectives is to be taught.

I am very happy that the editorial board under the leadership of Dr Norbert Lobo has brought out this issue of Al-Shodhana, the refereed research journal of St Aloysius College. Through this journal, the creative ideas thought out by the teaching faculty will see the light of day. It will also be an inspiration for many more young minds of our College to immerse themselves in creative research.

Good wishes

Fr Swebert D Silva, SJ

Principal

C ONTENTS

Title	Page
BASIC AND APPLIED SCIENCES	
1. Anti Tumor Effect of Leaves of <i>Withania somnifera</i> on Swiss Albino Mice - Serena D'Souza, Nidhi Abraham and Asha Abraham	1-10
2. Larvicidal Properties of Extracts of <i>Millingtonia hortensis</i> - Niveditha K.M, Chaithra G and Smitha Hegde	11-18
3. Evaluation of Antioxidant and Antimicrobial Activities of <i>Ophiorrhiza rugosa</i> - Bhavya D.K, Suneel Bhat, Aravindha, and Suguna P.	19-26
4. Business Analytics Over Large-Scale Multidimensional Data for an Enterprise Using Big Data™ - Santhosh Rebello	27-38
HUMANITIES AND SOCIAL SCIENCES	
5. Media and Health Care Financing - Norbert Lobo and Priya Shetty	39-52
6. Binaries in the European Construction of the Tulu World - Denis Fernandes	53-64
7. Saguna as a Prototype of Feminist Resistance to Evangelic Discourse - Sylvia Rego	65-80
8. Fidelity to Land and Communities : Berry's Critique of American Cultural Crises - Alwyn V D'Sa	81-96
9. Investor Attitudes Towards Strategic Corporate Social Responsibility of Indian Companies - Vishal Nayak and Sajna Arvind	97-105

Editor's Note

"It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change," said Charles Darwin. **Al-Shodhana**, the Multidisciplinary Refereed Research Journal of St Aloysius College (Autonomous) Mangalore is an initiative to keep in tune with changing times and to serve the cause of higher education. Change is inevitable, change is universal and change is permanent. At the outset there has been a change at the Editors Desk of Al-Shodhana. The new editorial team with the guidance of the editorial board will focus on moving the journal forward with a few momentous changes. This journal which was being published since 2008 with the title "*Explorations*" is renamed and registered as "Al-Shodhana" for obtaining ISSN assignment. We are immensely pleased that Al-Shodhana will now onwards be published with ISSN. The issue has come out with more reader friendly new design.

Excellence, expansion and accessibility for marginalised groups are the three major issues confronting higher education in India. St Aloysius College has been making a significant contribution in these three areas since its beginning in the year 1880. This journal will provide further impetus to the earnest attempts of the management in transforming the institution from a teaching - centered college to a research- based institution and opportunities for its faculty to be honed further in academic writing.

The purpose of *Al-Shodhan* - the Aloysian Journal of Research- is to provide a forum particularly for the young faculty members, research scholars and students of the college for disseminating their research findings and views to a wider audience and promotes devotion to the scientific process. Besides it also provides them an opportunity to contribute to knowledge development and trigger further research among readers. In future the journal is open to anyone in the teaching and research community.

This issue contains nine articles on a variety of topics related to biological science, business studies, computer science, humanities, media studies and social sciences. I hope Al-Shodhana will encourage and support a continued effort to create, disseminate and sustain interesting and qualitative research.

Dr Norbert Lobo
Editor-in-chief

AL-SHODHANA is the Multidisciplinary Refereed Research Journal of St Aloysius College (Autonomous) Mangalore. Bi-annually published, it features peer reviewed research articles related to biological sciences, business studies, communication and media studies, computer science, humanities, physical sciences, management studies, social sciences and technology.

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ANTI TUMOR EFFECT OF LEAVES OF *WITHANIA somnifera* ON SWISS ALBINO MICE

- Serena D'Souza, Nidhi Abraham and Asha Abraham*

ABSTRACT

Withania somnifera (WS), commonly known as Ashwagandha, is known for its anti-oxidant and immunomodulating properties. Antitumor activity of the roots of *Withania somnifera* is well documented. In the present study, we have evaluated the anti tumor effect of the leaves of *Withania somnifera* (LASH) on Ehrlich Ascite Carcinoma (EAC) in Swiss Albino Mice in vivo. The animals were divided into six groups: I - Normal, II - Normal + LASH (50 mg/ kg body weight), III-Normal + LASH (200mg/kg body weight), IV- EAC mice, V- Tumor mice +LASH (50 mg/kg body weight), VI - Tumor mice +LASH (200 mg/kg body weight). The anti tumor therapy was administered once in two days for 18 days. Body weight, Tumor volume, % increase in life span was measured; RBC, leukocyte count, bone marrow cell analysis was performed. Our results show that there was 144% increase in life span, reduced tumor progression and volume in tumor mice treated with LASH (50 mg/kg body weight) as compared to EAC mice and no significant change in body weight in all groups. A significant increase in the total WBC count, viable cell count of Bone marrow cells were observed in Normal Mice treated with LASH (50 mg/kg body weight) and EAC mice treated with LASH (50 mg/kg body weight). A significant finding was that LASH did not induce any micronuclei formation. It was also found that LASH at 50mg/kg body weight was effective in controlling tumor progression whereas at 200mg/kg body weight was found to be toxic to the animals.

Keywords: Anti tumor, Leaf extracts of Ashwagandha (LASH), Swiss albino mice

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INTRODUCTION

Withania somnifera, also known as Ashwagandha, Indian ginseng, Winter cherry, is a plant belonging to Solanaceae or nightshade family. It grows as a stout shrub reaching a height of 170 cm. It bears yellow flowers and red berry like fruits. It has been used for centuries in Ayurvedic medicine to increase longevity and vitality (No authors, 2004). The roots of *Withania coagulens* and *Withania simonii* are sometimes used interchangeably. Western research supports its polypharmaceutical use, confirming antioxidant, anti-inflammatory, immune modulating and anti stress properties in the whole plant extract and several separate constituents (Mishra *et al.*, 2000). Fruits, leaves and seeds of *Withania somnifera* have been traditionally used in the Ayurvedic system as diuretic and for treating memory loss. Research has shown that it greatly helps to reconstruct networks of the nervous system (Kiefer, 2006). It is also known to have antigenotoxic and anti-proliferative activity for cancer cell that involves activation of p53 tumor suppressor pathway (Kaur *et al.*, 2007). We had demonstrated that the leaf extracts of *Withania somnifera* had potent cytotoxic effects and induced apoptosis in EAC cell lines *in vitro* (D'Souza *et al.*, 2011). Therefore, to further check the efficacy of the drug *in vivo*, studies were carried out in swiss albino mice transplanted with liquid tumor.

MATERIALS AND METHODS

PLANT MATERIALS

Withania somnifera leaves were collected from Alva's College Moodbidri, Mangalore, India. The leaves were shade dried and stored in gunny bags.

EXTRACTION AND PREPARATION OF THE TEST SAMPLES

The dried leaves of *Withania somnifera* (powdered, 40g) were extracted in a Soxhlet apparatus (ROTEK, INDIA) consequently with methanol (B.P. 60°C). Methanolic extract was concentrated by evaporation of the methanol in vacuum rotary evaporator (SUPER FIT, INDIA). The residue was then made aqueous with double distilled water. This solution was dechlorophyllated with hexane using a solvent - solvent partitioning method. The dechlorophyllated fraction was then extracted with chloroform using a solvent-solvent partitioning method. The chloroform fraction was then concentrated by evaporation of chloroform in a vacuum

rotary evaporator. The residue (1g) was then dissolved in absolute DMSO (20 ml) to make a stock solution. This was now referred to as LASH (Leaf extract of Ashwagandha). Suitable dilutions were made from the stock solution before animal experimentation (Kaur *et al.*, 2004).

ANIMALS USED

Male mice 6 to 8 weeks of age were purchased from a local animal dealer. These mice were housed in mice cages, maintained with good ventilation in an animal house with a twelve hour dark and light cycle. They were fed with lab *chow* and *ad libitum* and were maintained according to the guidelines of CPCSEA. Sanction number SAC/IAEC/114/2011 dated 30th March 2011.

ANTITUMOR ACTIVITY

1×10^6 cells/ml EAC cells were inoculated intra peritoneally (i.p.) into 3 groups of mice (4 in each group) on Day 0. After 24 h of inoculation, mice were treated with the test samples at doses 50 mg/kg body weight and 200 mg/kg body weight. Control group untreated with the LASH extract treated with EAC, treated with LASH at 50 mg/kg body weight and 200 mg/kg body weight were also maintained. Regular monitoring of body weight, perimeter of the experimental mice was carried out. The treatment was continued for 17 days and on the 18th day, animals were sacrificed by cervical decapitation. Tumor cells collected were repeatedly washed with 0.9% saline. The packed cell volume of the tumor cells was found out. Blood from the heart was used to study hematological parameters like WBC Count, RBC Count, and Differential count of WBC. Percentage increase in the lifespan was also calculated in order to determine the effectiveness of the drug in prolonging lifespan.

$$\% \text{ increase in lifespan} = \frac{\text{Mean survival of the treated group}}{\text{Mean survival of the control group}} \times 100$$

RESULTS

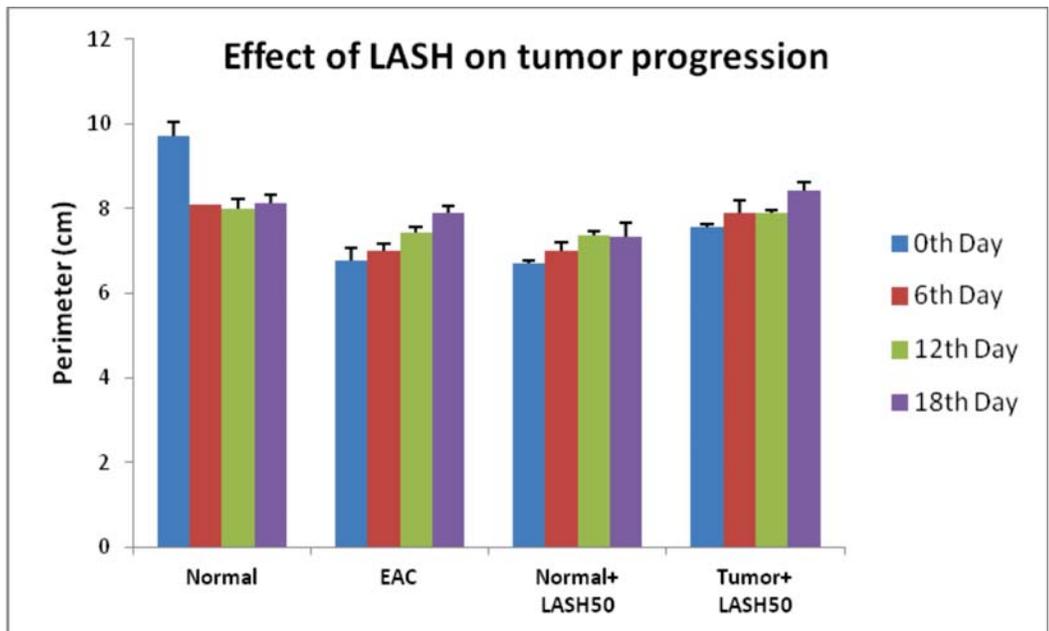
Although six experimental groups were used, two groups namely Normal + LASH (200 mg/kg body weight) and EAC + LASH (200 mg/kg body weight) died due to toxicity of LASH at higher dose within two injections that is within 4th day. Hence the results of the remaining groups are mentioned.

Table1. Effect Of LASH on Life span

Treatments	Doses (mg/kg body weight)	% of mice that survived
Normal	-	100
EAC (10 ⁶ cells/ml)	-	0
Normal + LASH (50 mg/kg body weight)	50	100
Tumor + LASH (50 mg/kg body weight)	50	75

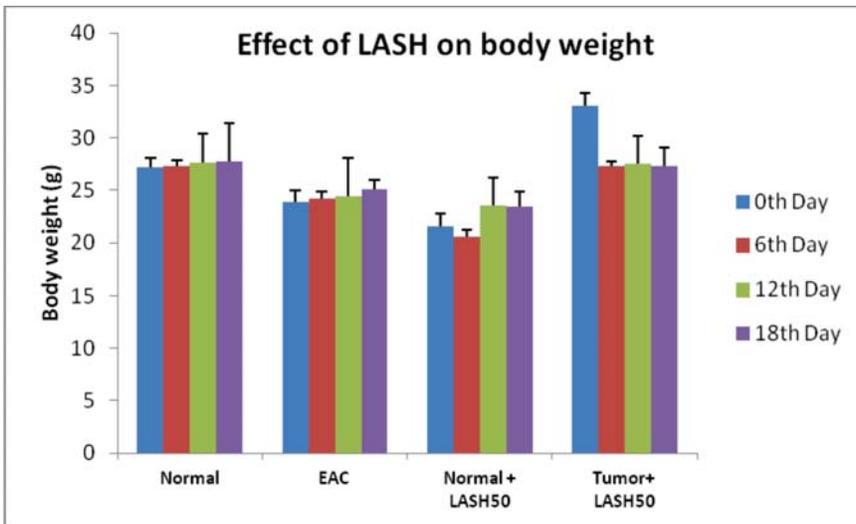
Tumor mice treated with LASH at a dose of 50 mg/kg body weight showed a remarkable 144% increase in the lifespan compared to Mice treated with EAC (Table 1).

Figure1. Effect of LASH on tumor progression



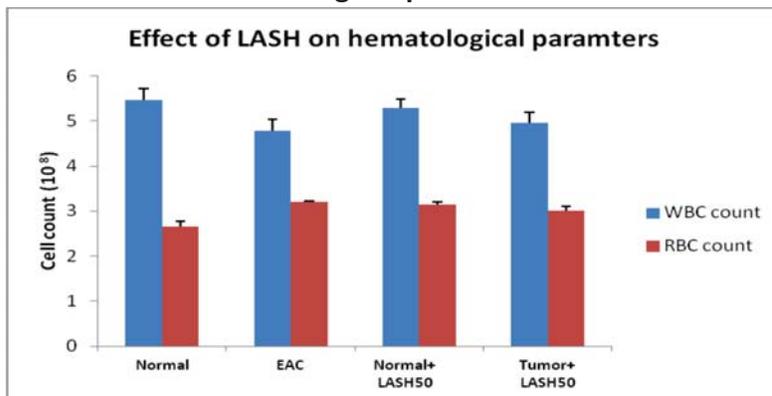
The tumor progression was determined by regular measurement of perimeter of the mice. There was a gradual increase in the perimeter of the mice injected with EAC alone. However, there was no significant increase in the perimeter of tumor mice treated with LASH at a dose of 50 mg/kg body weight which supports our observation of the effectiveness of the drug (Figure 1).

Figure2. Effect of LASH on body weight



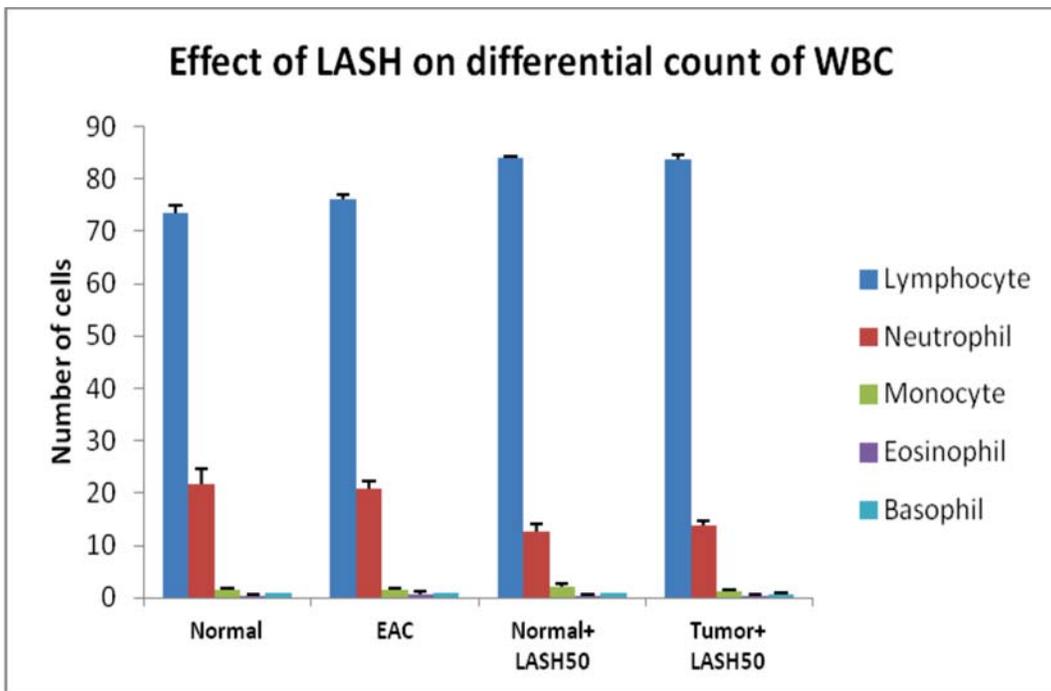
There was no significant increase in the body weight (Figure 2). This may be due to the fact that *Withania somnifera* is known to have a weight reducing effect (Gardiner *et al.*, 2006).

Figure3. Effect of LASH on hematological parameters



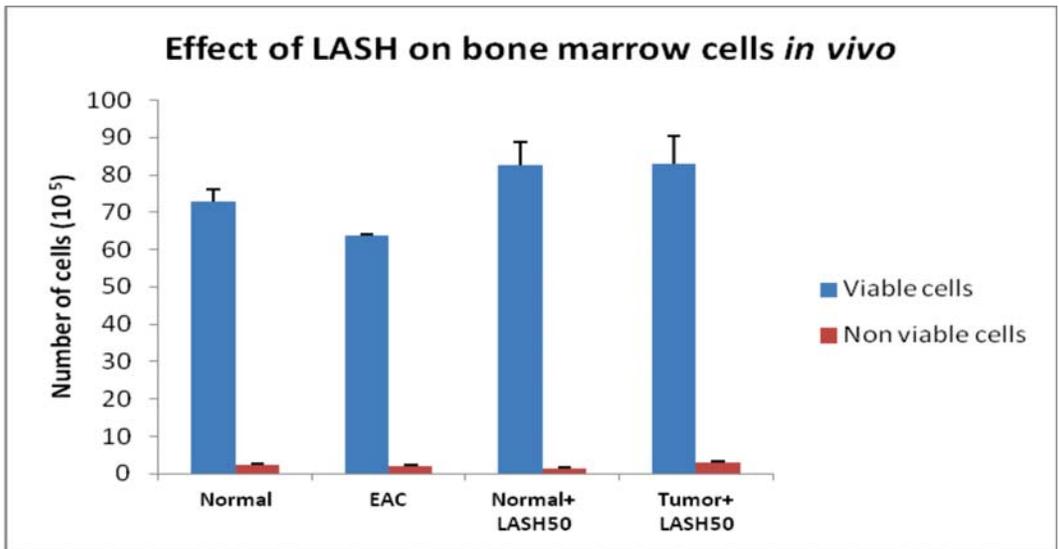
There was a significant increase ($p < 0.05$ as compared to EAC) in the WBC count of tumor mice treated with LASH at a dose of 50 mg/kg body weight and control mice treated with 50 mg/kg body weight (Figure 3). Decrease in the hematological parameters cause susceptibility to infections, excessive bleeding and anemia (Narang *et al.*, 2009). The ability of LASH to increase WBC count reduces the risk of developing such problems.

Figure 4. Effect of LASH on differential Count Of WBC



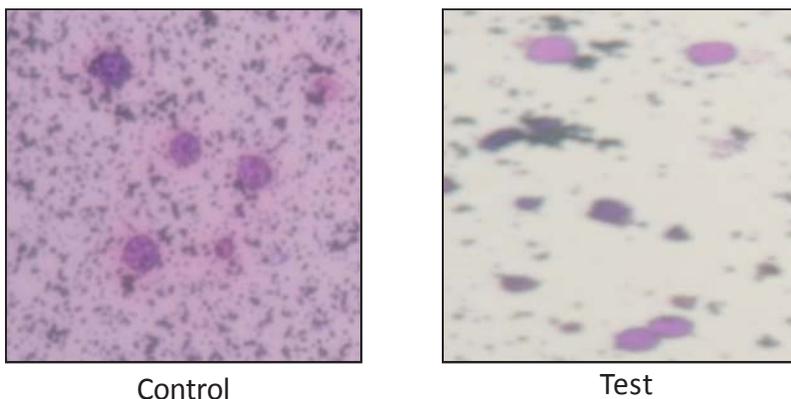
There was a significant increase ($p < 0.01$ as compared to Normal) in the lymphocyte and neutrophil count in tumor mice treated with LASH at a dose of 50 mg/kg body weight and control group treated with LASH at 50 mg/kg body weight (Figure 4). Increase in lymphocyte count and Neutrophil count indicates that LASH does not cause bone marrow suppression (Narang *et al.*, 2009.)

Figure 5. Effect of LASH on Bone Marrow Cells



There was a significant increase ($p < 0.01$ as compared to Normal) in the viable count of the bone marrow cells of tumor mice treated with LASH at a dose of 50 mg/kg body weight (Figure 5). Anti-cancer drugs such as Procarbazine cause bone marrow toxicity which causes a decline in individuals immunological resistance (Narang *et al.*, 2009). However, from our studies no such detrimental effect was observed which demonstrates the safety of the drug.

Figure 6. Maygreundwalds Giemsa staining



No micronuclei were observed on performing Maygreundwalds Giemsa staining (Figure 6). Most anti cancer drugs are reported to induce micronuclei formation, which is a marker for mutagenesis. However, our studies further support the safety of the drug.

DISCUSSION

Withania is already popularly used as a home remedy for several diseases such as arthritis, geriatric problems, fever, tuberculosis, asthma etc and is an official drug mentioned in the Indian Pharmacopia (Bandhuvula *et al.*, 2005). Our study shows that LASH does possess antitumor activity at a concentration of 50 mg/kg body weight in Swiss Albino Mice. More research is needed to determine if LASH can be as effective in humans. We have also found that a dosage of 200mg /kg body weight is lethal. Thus research also needs to be carried out to find out an optimal dosage both in mice and in humans. Our study also shows that *Withania somnifera* has immunomodulatory effect. Similar results are obtained by Davis *et al.*, 2000. Our study also shows that LASH does not cause micronuclei formation in bone marrow cells nor does it suppress the viability of these cells. This is of significance because most anticancer drugs cause micronuclei formation in rapidly dividing bone marrow cells, which is an indication of mutagenic effect. LASH has also been reported to be effective when used in combination with most other commonly used cancer drugs (Devi *et al.*, 1996). It has also been reported to have radiosensitizing effect (Devi *et al.*, 1996; Chandrashekar *et al.*, 1996; Archana *et al.*, 1999; Umadevi *et al.*, 1996). Hence it can also be used in combination with radiation therapy. Previously, we noted the presence of alkaloids including sterol alkaloids, flavonoids, sapogenins, Withaferin A and antioxidants in LASH (D'Souza *et al.*, 2011). The combined effect of these phytochemicals may have contributed to the anti tumor effect observed. Also, we had demonstrated that the LASH mediates its cytotoxic effect by inducing apoptosis in EAC cell lines in vitro (D'Souza *et al.*, 2011).

CONCLUSION

Thus from the *in vivo* studies it is seen that LASH has a potent antitumor effect on the liquid tumor bearing mice at a dose of 50 mg/kg body weight. Study

of hematological parameters also gave encouraging results, supporting the effectiveness of the drug.

ACKNOWLEDGEMENTS

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LARVICIDAL PROPERTIES OF EXTRACTS OF *Millingtonia hortensis*

Niveditha K.M, Chaithra G and Smitha Hegde*

ABSTRACT

Insects are a large group of sturdy organisms that thrive in diverse environment on the surface of this earth. They also act as vectors to many a pathogenic micro-organisms proven to cause various maladies and diseases in humans. There is a need to find local solutions to regional problems. The current work reports the use of a local tree leaf extracts in producing an effective larvicide. The tests are carried on model organism of D. melanogaster that represent the insect group. The leaves of M.hortensis were subjected to gradient and non gradient solvent extraction. The study reports ethyl acetate and methanol extracts were very effective against all the three instars of D. melanogaster larvae in concentrations as low as 8µg/ml. Chloroform, acetone, non-gradient methanol and ethanol, extracts were moderately effective while aqueous and hexane extracts were not effective larvicides.

Keywords: Larvicide, *Millingtonia hortensis*, Gradient solvent extraction.

INTRODUCTION

India has a rich biodiversity of medicinal plants and is well known for indigenous herbal medicinal systems like ayurveda, unani etc. Most medicinal plants are sought after because of their secondary metabolites such as phenolics, terpenoids, alkaloids, which are known to exhibit numerous biological activities. These activities include antimicrobial, anti-inflammatory, anticancer, antioxidant and larvicidal properties. *Millingtonia hortensis* is one such plant known to have

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medicinal properties. Stem and roots of the Cork tree have great medicinal value. Its dried flower is a good lung tonic. It is also used in the cough diseases. Larvicidal property of *M. hortensis* has been screened against the IV instar larvae of *Aedes aegypti* (Diptera: Culicidae) (Kaushik and Saini, 2008). An aqueous crude extract of this plant has shown apoptosis induction on RKO colon cancer cells (Tansuwanwong et al., 2009). Volatile oils and absolutes of plant showed antioxidant activity by scavenging effect on 1,1-diphenyl-2-picrylhydrazyl radical (DPPH) (Leelapornpisid et al., 2010). Antimutagenicity of hispidulin and hortensin, the flavonoids from the plant, were performed using the liquid preincubation method of the *Salmonella*/microsome test (Chulasiri et al., 2006). Methanol and aqueous extracts showed stronger antifungal activity against *Candida krusei*, *Candida glabrata*, *Trichosporon cutaneum* (Sharma et al., 2007).

In addition to its medicinal properties it is known for its aesthetic values as its flowers are used in the rituals. Its bark is used to produce yellow dye. The tree is cultivated through out India for ornamental purposes for its attractive fragrant flowers, decorative foliage and its characteristic tall stature. It is suitable for avenues, natural parks. It can be used for afforestation. It is a hardy tree, thriving best under moist situation, but also does well in dry climates. Leaves are opposite and large pinnately compound with 1-3 inches long leaflets while the flowers are waxy trumpet shaped with 5 sub equal lobes and are sweet scented. The tree flowers at night and shed flowers early morning and flowering is observed twice a year in November-December and again in April-June. The fruit is a capsule with flattened seeds that are mostly nonviable.

The present study reports larvicidal activity of *Millingtonia hortensis* leaf extracts subjected to gradient and non gradient solvent extraction.

MATERIALS AND METHODS

Fresh leaves of *Millingtonia hortensis* were collected from campus of St. Aloysius College, Mangalore. The chemicals used were from Himedia. The solvents for extraction like hexane, chloroform, ethyl acetate, methanol and acetone were from Merck (Mumbai). Test tubes, glass plates, measuring cylinders, beakers, glass bottles were from Borosil. Flash evaporator (Superfit, India), other equipment Rotary shaker, incubator hot air oven, autoclave, laminar air flow from Rotek, Cochin. *Millingtonia hortensis* leaves were dried at room temperature in shade for solvent extraction.

EXTRACTION FROM DRIED LEAVES

GRADIENT METHOD OF SOLVENT EXTRACTION

Harbourne (1998) method was used for sequential extraction with solvents. The dried leaves were powdered using blender. 500ml flasks were rinsed with solvent concerned and dried at room temperature. 100gms of powdered leaves was added to flask. 250ml of hexane was added to powdered leaves in a flask, the mouth of flask was cotton plugged and covered with aluminum foil to avoid evaporation of solvents. Same procedure was repeated with chloroform, ethyl acetate, acetone and methanol.

NON GRADIENT METHOD OF SOLVENT EXTRACTION

100 g of *Millingtonia hortensis* dried leaf powder was taken in a separate container. To this 200 ml of methanol was added and kept for 24 h in a shaker. Filtered through fine muslin cloth and extract was collected. The extraction process was repeated twice by adding fresh volume of 200 ml methanol. The collected extracts were pooled. The extraction was similar for ethanol and aqueous extraction.

CONCENTRATION OF EXTRACTS

After solvent, gradient and non gradient extraction, extracts were concentrated using a water bath to remove all organic solvents. Water bath temperature was maintained at 40°C to minimize the loss of heat labile compounds in the extract. After evaporation of organic solvents, the extracts were dissolved in known volume of DMSO and stored in refrigerator for future use.

DETERMINATION OF LARVICIDAL ACTIVITY

Wild type adult flies of *Drosophila melanogaster* were cultured on cream of wheat agar medium and maintained at 20°C. The larvae of different instars were sorted and were subjected to test.

Treatment method A: Different concentrations (20, 40, 60, 80, 100, 120, 140, 160, 180, 200ug) of plant extracts are taken in tubes. To each tube ten *Drosophila melanogaster* larvae of I instar are added. The mortality rate is observed at regular time intervals. A control batch was maintained with same number of larvae. The same procedure is repeated for II & III instar larvae. This method

is referred as direct method.

Treatment method B: Tubes along with cotton plug are sterilized by autoclaving at 121°C at 15 lbs pressure for 20mins. 10ml of cream of wheat agar media along with different concentration of plant extracts is poured into tubes & allowed to solidify. After 12hrs ten *Drosophila melanogaster* larvae (I,II,III instar) are taken in each tube. These tubes were maintained at 20°C and mortality rate of larvae in each tubes were noted. This method is referred as indirect method. A control batch cream of wheat agar media was maintained with same number of larvae without plant extracts.

RESULTS AND DISCUSSION

Millingtonia hortensis is known to have therapeutic uses (Jetty and Iyengar, 2000; Chulasiri *et al* 2006; Sharma *et al.*, 2007; Tansuwanwong *et al.*, 2009; Leelapornpisid *et al.*, 2010). Ethanol and methanolic extract from flower has inhibited the growth of gram positive bacteria *S. aureus*, *S. epidermidis*, *B. subtilis* and *L. plantarum* and gram negative bacteria *E.coli* and *P.vulgaris* by agar disc diffusion method (Jetty and Iyengar, 2000). Present study reports larvicidal properties of leaf extracts of *M. hortensis*. The concentrated extracts obtained from the gradient and non gradient methods were quantified using their dry weight. The quantity of the extracts varied (Table 1& 2). Methanolic extracts were maximum in quantity as compared to extracts in other solvents.

Table 1: Dry weight of the extracts obtained from leaf tissue subjected to gradient solvent extraction method.

Extracts from solvents	Dry Weight in g/ 100 g of Leaves
Hexane	3.375
Chloroform	3.690
Ethyl acetate	6.912
Acetone	4.048
Methanol	13.923

Table 2: Dry weight of the extracts obtained from leaf tissue subjected to Non-gradient solvent extraction method.

Extracts from solvents	Dry Weight in g / 100 g of Leaves
Methanol	37.212
Ethanol	35.074
Aqueous	37.772

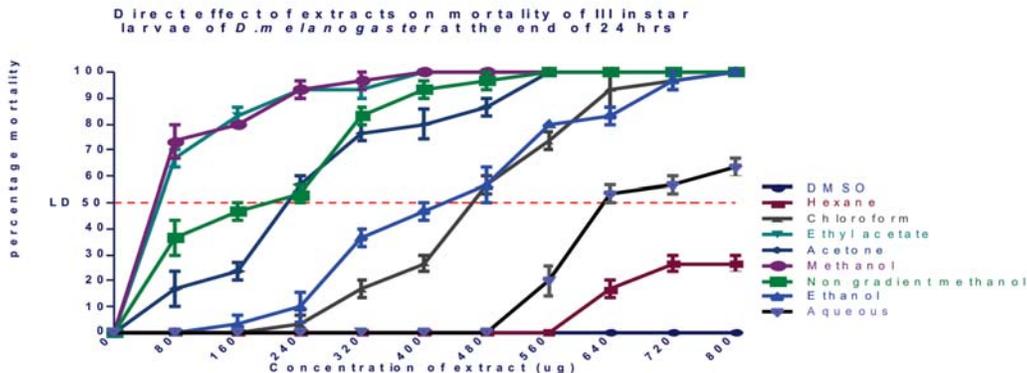
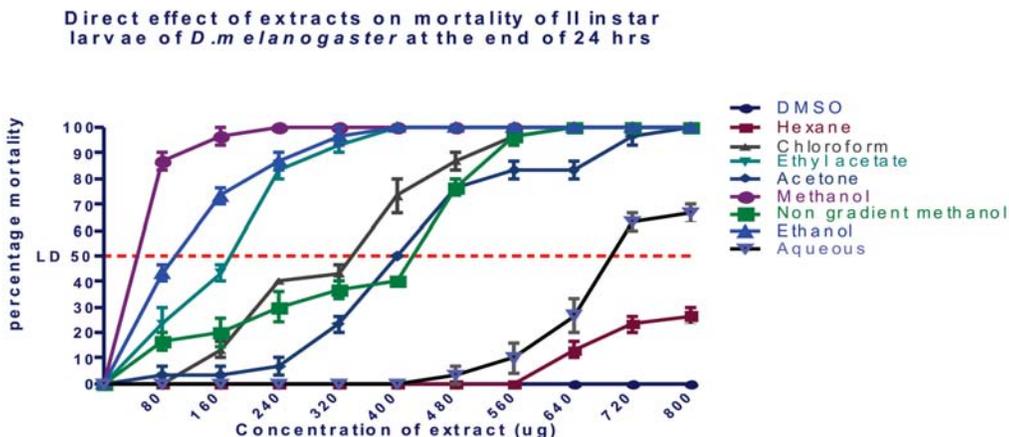
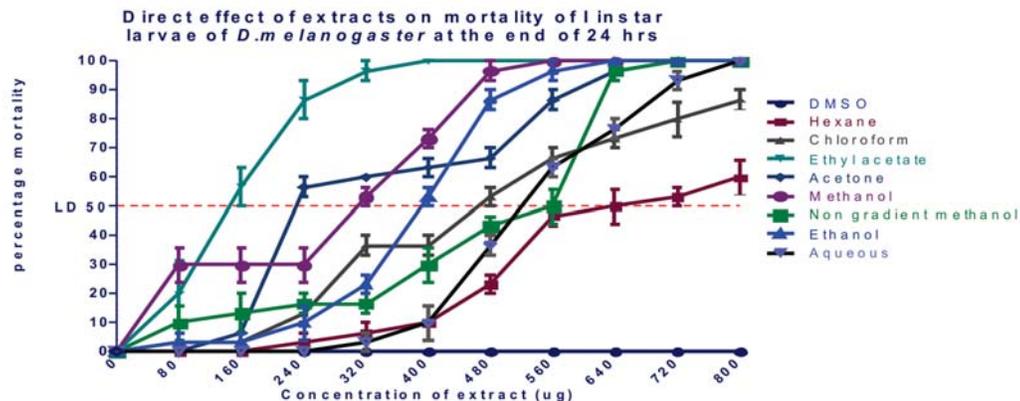
Non gradient methods of extraction resulted in more quantity of extracts as compared to gradient method.

LARVICIDAL ACTIVITY

Today the environmental safety of an insecticide is considered to be of paramount importance. An insecticide does not have to cause high mortality on target organism in order to be acceptable (Kabarou et al, 2001) but it should prevent breeding. These compounds may jointly or independently contribute to produce larvicidal activity. Acetone extract of leaves of *M. hortensis* showed larvicidal activity against *A.aegypti* and *A. stephensi* (Kaushik and Saini, 2008). We report a broad spectrum larvicidal activity of the leaf extracts on *D. melanogaster larvae*. The percent mortality values for I, II, and III instar *D. melanogaster larvae* treated with various concentration (80 - 800µg) of the leaf extract of *M. hortensis* are presented in graph 1 and graph 2.

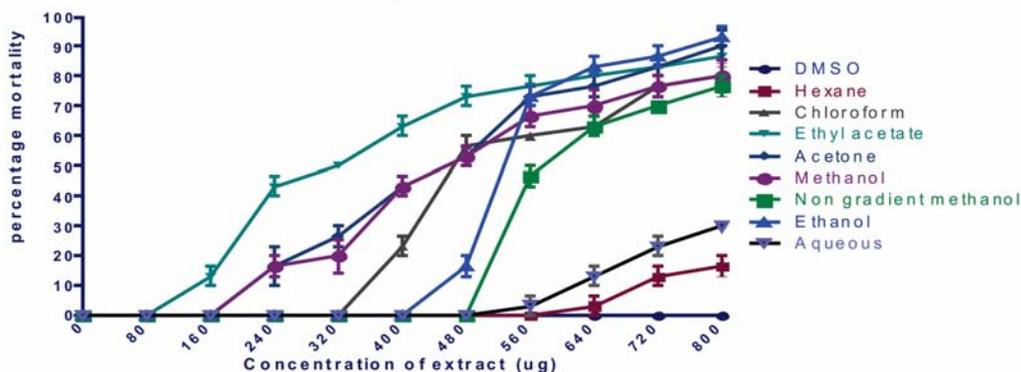
The results indicate the effectiveness of ethyl acetate and methanol extracts against all the three instars of *D. melanogaster larvae*. Chloroform, acetone, non-gradient methanol and ethanol extracts were moderately effective. However aqueous and hexane extracts were not effective and control (DMSO) did not show any larvicidal activity. Future work on characterization of the active compound in ethyl acetate and gradient methanol solvent fraction is needed to find the natural compound having larvicidal property.

Graph 1: Effect of leaf extracts of *M.hortensis* on I, II and III instar larvae of *D. melanogaster* at the end of 24 hrs using method A.

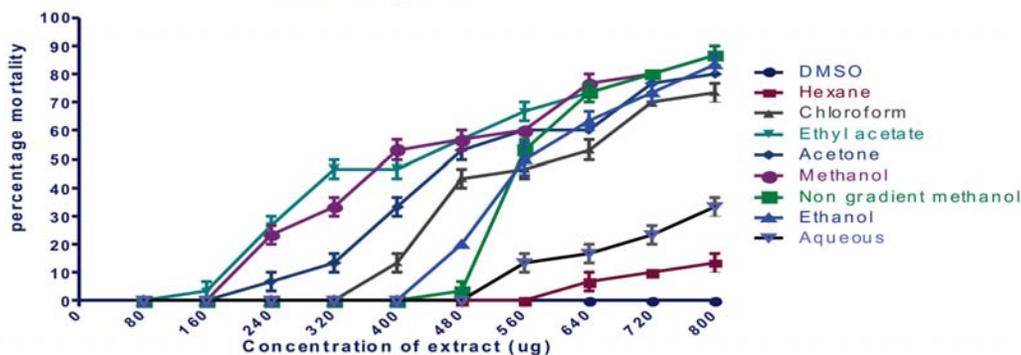


Graph 2: Effect of leaf extracts of *M.hortensis* on I, II and III instar larvae of *D. melanogaster* at the end of 24 hrs using method B

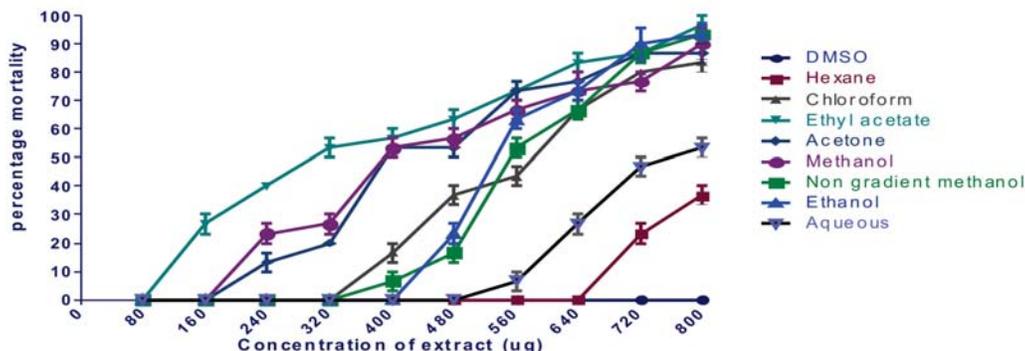
Indirect effect of extracts on mortality of I instar larvae of *D.melanogaster*



Indirect effect of extracts on mortality of II instar larvae of *D.melanogaster*



Indirect effect of extracts on mortality of III instar larvae of *D.melanogaster*



While control DMSO did not show any mortality. Hexane and aqueous extracts were not very potent as even in higher concentrations of 64 µg/ml. Gradient methanolic extract was most effective with the earliest LD50. Concentration as low as 8 µg/1ml was effective in killing 100 % of the larvae of I, II and III instars within 24 hrs. The leaf extract of *Millingtonia hortensis* is an effective source of insect larvicide that can be used as direct application or incorporated into the media upon which the larvae feed, thus making it a potential source of natural compound that can be used to kill larvae of insects such as mosquitoes and flies, known to cause human health hazards in our region.

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EVALUATION OF ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF *Ophiorrhiza rugosa*

Bhavya D.K*, Suneel Bhat, Aravindha, and Suguna P.

ABSTRACT

In recent years more interest has been paid to protect foods and human beings against oxidative damage caused by free radicals like hydroxyl, peroxy, superoxide radicals and the effects of microorganisms on foods and human beings. Based on the Ayurveda, they were using medicinal plants as a folk medicine. Here we used the plant O.rugosa. In the present work we have extracted chloroform-methanol(basic), methanol(polar), chloroform(moderately polar) extracts from the leaf of plant of our interest. Here we determined the presence of secondary metabolites from phytochemical analysis. We also evaluated the antioxidant and antimicrobial properties of extracts. Phytochemical screening of the plant showed the presence of alkaloids, steroids, phenolics, cardiac glycosides, and terpenoids. It also showed the absence of anthraquinone. The antioxidant screening was done by DPPH free radical scavenging assay. We also checked antimicrobial activity of our plant extract by agar plate disc diffusion method.

• **Key words:** Antioxidant, Antimicrobial, phytochemical.

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INTRODUCTION

In recent years more interest has been paid to protect foods and human beings against oxidative damage caused by free radicals like hydroxyl, peroxy, superoxide radicals and the effects of microorganisms. Based on the Ayurveda, they were using medicinal plants as a folk medicine. Medicinal plants help in improving the human health that is primarily due to bioactive constituents such as flavonoids, alkaloids, saponins, cardiac glycosides and tannins. These compounds play an important role in minimizing oxidative stress, cancer, impotency, cardiac dysfunction and microbial inhibition. In search of novel sources of antioxidants in the last few years, medicinal plants have been extensively studied for their antioxidant activity. From ancient times, herbs have been used in many areas, including nutrition, medicine, flavoring, beverages, cosmetics, etc. The ingestion of fresh fruit, vegetables and tea rich in natural antioxidants has been associated with prevention of cancer and cardiovascular diseases (Thomas and Kalyanaraman, 1997). The higher intake of plant foods correlates with lower risk of mortality from these diseases (Parle, and Bansal, 2005). Approximately 60 % of the commercially available anti-tumoral and anti-infective agents are of natural origin (Cragg *et al.*, 1997).

The discovery, development and clinical use of antibiotics during the nineteenth century have substantially decreased public health hazards resulting from bacterial infections. However there has been a parallel alarming increase in bacterial resistance to existing chemotherapeutic agents as a result of their injudicious use. In many countries such as India and China, thousands of tribal communities still use folklore medicinal plants to cure sickness. The interest in the use and importance of many Indian medicinal plants by the WHO in many developing countries has led to intensify efforts on the documentation of ethno medical data of medicinal plants. A number of studies have been reported, dealing with antimicrobial screening of extracts of medicinal plants.

Concern has been expressed about the rising prevalence of pathogenic microorganisms, which are resistant to the newer or modern antibiotics that have been produced in the last three decades. Also, the problem posed by the high

cost, adulteration and increasing toxic side effects of these synthetic drugs coupled with their inadequacy in diseases treatment found more especially in the developing countries cannot be over emphasized. Coincidentally, the last decade has also witnessed increasing intensive studies on plant extracts and biologically active compounds isolated from plant species used for natural therapies or herbal medicine. Traditional antibacterial therapy is going through a crisis due to rapidly increasing development of resistance to existing agents. Such resistance has an impact on all areas of chemotherapy. The first pathogen *Staphylococcus aureus* that has become resistant to all known antibiotics has posed a threat already for a number of years. It has thus become apparent that new antimicrobial agents will continue to select for resistance strains from the pool of bacteria which continuously undergo genetic change.

MATERIALS AND METHODS

All the chemicals used in the study were of analytical grade, purchased locally from HIMEDIA, MERK, SIGMA and SRL India.

Plant Collection

Healthy plants were collected from the Western Ghats of Karnataka, the collected material was authenticated by Dr. K. Gopalkrishna Bhat (Botanist). It was shade dried and powdered.

Phytochemical Fractionation

Fresh leaves which were washed, shade dried and powdered using a kitchen blender. The remaining trace of moisture was removed by keeping it in an incubator at 37°C was homogenized in methanol water mixture in the ratio (4:1) i.e. ten volume of the weight of the sample. The mixture was filtered using a cheese cloth and two parts were obtained the filter and the residue. The residue was dried at 37°C was extracted with 5 volumes of ethyl acetate. The filtrate was evaporated to dryness i.e. 1/10 volume at temperature less than 40°C, then the remaining filtrate was acidified with 2 M H₂SO₄ and then extract with 3 volumes of chloroform. The ethyl acetate extract was filtered, two parts were obtained one was residue which mainly consisted of the fibre (mainly

polysaccharide) and filtrate which was evaporated to dryness called neutral extract (fats, waxes). The acidified chloroform extract was then separated using a separating funnel in two parts one which consist of chloroform layer and other which consisted of the aqueous acid layer. The chloroform layer is evaporated to dryness and is called the moderately polar extract (terpenoids and phenolics). The aqueous acid layer is basified to pH 10 with NH_4OH and extract with CHCl_3 -MeOH (3:1 twice) and then with CHCl_3 . The CHCl_3 -MeOH is then separated, evaporated to dryness and is called the basic extract (most of the alkaloids) and the aqueous basic layer is evaporated and then extracted with MeOH and now it is called the polar extract (Harborne, 1998).

PARTIAL PHYTOCHEMICAL SCREENING OF THE EXTRACTS

Test for Alkaloids:- One millilitre of the test solution was treated with a few drops of Dragendorff's reagent. The formation of a precipitate was seen as indicating the presence of alkaloids.

Test for Phenolic compounds:- One millilitre of the test solution was treated with 10% ethanolic ferric chloride. Phenolic compounds were considered present when a colour change to blue green/ dark blue was observed.

Test for Anthraquinones:- The Borntrager test was used for the detection of anthraquinones. Two millilitre of the test sample was shaken with 4ml of hexane. The upper lipophilic layer was separated and treated with 4ml of dilute ammonia. If the lower layer changed to violet to pink, indicated the presence of anthraquinones.

Test for Steroids:- One millilitre of the respective plant extract was treated with three drops of acetic anhydride and one drop of concentrated sulphuric acid. A colour change from deep green turning to brown to dark brown, indicated the presence of sterols.

Test for Cardiac glycosides:- Following the protocol of the Keller-Killani Test, 1ml of sample solution was mixed with one ml of glacial acetic acid then treated with one drop of 5% ethanolic ferric chloride solution. One ml of concentrated sulphuric acid was carefully poured down the side of the test-tube. The appearance of a brownish ring between the two formed layers with the lower acidic layer

turning blue green upon standing indicated the presence of cardiac glycosides.

DPPH Free Radical Scavenging assay (RSA)

The decrease in DPPH solution absorption value at 515nm after the addition of plant extract was measured. The reaction mixture contains 1ml of 0.004M DPPH, 2ml of absolute alcohol and the plant extract. Negative control was prepared by adding DPPH and the alcohol. Positive control was ascorbic acid (vitamin C-standard) .Absorbance was recorded at 515nm after 10mins of incubation period at room temperature in a dark condition.RSA value was determined for each sample at five different concentration(1mg, 2mg, 4mg,8mg, 16mg) at 10 minutes after the mixture was prepared.

$$\% \text{ inhibition} = \frac{(\text{A-blank} - \text{A-extract}) \times 100}{\text{A-blank}}$$

Where A-blank=absorbance of blank; A-extract= absorbance of extract.

SCREENING FOR ANTIMICROBIAL ACTIVITY(DISC DIFFUSION ASSAY)

Agar plates were taken containing 15ml of nutrient agar. To that an overnight culture of bacteria (0.1 ml) was spread on the surface of the agar plate using a sterile glass spreader. Antimicrobial susceptibility discs were taken to which 10µl of each extract was added. The extract impregnated discs along with two standards antibiotic resistance discs tetracycline and vancomycin 30 µg/100µl (Himedia)and control containing DMSO were placed onto the inoculated surface of the agar plate(six discs per plate) .The agar plates incubated overnight at 37°C and the zones of bacterial inhibition was observed and measured.

RESULT AND DISCUSSION

Phytochemical Screening of the Extracts

Phytochemical screening of all the extracts of *O. rugosa* tested revealed the presence of alkaloids,Phenol and steroids were present in chloroform methanol extract, alkaloids phenols and steroids were present in chloroform extract.(Table.1)

Table:-1.Phytochemical Constituents of *O.rugosa*.

Reaction	Chloroform- Methanol extract	Chloroform extract	Methanol extract
Alkaloids	+	+	-
Phenols	+	+	-
Anthraquinones	-	-	-
Steroids	+	+	-
Cardiac glycosides	-	-	-

+ Sign indicate positive response and - Sign indicates no response.

DPPH Free Radical Scavenging Assay(RSA):

All the evaluated samples showed moderate to little free radical scavenging activities. The chloroform methanol extract showed 67% free radical inhibition at 16mg/ml concentration followed by chloroform extract showed 64% free radical inhibition at 16mg/ml concentration. Methanol extract showed reasonable amount of free radical inhibition activity. (Table.2)

Table:-2 DPPH Free Radical Scavenging assay of *O.rugosa* (RSA):

	1mg//ml	2mg/ml	4mg/ml	8mg/ml	16mg/ml
Vitamin C	95.612±0.001	96.23±0.005	96.26±0.017	97.46±0.017	98.35±0.023
Chloroform-methanol extract	9.37±0.003	9.46±0.003	39.95±0.023	55.91±0.005	67.11±0.002
Chloroform extract	0	0	2.78±0.002	32.81±0.003	64.36±0.003
Methanol extract	0	0	0	36.87±0.003	38.74±0.002

All values were expressed as mean ± SEM

Screening for Antimicrobial Activity:-

Antimicrobial activity was exhibited by the chloroform methanol extract(CMT) which is almost significant with standard antimicrobial agent (Table.3)

Table.3:- Antimicrobial activity of *Ophiorrhiza rugosa*

Microorganisms	Bacillus subtilis (mm)	Escherichia coli (mm)
Sample1	18.37±0.23	6.25±0.14
Sample 2	24.37±0.23	18.125±0.125
Sample 3	6.25±0.14	-
Vancomycin	20.125±0.125	-
Tetracycline	-	20.25±0.144

Sample 1: MT (methanol extract); Sample 2: CMT (chloroform methanol extract) and Sample 3: CT (completely polar). Values are expressed as mean±SEM

DISCUSSION

Phytochemical screening of the plant extracts revealed some difference between the extracts.CMT showed positive result for alkaloids,Phenols and steroids.

Greater Inhibition of free radicals in CMT extract and antimicrobial activity may be due to the presence of high amount of alkaloids and Phenols.The presence of alkaloids and phenols in all the plants are likely to be responsible for the free radical scavenging effects observed. Phytochemical are major group of compounds that act as a primary antioxidant or free radical scavenger Earlier Anita and jayashree (1999) have also reported that many plants of Indian regions are rich sources of antioxidants.

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BUSINESS ANALYTICS OVER LARGE-SCALE MULTIDIMENSIONAL DATA FOR AN ENTERPRISE USING BIG DATA™

- Santhosh Rebello

ABSTRACT

For decades, companies have been making business decisions based on transactional data stored in relational databases. Beyond that critical data, however, is a potential treasure trove of non-traditional, less structured data: weblogs, social media, email, sensors, and photographs that can be mined for useful information. Decreases in the cost of both storage and compute power have made it feasible to collect this data - which would have been thrown away only a few years ago. As a result, more and more companies are looking to include non-traditional yet potentially very valuable data with their traditional enterprise data in their Business Intelligence analysis. To derive real business value from big data, it is essential that the right tools to capture and organize a wide variety of data types from different sources, and to be able to easily analyze it within the context of all enterprise data. This paper looks into how organization can acquire and organize these diverse data types and analyze them alongside with the existing data to find new insights and capitalize on hidden relationships.

Keywords : *Big Data Analytics, Data Warehousing, OLAP, Multidimensional Data, NoSQL, Hadoop, MapReduce.*

INTRODUCTION

Computers began in the back office, where business data was aggregated to produce summary reports that gave an idea how, for instance, a particular business perform every month or quarter. The data was mostly not transactional until the computers moved to operations and the front office and began handling customer-facing business transactions. Data base technology became central to such application, which were often centralized and equally often designed to handle specific function creating many independent systems and independent data bases in the process. Master data (such as for products and customer data) and

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transactional data were fragmented across applications leading to duplication and inconsistencies. The next logical step in the evolution was to integrate data across application into a data warehouse [21] to really develop a complete picture of the business and to support comprehensive reporting for effective decision support. This allowed senior management to ask questions about various business dimensions (such as region, time, and product so on) and leverage new insights while planning new strategies or new product development. Data warehouses allow analysis of data for new and hidden (non obvious) but useful patterns creating a wave of business intelligence allowing productivity growth, innovations and differentiations.

As computers became readily accessible, interactions mode well beyond just transitions as enterprises began to leverage ‘online’ and ‘real-time’ applications to remain in touch with their stake holders. Innovation in storage technologies also made it possible to allow enterprises to acquire, store and retain more and more data over the years. This resulted in an ability to collect huge amounts of data from emails, telephonic and social media interactions and many other non traditional sources. For Eg: embedded systems helped hospitals to record every heart beat of a patient, while retailers can today store photograph or video of visitors for greater security, besides, being able to track the movement of goods or record the position of every vehicle. Enhancements in storage technologies [4] like the use of solid state devices in conjunction with high capacity magnetic disks in a storage sub system and quality of service on storage input/output operations as enables enterprises to optimize the way they handle and store their unstructured data like files, emails, images, documents and structure data like transaction records in a data base, while meeting the extremely aggressive performance demands of the applications and its users. Enterprisers also begun to realize that there is more data outside their traditional data bases and new tools are critical to evolve their current enterprise data architecture to incorporate Big Data.

BIG DATA : STRUCTURE AND COMPONENTS

Big data typically refers to the following types of data:

- ***Traditional enterprise data*** – includes customer information from CRM systems, transactional ERP data, web store transactions, general ledger data.

- **Machine-generated /sensor data** – includes Call Detail Records (“CDR”), weblogs, smart meters, manufacturing sensors, equipment logs (often referred to as digital exhaust), trading systems data.
- **Social data** – includes customer feedback streams, micro-blogging sites like Twitter, social media platforms like Facebook

The McKinsey Global Institute estimates that data volume is growing 40% per year, and will grow 44x between 2009 and 2020. But while it’s often the most visible parameter, volume of data is not the only characteristic that matters. In fact, there are four key characteristics that define big data:

- **Volume.** Machine-generated data is produced in much larger quantities than non-traditional data. For instance, a single jet engine can generate 10TB of data in 30 minutes. With more than 25,000 airline flights per day, the daily volume of just this single data source runs into the Petabytes. Smart meters and heavy industrial equipment like oil refineries and drilling rigs generate similar data volumes, compounding the problem.
- **Velocity.** Social media data streams – while not as massive as machine-generated data – produce a large influx of opinions and relationships valuable to customer relationship management. Even at 140 characters per tweet, the high velocity (or frequency) of Twitter data ensures large volumes (over 8 TB per day).
- **Variety.** Traditional data formats tend to be relatively well described and change slowly. In contrast, non-traditional data formats exhibit a dizzying rate of change. As new services are added, new sensors deployed, or new marketing campaigns executed, new data types are needed to capture the resultant information.
- **Value.** The economic value of different data varies significantly. Typically there is good information hidden amongst a larger body of non-traditional data; the challenge is identifying what is valuable and then transforming and extracting that data for analysis.

When big data is distilled and analyzed in combination with traditional enterprise data, enterprises can develop a more thorough and insightful understanding of their business, which can lead to enhanced productivity, a

stronger competitive position and greater innovation – all of which can have a significant impact on the bottom line. For example,

- i. In the delivery of **healthcare services**, management of chronic or long-term conditions is expensive. Use of in-home monitoring devices to measure vital signs, and monitor progress is just one way that sensor data can be used to improve patient health and reduce both office visits and hospital admittance.
- ii. **Manufacturing companies** deploy sensors in their products to return a stream of telemetry. Sometimes this is used to deliver services like OnStar, that delivers communications, security and navigation services. Perhaps more importantly, this telemetry also reveals usage patterns, failure rates and other opportunities for product improvement that can reduce development and assembly costs.
- iii. The proliferation of **Smart phones** and other GPS devices offers advertisers an opportunity to target consumers when they are in close proximity to a store, a coffee shop or a restaurant. This opens up new revenue for service providers and offers many businesses a chance to target new customers.
- iv. **Retailers** usually know who buys their products. Use of Social Media and web log files from their e-commerce sites can help them understand who didn't buy and why they chose not to, information not available to them today. This can enable much more effective micro customer segmentation and targeted marketing campaigns, as well as improve supply chain efficiencies.
- v. Finally, **Social media sites** like Face book and LinkedIn simply wouldn't exist without big data. Their business model requires a personalized experience on the web, which can only be delivered by capturing and using all the available data about a user or member.

BIG DATA AT CLOUD COMPUTING.

Cloud computing [2] is a successful computational paradigm for managing and processing big data repositories, mainly because of its innovative metaphors known under the terms “*Database as a Service*” (DaaS) [17] and “*Infrastructure as a Service*” (IaaS). DaaS defines a set of tools that provide final users with seamless mechanisms for creating, storing, accessing and managing their proper databases on remote (data) servers. Due to the naïve features of big data, DaaS

is the most appropriate computational data framework to implement big data repositories. **MapReduce [1]** is a relevant realization of the DaaS initiative. IaaS is a provision model according to which organizations outsource infrastructures (i.e., hardware, software, network) used to support ICT operations. The IaaS provider is responsible for housing, running and maintaining these services, by ensuring important capabilities like *elasticity, pay-per-use, transfer of risk and low time to market*. Due to specific application requirements of applications running over big data repositories, IaaS is the most appropriate computational service framework to implement big data applications.

While volume of data is often the most visible parameter, it is not the only characteristic that defines Big-Data. Besides, very large and continuously growing data size, the term implies many different aspects of collection, storage and processing of data that is not restricted to structured and transactional data[15]. The technology infrastructure needed to support the acquisition of Big Data should be able to capture all types of interactions and process details, preferably in a suitable storage medium. For Eg: the files, documents and emails from the home directories of thousands of users can be stored in network attached storage (NAS) and data bases are stored in High Performance SAN storage. It should be able to include external data sets like socio-economic data and interactions on various social websites as well. Once the data is acquired from various sources it is pushed on to clusters [9] of systems that organize large sets of heterogeneous data. The infrastructure required for organizing big data must be able to process and manipulate data in the original storage location and support very high through put. It should support hugely parallel architectures allowing for efficient examining and processing of huge amount of heterogeneous data in parallel (without benefits of the usual indexing technologies). Once examined and analyzed, the infrastructure should allow the results to be visualized through various business intelligence systems that ultimately reveal valuable business information for crucial enterprise wide business decisions.

However, building a system based on Big Data, one which collects and stores all kinds of data is only one side of the story. The bigger challenge is defining varied analytical processing of this data, derive newer and very innovative patterns and associations, and then act on them effectively. Among the collection of open problems and research challenges deriving from the latest *big data revolution*,

analytics over big data play a relevant role in the context of Data Warehousing and OLAP research. Let us focus on this research challenge in a greater detail.

Analytics [6] can be intended as complex procedures running over large-scale, enormous-in-size data repositories (like big data repositories) whose main goal is that of extracting useful knowledge kept in such repositories. Two main problems arise, in this respect. The first one is represented by the issue of conveying big data stored in heterogeneous and different-in-nature data sources (e.g., legacy systems, Web, scientific data repositories, sensor and stream databases, social networks) into a structured, hence well interpretable, format. The second one is represented by the issue of managing, processing and transforming so-extracted structured data repositories in order to derive *Business Intelligence* (BI) components like diagrams, plots, dashboards, and so forth, for decision making purposes. Actually, both these aspects are of emerging interest for a wide spectrum of research communities, and more properly for the Data Warehousing and OLAP research community. As a consequence, this has generated a rich literature. At the industrial research side, **Hadoop**[3] and **Hive** are two fortunate implementations of the ETL layer and the BI layer of big data applications, respectively. Although analytics over large-scale data repositories have been deeply investigated recently, the problem of extending actual models and algorithms proposed in this respect to the specific *big multidimensional data* context plays a leading role, as multidimensional data naturally marry with analytics.

ANALYTICS OVER MULTIDIMENSIONAL DATA BY BUILDING BIG DATA PLATFORM

As with data warehousing, web stores or any IT platform, an infrastructure for big data has unique requirements. In considering all the components of a big data platform, it is important to remember that the end goal is to easily integrate your big data with your enterprise data to allow you to conduct deep analytics on the combined data set. The requirements in a big data infrastructure span data acquisition, data organization and data analysis.

ACQUIRING BIG DATA

The acquisition phase is one of the major changes in infrastructure from the days before big data. Because big data refers to data streams of higher velocity and higher variety, the infrastructure required to support the acquisition of big

data must deliver low, predictable latency in both capturing data and in executing short, simple queries; be able to handle very high transaction volumes, often in a distributed environment; and support flexible, dynamic data structures.

NoSQL [5] databases are frequently used to acquire and store big data. They are well suited for dynamic data structures and are highly scalable. The data stored in a NoSQL database is typically of a high variety because the systems are intended to simply capture all data without categorizing and parsing the data. For example, NoSQL databases are often used to collect and store social media data. While customer facing applications frequently change, underlying storage structures are kept simple. Instead of designing a schema with relationships between entities, these simple structures often just contain a major key to identify the data point, and then a content container holding the relevant data. This simple and dynamic structure allows changes to take place without costly reorganizations at the storage layer.

PREPROCESSING OF BIG DATA

In classical data warehousing terms, organizing data is called data integration. Because there is such a high volume of big data, there is a tendency to organize data at its original storage location, thus saving both time and money by not moving around large volumes of data. The infrastructure required for organizing big data must be able to process and manipulate data in the original storage location; support very high throughput (often in batch) to deal with large data processing steps; and handle a large variety of data formats, from unstructured to structured. Apache Hadoop is a new technology that allows large data volumes to be organized and processed while keeping the data on the original data storage cluster. Hadoop Distributed File System (HDFS) is the long-term storage system for web logs for example. These web logs are turned into browsing behavior (sessions) by running MapReduce programs on the cluster and generating aggregated results on the same cluster. These aggregated results are then loaded into a Relational DBMS system[16].

ANALYZE BIG DATA

Since data is not always moved during the organization phase, the analysis may also be done in a distributed environment [11], where some data will stay where it was originally stored and be transparently accessed from a data

warehouse. The cloud infrastructure required for analyzing big data must be able to support deeper analytics such as statistical analysis and data mining, on a wider variety of data types stored in diverse systems; scale to extreme data volumes; deliver faster response times driven by changes in behavior; and automate decisions based on analytical models. Most importantly, the Cloud infrastructure must be able to integrate analysis on the combination of big data and traditional enterprise data [20]. New insight comes not just from analyzing new data, but from analyzing it within the context of the old to provide new perspectives on old problems.

For example, analyzing inventory data from a smart vending machine in combination with the events calendar for the venue in which the vending machine is located, will dictate the optimal product mix and replenishment schedule for the vending machine.

DIVIDED SOLUTION SPECTRUM

Many new technologies have emerged to address the IT infrastructure requirements outlined above. At last count, there were over 120 open source key-value databases for acquiring and storing big data, with **Hadoop** emerging as the primary system for organizing big data and relational databases expanding their reach into less structured data sets to analyze big data. These new systems have created a divided solutions spectrum comprised of:

- Not Only SQL (NoSQL) solutions: developer-centric specialized systems
- SQL solutions [12]: the world typically equated with the manageability, security and trusted nature of relational database management systems (RDBMS)

NoSQL systems are designed to capture all data without categorizing and parsing it upon entry into the system, and therefore the data is highly varied. SQL systems, on the other hand, typically place data in well-defined structures and impose metadata on the data captured to ensure consistency and validate data types.

Distributed file systems and transaction (key-value) stores are primarily used to capture data and are generally in line with the requirements discussed earlier in this paper. To interpret and distill information from the data in these solutions, a programming paradigm called MapReduce is used. MapReduce programs are

custom written programs that run in parallel on the distributed data nodes. The key-value stores or NoSQL databases are the OLTP databases of the big data world; they are optimized for very fast data capture and simple query patterns. NoSQL databases are able to provide very fast performance because the data that is captured is quickly stored with a single identifying key rather than being interpreted and cast into a schema. By doing so, NoSQL database can rapidly store large numbers of transactions. However, due to the changing nature of the data in the NoSQL database, any data organization effort requires programming to interpret the storage logic used. This, combined with the lack of support for complex query patterns, makes it difficult for end users to distill value out of data in a NoSQL database. To get the most from NoSQL solutions and turn them from specialized, developer-centric solutions [19] into solutions for the enterprise, they must be combined with SQL solutions [13] into a single proven cloud infrastructure that meets the manageability and security requirements of today's enterprises.

TURNING INTO BUSINESS ANALYTICS ON BIG MULTIDIMENSIONAL DATA

It has been already studied that multidimensional data naturally marry with analytics. Indeed, analytics significantly extend typical OLAP [7] operators (e.g., roll-up, drill-down, and so forth) hence it is natural to think of multidimensional data as an *add-on value* for analytics models and methodologies. Multidimensional data finally allow us to enhance the *expressive power* and the *capabilities* of analytics, and actual research experiences in the context of big data analytics [8] are mature enough to launch a novel paradigm for Data Warehousing and OLAP research: *analytics over big multidimensional data*. Basically, this innovative paradigm aims at integrating the classical, well-known benefits of multidimensional data models (such as multidimensional abstractions, hierarchy-based dimensional tables, multi-resolution fact tables, multi-way aggregations, OLAP tools, and so forth) with analytics, in order to achieve more powerful analytics capable of enhancing actual models by means of typical amenities deriving from such multidimensional data models. In order to realize this sort of *second-generation big data revolution*, it is necessary to face-off a number of open research problems, some of which can be summarized by the following questions.

(a) *How To Build Multidimensional Structures On Top Of The HDFS?*

This problem refers to the issue of building multidimensional data structures on top of the structured HDFS [10] repositories of Haadoop, as a first step towards directly integrating multidimensional data models with analytics over big data. A promising direction to this end consists in exploiting *array-based in memory representation methods*.

(b) *How To Directly Integrate Multidimensional Data Sources Into The Hadoop Lifecycle?*

Hadoop populates the underlying structured big data repositories from heterogeneous and different in nature data sources, such as legacy systems, Web, scientific data sets, sensor and stream databases, social networks, and so forth. Despite this, no research efforts have been devoted to the yet relevant issue of *directly integrating multidimensional data sources* into the Hadoop lifecycle, which is an exciting research challenge for next-generation Data Warehousing and OLAP research.

(c) *How To Model and Design Multidimensional Extensions of HiveQL?*

In order to achieve an effective integration of multidimensional data models with analytics over big data, the query language HiveQL must be enriched with multidimensional extensions as well. These extensions should take into consideration language syntax aspects as well as query optimization and evaluation aspects, perhaps by inheriting lessons learned in the context of actual *MDX-like languages* for multidimensional data [18].

(d) *How to Design Complex Analytics over Hadoop-Integrated Multidimensional Data?*

Multidimensional data provide add-on value to big data analytics [14]. In this respect, design complex analytics over Hadoop-integrated multidimensional data plays a critical role. Actual analytics, although quite well-developed, still do not go beyond classical BI components, like diagrams, plots, dashboards, and so forth, but complex BI processes of very large organizations demand for *more advanced BI-oriented decision support tools*, perhaps by integrating principles and results of different-in-nature disciplines like statistics.

(e) *How To Deal with Visualization Issues Arising From Big Multidimensional Data Analytics?*

Visualization issues represent a leading problem in Data Warehousing and OLAP research. These issues get worse when re-visited in the context of big multidimensional data analytics, as here visualization must kept a stronger *decision-support value*. More complex techniques, such as *multidimensional space exploration approaches*, must be investigated to this end.

CONCLUSION

Data is not only becoming more available but also more understandable to computers. Most of the Big Data surge is data in the wild — unruly stuff like words, images and video on the Web and those streams of sensor data. It is called unstructured data and is not typically grist for traditional databases. But the computer tools for gleaning knowledge and insights from the Internet era’s vast trove of unstructured data are fast gaining ground. At the forefront are the rapidly advancing techniques of artificial intelligence like natural-language processing, pattern recognition and machine learning. Data is tamed and understood using computer and mathematical models. These models, like metaphors in literature, are explanatory simplifications. They are useful for understanding, but they have their limits. A model might spot a correlation and draw a statistical inference that is unfair or discriminatory, based on online searches, affecting the products, bank loans and health insurance a person is offered, privacy advocates warn. Despite the caveats, there seems to be no turning back. Data is in the driver’s seat. It’s there, it’s useful and it’s valuable, even hip.

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MEDIA AND HEALTH CARE FINANCING

Norbert Lobo and Priya Shetty

ABSTRACT

Provision of quality health care to every individual and to every household has been one of the main objectives of all civil societies. Infact, good health is universally acknowledged to be of intrinsic value and therefore constitutes an integral element of development. A peep into the Indian health scenario reveals that the Indian population is divided into affordable and non affordable sections. For the non affordable section, positive health is one of the major reasons of indebtedness . There is a vicious circle that ill health complicates economic burden on the poor family which further leads to lower productivity leading to lower economic status ; this in turn promotes poverty.

In recent years institutionalized voluntarism has evolved as a source of financing health care in India. They basically help in filling the critical gaps that exist in government health services. These voluntary agencies have played significant role in developing alternative 'models' for providing free or low- cost effective health care services. However with incresed cost of health care and dwindling of public sector funding affording health care service has been a cumbersome challenge especially for households living below the poverty line.

Partnership with media has emerged as a new model of financing health care expenditure. Media promotes health and health care both directly and indirectly both in preventing and healing diseases. Indirectly, it helps in generating awareness regarding health and health care among the people. Directly media takes action in mobilising and generating resources to finance the health care needs of needy and vulnerable people of the society. In this paper an attempt is made to understand the role of media in providing health care to the weaker section of the society. Case study of web based media [www:daijiworld](http://www.daijiworld) is taken up to understand the role of media in health care financing.

Key Words: *health care financing, institutionalised voluntarism, role of media, daijiworld, brand utilisation.*

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Provision of quality health care to every individual and to every household has been one of the main objectives of all civil societies. Infact, good health is universally acknowledged to be of intrinsic value and therefore constitutes an integral element of development. The Millennium Development Goals (MDGs) have put health at the heart of the development agenda, with three out of eight Goals directly related to improvement in health status. These goals and targets emphasize the importance of health as a dimension of poverty. Access to healthcare is critically dependent on how healthcare provision is financed. (Duggal, 2007). India needs a healthcare system that can meet the demands of over a billion people, most of whom are unable to bear the burden of healthcare costs – each year 39 million people are pushed into poverty because of their inability to meet healthcare costs. It has been reported that thousands of people die every year in India due to lack of access to basic health care (The Hindu, Feb 6, 2011). This highlights the fact that “financing the health care is as important as health care itself”.

A peep into the Indian health scenario reveals that the Indian population is divided into affordable and non affordable sections. For the non affordable section, positive health is one of the major reasons of indebtedness (Bhise, 2009). There is a vicious circle that ill health complicates economic burden on the poor family which further leads to lower productivity leading to lower economic status ; this in turn promotes poverty. In India, thus the challenge in this regard is how to maintain health spending and how to achieve “health for all” initiative?

OBJECTIVES

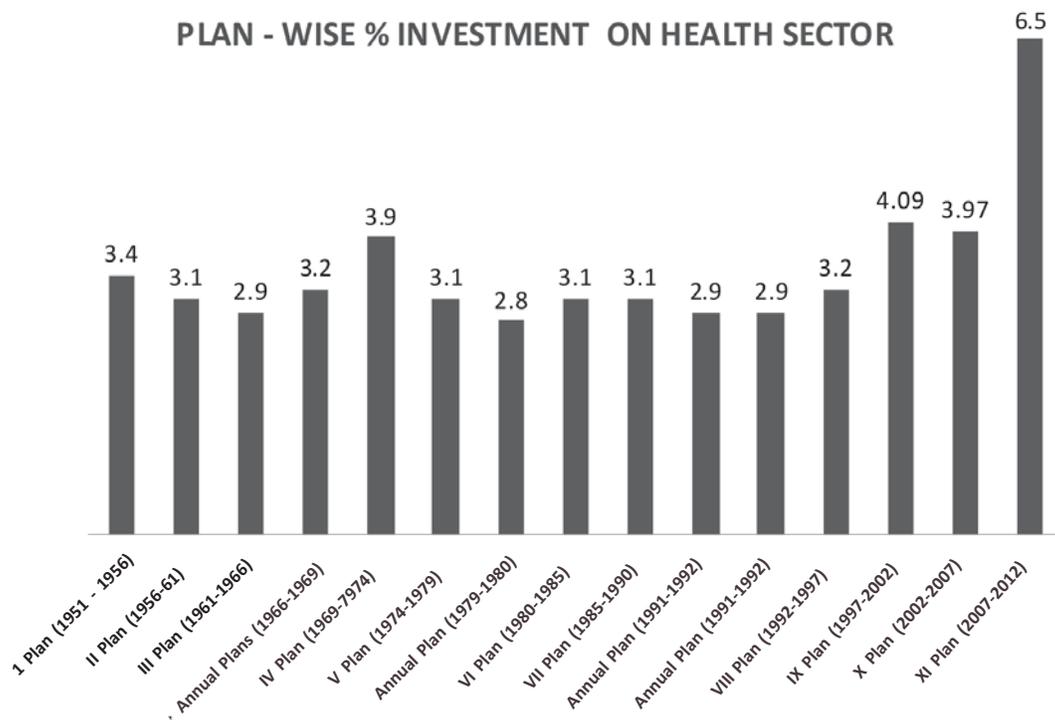
In this paper an attempt is made to showcase the role that media can play in financing the health care expenditure of the vulnerable sections in particular and that of the needy in general. A case study of daijiworld.com - a web based portal has been taken to analyse the role of media in health care financing.

HEALTH CARE FINANCING IN INDIA: AN OVERVIEW

Health care financing may be defined as the mobilization of funds for health care and the allocation of funds to the regions and population groups and for specific types of health care and the mechanisms for paying health care (Hsaio, W, 2001). India spends about 4 % to 6 % of the GDP on healthcare. Of which

the public sector spending on health accounts for 1.3% and the rest 4.7 % is by the private sector. A small percentage of population roughly around 12-13 % has some form of health insurance in addition to the 10% who is covered under some variety of health plans including beneficiaries under Employee State Insurance Scheme (ESIS), Central Government Health Schemes (CGHS), Army, Railways, Self-funded, Public Sector Undertakings (PSUs), etc. (The Economic Times, March 16, 2011)

Graph 1:



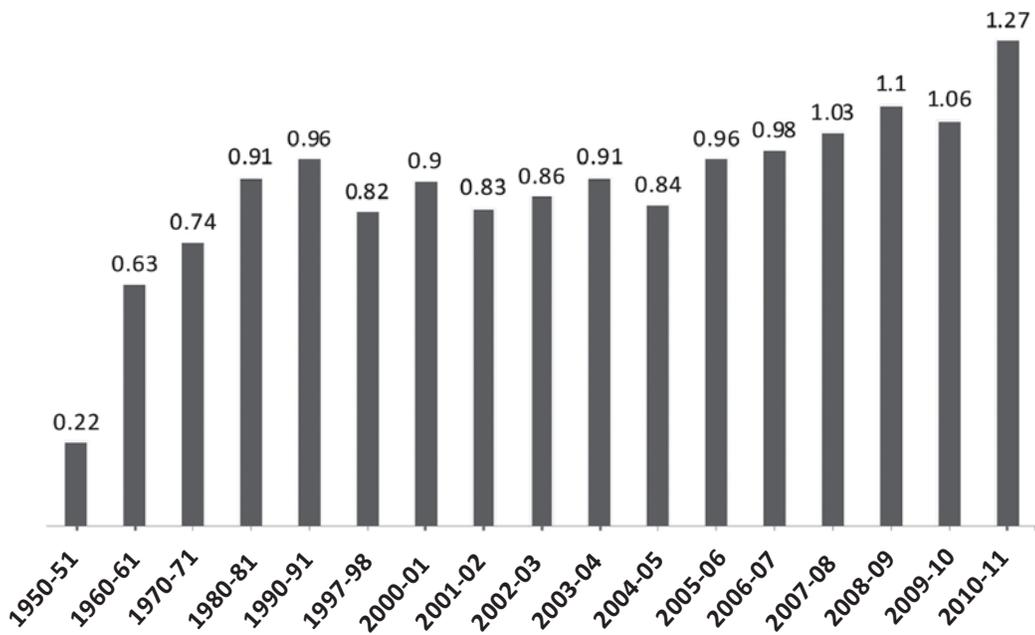
Notes:

- Investment on Health Sector involves investment on health, family welfare and AYUSH.
- Deptt. ISM&H (now AYUSH) was created during 8th Plan Period

Source: National Health Profile 2010

Results from the NHA show that for the year 2004-05 Central, State and local Governments together spend one-fifth of the total health expenditure. The share of other central ministries, which include railways, defence, posts and telegraphs, other civil ministries, etc, is estimated to be about 2.42% of total health spending in the country. The household sector accounts for a whopping 71.13 % . Taken together, public health spending accounts for 19.67% of aggregate expenditure the balance being out of pocket expenditure incurred by patients to private practitioners of various hues. The report also reveals that the share of total government health spending as a percentage of GDP shows a secular decline from over 1.1% in 1990 to less than 0.84% in 2005. This secular decline is mainly on account of the decline in Government health spending at state level. The center's share shows a marginal increase between 1990 and 2005. The year 2005, however, marks a turning point when the share of government health expenditure in GDP begins to rise and was 1.01 % during 2008-09 and was 1.27 % during 2010- 11.

Graph 2: Trends in Public Health Expenditure as a % share of GDP



Source: National Health Profile 2010

Table: 1: Financing Healthcare in India 2004-2005

Source	% Expenditure
A: Public Sector	16
<i>i) Social Insurance</i>	<i>1.5</i>
B: Private Sector	84
<i>ii) Private Insurance</i>	<i>0.6</i>
<i>ii) Out of Pocket</i>	<i>83.4</i>
Total	100.00

Source: National Health Accounts India: 2004-05,

Public spending on health in India has itself declined after liberalization from 1.3% of GDP in 1990 to 0.84% in 2005. Central budget allocations for health have stagnated at 1.3% to total Central budget. In the States it has declined from 7.0% to 5.5% of State health budget. The total value of the health sector in India today is over Rs 1,500 billion which is 6 % of GDP. Of this 16 per cent is publicly financed, 1 % is from social insurance, 0.6 % private insurance and the remaining 83 % being out of pocket as user-fees or 5.5 % GDP. Of the total out-of-pocket users 90 % are from the poorest sections. (NHA 2004-05)

Table 2: Sources of Finance in the Health Sector in India during 2001-02 and 2004-05

Sources	2001-02	2004-05
	Share (in %)	
Central Govt	7.2	6.78
State Govts	14.4	11.97
Local Level Govts	2.2	0.92
Firms	5.2	5.73
NGOs	0.3	0.07
External Funds	2.0	2.28
Households	68.8	71.13
Total	100.0	100.0

Source: National Health Accounts India: 2004-05,

A significant observation about health care financing is that in India, as elsewhere, those who have the capacity to buy healthcare from the market most often get healthcare without having to pay for it directly, and those who are below the poverty line or living at subsistence levels are forced to make direct payments, often with a heavy burden of debt, to access healthcare from the market. National data reveals that 50 per cent of the bottom quintile sold assets or took loans to access hospital care. (Duggal, 2004). Escalating health care costs constitute an important cause for indebtedness among the poor and middle-income groups, and lead to the impoverishment of 2.2% of the population annually.(WHO, 2010). Rao and Choudhury (2012) analysing public spending on health care in India Concludes that, “the Indian health care system is characterized by low levels of public spending on health care; poor quality in health care services, with adverse effects on the population’s health status; a lack of focus on preventative health care; and dependency of the population, particularly the poor, on private health care providers and consequently high out of pocket spending and immiseration”. This again calls for necessary voluntary initiatives in the area of extreme needs.

THE MODELS OF HEALTH CARE FINANCING

Health services in India are financed broadly through private expenditure or public expenditure or external aid. Public expenditure includes all expenditure on health services by central, state and local government funds spent by state owned and semi governmental enterprises as well as government and social insurance contributions where services are paid for by taxes or compulsory health insurance contributions either by employers or insured persons or both. Voluntary payments by individuals or employers are private expenditure. External sources refer to the external aid which comes through bilateral aid programme or international non governmental organizations.

Different forms of health system financing exist, that vary in terms of how resources are generated, pooled together and used. There are five main models of health financing in India. They are (i) general revenue or earmarked taxes , (ii) social insurance contributions , (iii) private insurance premiums , (iv) community financing and (v) direct out of pocket payments. Each method distributes the financial burdens and benefits differently. Similarly each method affects who will

have access to health care and differs in terms of its financial protection.

HEALTH CARE FINANCING AND THE VOLUNTARY SECTOR

Health care in India has a long tradition of voluntarism. For centuries, traditional healers have taken care of the health needs of their own community as a part of their social responsibility. They have used knowledge that has passed down the generations, regarding the medicinal value of locally available herbs and plants. This tradition still continues, particularly in the tribal pockets of the country. According to a rough estimate, more than 7,000 voluntary organizations are working in the above areas of health care throughout the country. (Mukhopadhyay 2005). Voluntary agencies have played a significant role in developing alternative 'models', as well as providing low-cost and effective health services in many parts of the country.(ibid)

The voluntary health effort as it exists today can be broadly classified as follows (*ibid*):

- *Specialized Community Health Programmes*: Many of them go a little beyond health, by running income-generation schemes for the poorer communities so that they can meet their basic nutritional needs.
- *Integrated Development Programmes*: In these programs, health is a part of integrated development activities. Consequently, their emphasis on health care may not be as systematic or as effective as that of the previous group. However, the long-term impact of their work on health and the development of the community is significant.
- *Health Care for Special Groups of People*: This includes education, rehabilitation and care of the handicapped. These specialized agencies are playing an important role, keeping in view the fact that hardly any government infrastructure exists in this sector of health care.
- *Government Voluntary Organisation*: These are voluntary organizations which play the role of implementing government programs like Family Planning and Integrated Child Development Services. These bodies are marginally more efficient than the government system but their overall approach is the same.
- *Health Work Sponsored by Rotary Clubs, Lions Clubs and Chambers of Commerce*: They usually concentrate on eye camps – conducting cataract

operations in the rural areas on a large scale with the help of various specialists, blood donation camps, blood grouping, medical check up camps, etc.

- *Health Researchers and Activists:* The efforts of these groups are usually directed towards writing occasional papers, organizing meetings on conceptual aspects of health care and critiquing government policy through their journals (which usually have limited circulation).
- *Campaign Groups:* These groups are working on specific health issues, such as a national drug policy and amniocentesis, among others.

MEDIA AS A SOURCE OF FINANCING HEALTH CARE

With its large audiences, widespread appeal and loyal readers base, mass media including print, electronic and web plays an important role in health promotion and health care financing. Media promotes health and health care both directly and indirectly both in preventing and healing diseases. Indirectly, promotion of health and financing of health care is done through the scholarly and timely articles on various health related problems and issues concerning health care financing particularly that of nonaffordable section of the society. It helps in generating awareness regarding health and health care among the people. The government and policy makers are also made pro-active with such scholarly writings and investigative reports on health; like articles on family planning, malaria, dengue, chickangunya, filarisis, cancer, HIV/AIDS and so on. Further, the mass media brings various health related issues to public attention generateing public opinion. This agenda-setting can influence both public and private decisions by making such issues seem more important than others. It also makes the public authorities to take preventive measures and implement various remedial schemes.

Directly media takes action in mobilising and generating resources to finance the health care needs of needy and vulnerable people of the society. It mobilises financial resources especially during natural calamities, accidents and crisis by creating separate funds and requesting public particularly its readers to contribute for such causes. As an incentive the names of the donors are published in the paper. Besides, it publishes appeals to give financial assistance to the needy patients especially from the lower strata of the society who require a large amount of money to cure ailments. With the generous contributions of some

philanthropic people the finance is made available to the needy. This not only helps the needy but also brings about a change in the behavioural pattern of the society. It has been observed that almost every daily news paper both national and regional keep publishing appeals from patients on a regular basis.

DAJIWORLD – A CASE STUDY

Started on January 14, 2001 as a community based online portal in Dubai to relay the latest news from the coastal Konkan region and the world at large, to the Indian Diaspora as its prime objective, daijiworld.com has become a brand in itself, creating its own niche in the challenging field of the web media. Over the period of 11 years daijiworld.com has emerged as a competent, professionally managed and resourceful web portal known for its wide coverage of news and views, precision, promptitude, timeliness and humane approach. In March 2007, daijiworld became Daijiworld Media Pvt Ltd., and established itself as a media company. Though initially Daijiworld was accessed mainly by NRIs, in the last few years there has been a sizeable increase in the viewership within the country in states like Karnataka, Goa and Maharashtra along with the enhanced volume of viewership from abroad. To supplement the growth of the website a 24-hour Internet TV news channel called T V Daijiworld was introduced for webcasting important events.

In 2009 Daijiworld.Com has further widened its horizons by making a successful foray into print journalism by launching “Daijiworld Weekly”. Launched in February 2009, the weekly is printed in Bangalore and published from Mangalore under the banner of Daijiworld Publication Pvt Ltd. The weekly is currently reaching all over India and the Gulf countries and is gaining popularity due to its forthright and impartial presentation of news and views. Also since two years Daijiworld has launched ‘*Swabhiman Awards*’ to recognize and felicitate the specially abled people who have excelled in whichever field they have chosen to display their skill.

DAJIWORLD AS A PARTNER IN HEALTH CARE FINANCING

In the last 11 years daijiworld.com was able to gain a strong foothold in and around Mangalore and attracts more readerships all over the globe. With more and more people becoming internet-savvy, the popularity of the website witnessed an upward swing and daijiworld.com spread its tentacles to many countries of

the world. The web portal's news is referred to by news agencies and channels the world over, which is a proof of its authenticity. All this are ample proof to the fact that Daijiworld is a brand by itself. This brand had arrived with a bang and is here to stay. The good work and impact of Daijiworld brand has been identified and recognized by institutions and organizations as they have been honoured with more than 50 awards in the last few years.

As a mass media www.daijiworld.com has been in the forefront in its social commitment of reaching out to the cause of humanity. Its social awareness campaigns and appeals to render a helping hand to the needy, sick and the deprived sections of the society have struck a chord among its readers and succeeded in giving a new lease of life to many families irrespective of caste, creed or religion. According to Walter Nandalike, the Editor-in-chief and its founder "More than news, we do a lot of charity work. On our Web site, we post appeals for those who have difficulty pursuing education or need money for medical expenses. Our reporters visit such households to verify the situation and take photographs. Sometimes they even help the family open a bank account for the donations," (Business Line, Friday, Sep 24, 2010). Daijiworld's biggest achievement in the past ten years is that the total financial help received for their various appeals has crossed Rs 5.7 crore (For over 250 individuals or families) . Readers of Daijiworld have helped the cause of the poor for housing, education and chiefly, medical needs.(Daijiworld, Sept 16, 2012)

THE MEDIA- PATIENT PARTNERSHIP PROCESS

To foster its social commitment of reaching out to the cause of humanity, the daijiworld web portal has a column / Tab on its website, by name "Charity" and "In Search of Help". The reporters and correspondents identify people who are in need for financial help without any bias. The web site also receives hundreds of appeals for help from the people directly. All these appeals are not posted on the website automatically. The reporters visit such households to verify the situation and take photographs. After verifying its authenticity the portal posts appeals for those who are in need of money for medical expenses. Sometimes they even help the family open a bank account for the donations. The donations are directly sent to the bank accounts of the patients by the donors. An examination of the process reveals that the readers' response has been instantaneous and

generous. People from nooks and corners of the world responded by extending their helping hands for the suffering. All appeals remain on the Web site for certain days, after which the reporters revisit the family to report on the funding received. A follow –up report is also published in the portal.

BRAND UTILISATION

- Analysis of the whole process reveals that daijiworld.com has utilised its brand name to mobilize and finance health care needs of the weaker and vulnerable section of the society. Many of the beneficiaries have not even heard the name of daijiworld.com. In its social commitment of reaching out to the cause of humanity the web portal has generated about Rs 5.7 crore through appeals published in the website to help the needy in the last 11 years, which has benefited over 250 families to pick up the threads of their lives.

A few comments published by the beneficiaries in the portal reveal that how media by utilising its brand can do wonders to finance health care needs of the non affordable section of our society. A few such comments are given below: (the identity of the beneficiaries is not disclosed, one may refer to the website for details)

- “We did not know what Daijiworld was, but for us it was like a messenger sent by the Almighty ... never thought that anyone would come to our help, but now this feels like a dream come true. We do not know how to thank those who sent money for our cause “– a family which received about Rs 2 lakhs. (Daijiworld July 14, 2008)
- “I hardly had any hope as I always felt alone, and with this sickness, I had little hope for the future. Those lovely people have now given me hope to live... their love has proved that I am not alone in this world...” was her first reaction when she came know of the support and prayers received from people all around the world. - A young woman of 21 years, had been operated at Wenlock hospital for brain tumour. She lives with her younger brother, was abandoned by their father. Their mother passed away a couple of years ago. Within two weeks of publishing the appeal, a sum of Rs 28 laks gathered in her account. (Daijiworld September 16, 2012)

- “Though she is not sure how long she can go on fighting this disease (cancer), her gloomy eyes have started twinkling, as we saw when she visited us again last week, to express her wholehearted thanks to innumerable Daijiworld readers who came to her rescue. Her renewed confidence, and the will to fight has emerged because of the overwhelming support of our readers, show that the Daijiworld readers have made a tremendous impact on her outlook of life.” (Daijiworld July 14, 2008 June 15, 2009)
- Here is a story of a couple, who thought they had no reason to live, and had in fact contemplated ending their lives out of the misery of pain. His new born son had hernia and his urine bladder was outside the stomach (extropy bladder). Urine was passing through a hole, and later the child was operated. A simple appeal on daijiworld column has now enabled people to contribute nearly Rs one million (Rs 10 lac) towards the cause! And that too within a gap of just 20 days (Daijiworld April 30, 2012)
- “I owe the future of my son to the readers of Daijiworld, their support will surely help me to secure his future...I will pray for them...my son will pray for everyone.” (Daijiworld July 14, 2008)
- “I had lost all hope, but it was after Daijiworld published an appeal, and money for her treatment came in, that hope kindled again. If not for Daijiworld readers, whose benevolence collected Rs 3.5 lac for —(name)——-treatment, She would not have seen the light of the day,” expressed —(name)——-with tears in his eyes.” (Daijiworld October 31, 2006)
- One needs to salute the benevolence of various communities, especially those hailing from Mangalore and around. When money was received at the Syndicate Bank Kanjarkatte branch, there was no caste, creed or religion. Help that poured in had no boundaries at all. It is enriching to know that over Rs 5 lac has been mobilized through just one simple appeal on Daijiworld! . The grand amount is inclusive of generous contributions from donors from across Karnataka, other Indian states and also most of them from Non-resident Indians (NRIs). (Daijiworld June 04, 2009)
-and many more such examples in the archives....

CONCLUSION:

Media's role in health care financing is basically an innovative method of brand utilization for social commitment. Daijiworld's commitment in this regard is the finest example how media can show its social responsibility towards society. The study reveals that the process has strengthened brand bonding between the media and its readers. Indirectly it has also contributed to enhance the brand value of the media. By showing its social commitment, media has contributed and will continue to contribute immensely in promoting the well being of the society. Improvement in the health status of population not only contributes directly to human happiness, but also enhances capabilities and freedoms. Health is a basic component of human development and hence, an important determinant of well-being of population. Therefore, ensuring universal access to healthcare is necessary for providing health security, particularly to the poor and disadvantaged sections of society. As improved health status enhances productivities and incomes, ensuring access to the poor is critical for inclusive development. In the back ground of shrinking public expenditure on health care, media's role in financing health care needs of the vulnerable sections of the society is commendable. The study demonstrates that media by utilizing its brand name and reach, can play a very useful role to prevent further impoverishment of the non-affordable section of the society in the backdrop of escalating costs of health care and the inability to meet the health care costs of millions of people.

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BINARIES IN THE EUROPEAN CONSTRUCTION OF THE TULU WORLD

- Denis Fernandes

ABSTRACT

The Article would like to highlight the Imperialist perception of a land which they have acquired to administer. The information they gathered helped them to create a knowledge which was more relevant to their understanding on the land. The knowledge which they gathered was based on the politics of difference, always tried to emphasize on the difference between the 'traditional' east and the 'enlightened' west. This would eventually helped them to establish their dominance over the people who came under their rule. These narratives not only defined the West but also justified their presence in Tulunadu. The Missionary writings always projected moral depravity connected with Hinduism. They portrayed the religion of the natives as the opposite to Christianity-ceremonial, ritualistic, fatalistic, licentious and superstitious. For them such things indicated darkness, which could be expelled by the light of Christianity.

Key Words: Colonial, Tulunadu, Canara, Missionary, Conversion, European

Conventionally the European writings on non-European lands and peoples have been looked upon as sources for understanding those exotic, interesting or exasperating subjects. They would help inducting those peoples, bereft of historical sense, into the warmer realms of history. It was one of the ways of the European imperialist swagger, announcing its superiority, valorizing its writings as truly informed by historical sense and powers of observation and judgment that were as keen as they were fair. Since the publication of Edward Said's *Orientalism* (1979) European writings on the Orient are shown in different light and as carrying a different image. Harnessing Foucault's ideas on Knowledge as an operation and product of power, Said argued that the construction of the Orient was perverse reflection of the way the West constituted its own self-image in the over-all context of colonialism.

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By 1800 the concept of Indian empire had entered the British thought and therefore Europeans produced a network of intersecting and contending literature about India. Immediately after occupying the land, the British were preoccupied with a wide ranging set of questions about authority, responsibilities, crafting the present, constructing the past, designing the future, all as an exercise of their vindication. These exercises provided knowledge which was agreeable for the colonial use. Moreover, the colonial literature shared certain assumptions, strategies and imagery which provided for the creation of an India for European as well as Indian viewers, though images were diverse and shifting.

After the acquisition of Canara, the immediate need for the British was to know the land, agriculture, revenue and the rules related to the collection of revenue. Therefore land surveys were taken up, experts were sent to collect information on the landscape, climate, produce of the land and the types and amount of taxes that were collected. Apart from this, they were also instructed to get information on the histories of the region. It included the location and mapping of human landscape of villages, forts, roads, irrigation schemes, and boundaries, buildings, forests and even individual trees. In this course of action the surveyors like Buchanan entered the literature as active agents of imperialism. Mathew Edney points out that those activities did not map the 'real India', but the India that was perceived and governed by them. "...what they did map, what they did create, was a British India".¹

Canara was portrayed by the colonial masters as a rocky, mountainous country transacted by numerous small rivers and abounding in lofty forests. It was described as a wild and inhospitable region, with a poor soil, which produces, "nothing but rice and cocoa nuts". The face of the country, as they narrated, was rude and savage beyond description. The incessant rains had washed away the efficiency of the soil long ago and whatever remained was mere sand.² In the colonial narration the land under their domination always figured in contrast to their own in their homeland. In the Census of India in 1911, the villages of south India do not resemble the mental picture of the European village. "Instead of orderly rows of fairly substantial houses fronting some well-used thoroughfare the incipient statistician finds a bewildering medley of

cottages, leaf huts, cowsheds, and straw yards, arranged on no apparent plan, and often lying hidden in a grove, or isolated in a swamp, miles distant from any public highway”.³ Thomas Munro was among the first to visit Canara as an administrator, who, in his personal letters, wrote about the land with a lot of contempt. . His aversion to the land was expressed in one of his private letters. “I would rather live upon ensign’s pay in a sunny climate, than be sovereign of Canara. If I can contrive to get away, I shall go, though it will probably cost me near half my income.”⁴ He contrasted Canara with Scotland. “Canara would look bleaker than the most barren spot in Scotland. What are usually called the pleasures of the country, are unknown in Canara.”⁵ For him the whole country was a waste. “I would not stay three years in such a country of eternal rains, where a man is boiled one half of the year and roasted the other....”⁶

Colonial interest in Canara, which was not in favour of industrial establishments, fabricated the notion that the land was only fit for agricultural production. The reasons given for this were that it produced none of the raw materials required for the industries and that the heavy rains last for the great a part of the year, where the manufacturing requires a clear sky as it is in Europe.⁷ The colonial writers seemed to suggest that only the Western countries were fit for industrial production while the East could only confine itself, happily to agriculture. The abundant rainfall in this region is considered the major boon for agriculture while the canal and tank irrigation were looked upon as the least desirable for the purpose.

Not only the agricultural produces but even the forest and mineral wealth attracted the rulers. By 1822 itself an attempt was made to list the Government forests in the district. It also allotted 100 yards of ‘*kumaki*’ land to the cultivation when a government forest adjoined cultivated land. But this concept was given up in 1839 and the ‘*kumaki*’ only had come to mean a semi proprietary right to forest within 100 yards of all cultivation.⁸ Thus the colonial government gradually withdrew its earlier stand on private property in forest land.

‘*Kumeri*’ cultivation of Canara drew the attention of the British administrators from the beginning. Destruction of forest wealth for *Kumeri* cultivation noted by

the colonial masters was considered as a wasteful and barbarous system which would have serious disruptive effect on the climate and on public health. It was also pointed out that this process involved destruction of valuable timber which could otherwise be used for shipbuilding and railway construction.⁹ By 1850s the government had passed stringent rules regarding the Kumeri cultivation. Sweeping orders were passed in 1860 prohibiting Kumeri cultivation in the district. Even though it failed to stop the practice at once, it reduced the area of cultivation to a considerable level.¹⁰

European writings have found the climate of the East not only different but also disagreeable. The heat of the land was considered oppressive and debilitating. Therefore the image of the East was the one where fortunes might be made quickly but would not ensure an enjoyable, long and healthy life.¹¹ Among the countries of the Madras Presidency Canara was considered as the most difficult to manage. Hot climate was not only looked upon as the conveyer of diseases but also degeneration of mind and body. The most suitable way of escaping from the hot, disease-ridden land was to retreat to the hills. The one nearby was that of Kudremukh Sanatorium which was above 6000 feet from the sea level. There were three bungalows, one for the Collector of Canara, and the other two for the missionaries of Basel and the Jesuits respectively. Nilgiris and Coorg were other hill-stations where the Europeans spent their vacation to escape the boiling heat in the plains.

Once the issues of law and order and maintenance of the newly conquered territories were addressed, the other questions of control were taken up. In the latter half of the nineteenth century a new kind of knowledge of Indian social world was projected through *Manuals* and *Gazetteers*. The subjects such as marriage systems and kinship patterns, funeral rituals, adherence to Brahmanical priesthood and principle, clothing, and the geographical distribution of different groups have taken more space in such writings.¹² Ethnology became a compulsory subject in which caste and tribes were recorded. By 1891 racial theory was projected in the Census which became the basis for understanding caste system. The people were divided as Aryan and Dravidian races, martial

and criminal races and certain habits and customs were fixed to each of the category. Anthropometric investigations were made to categorize different caste people in different physical appearance. The works of Risley and Edgar Thurston put a stamp of authority on such ideas.

Desegregation of Indian society was a part of the colonial policy of 'divide and rule'. They needed the support of those who were loyal and whose skills and manpower could be mobilized in the service of the colonial government. At the same time they were also eager to identify those who remained unreconciled or hostile to the colonial interest.¹³ This type of pigeon-holing the people led to the creation of stereotypes, which have come to stay. Individual was not bothered about anything but his caste: if a man was a Brahmin, and Brahmin had certain characteristics¹⁴ and so on. Brahmins of South India were treated as a degenerated community in race and complexion. This was because of the admixture of the races. Therefore, the majority of the Brahmins in the south did not perform the intellectual duty of studying the Vedas or perform priestly functions. Only a few did. In Canara only Saraswat Brahmins were recognized as the most enterprising class. They had a fair complexion and handsome features, their readiness to adapt themselves to the requirements of the day led them to occupy the government posts and emerge as eminent personalities in the society like writers, shopkeepers and teachers.¹⁵ For the missionaries a Brahmin convert represented quality and a low caste, quantity.¹⁶ Conversion of a Brahmin was always celebrated, as it was considered as the greatest achievement of the 'mission'.

The categorisation of Indian people into martial and non- martial races has become one of the persistent legacies of British rule after the Mutiny. Most of the British writings averred that martial races could be found among the original white races and that the Aryans provided the most favoured martial races. However, among the south Indian population some classes, for administrative convenience, were raised to the status of the martial races though not equal to north Indians. Nairs and Mappilas of Malabar, Coorgs in Kodagu and Bunts of South Canara were given the status of the martial races in the Western part of

South India. According to the *Manual*, originally Bunts were a military class corresponding to the Nayars of Malabar, and the use of the term Nadava was associated with the Nad or territory.¹⁷ Comparison of the Bunts with Nayars is significant because Nayars in the eyes of colonial rulers had not only their warrior tradition but they were also the defenders of *status quo*.¹⁸

In the official circles there was a growing conviction that the untouchables were 'habitual criminals' and therefore should not be recruited in the Police force. Such castes could only be reformed by stringent measures of punishment and "rehabilitation." These ideas find expression in the *Manuals* and *Gazetteers* published after 1860.¹⁹ Dharma Kumar points out that there were nearly ten percent slave castes in South Kanara, available for agricultural work. She further states that local servitude had official blessings for its use in administration and industry. It was also suggested, apparently for the same reason, that Holeyas should be stopped from enlisting in the army.²⁰

The colonial writings have always tended to justify their rule in Canara, which was supposed to bring an end to the misery, and restore peace, among the people of Canara. It was necessary to instill faith among themselves as well as in those whom they governed.²¹ Therefore, in their writings, the rulers they defeated and replaced always appeared as villains who brought misery to the masses. They pointed out that prior to their take over in Canara, there was rapidly changing succession of dynasties and the rulers and the havocs played by them which brought the suffering to the people of the land. It was only during the British rule that there had been any thing like a steady administration.²² Thus the British projected themselves as the redeemers of the fanatic atrocities of the former usurpers to restore peace and prosperity of the country. At the same time they rejected the claims of local rajas of Tulunadu to restore them to power by discarding them as mere opportunist Zamindars.

Land revenue formed the major debate in the early administration of Canara. In spite of the accusation on the former regime on high assessment the colonial government never made any attempt to reduce it. Instead, it justified the enhancement of revenue under the pretext of prosperity of the land during the

colonial regime. Over assessment of revenue brought hardship on the farmers which resulted in peasant revolt in 1831 and in 1837. But they played down such revolts in the colonial literature by placing a veil on the real nature of the colonial rule.

In order to achieve the evangelistic and civilizing objectives, the Protestant missionaries focused on the negative aspect of the Indian religions. The term 'Hindu' was used in the negative sense to denote the 'other', which contrasted with the 'Self' or the European Orientalists. Swayed by their own theological presuppositions and the sense of cultural as well as religious superiority they condemned Hinduism as a degrading religion. The missionaries had recognized and depended on the textual presence of Hinduism. The Protestant emphasis on the 'text' as an authoritative representation of religion had made them look for similar features in Indian religion. Historical verifiability of the incarnation of Hindu gods was one of the obsessive concerns of the missionaries. They rejected the miracles of these gods as they are undatable, and discarded the ancient Hindu scriptures as a collection of legends and fantasy. For the missionaries, all Hindu gods, were false gods, inefficient, corrupt and involved in adultery. For them, Hindu *Shastras* were imaginations of man and hence immoral. They do not show the true path for salvation. They merely confuse people and show several ways and direct the sinners to the wilderness. The only way out of this degradation is to renounce such decaying religion and embrace Christianity.

Equating the Bhuta cult to Devil worship was part of the missionary project in Canara. Bloody sacrifices and cruelty is linked with this worship. According to them fear of evils is the major motive behind Bhuta worship. The Christian exponents of faith firmly believed that the religion of the early man was no religion at all, because a true religion would reduce fear and drive away superstitions. Christianity was the only religion which would not create fear in its believers. Thus the European writers tried to show the contrast between the Christian God who loved humanity immensely and the demons of the Dravidians who haunted and punished human beings. Such practices were attributed to the low caste Dravidians who had no connection with the Brahmanical rituals. Such

narration also projected the Tuluvas as primitive people. The ugly appearance of the man who performed these rites was also pointed out to mark the contrast with the civilized religions. Such religious practices were compared with the pre Christian Europe which was conquered by Christianity and the missionaries hoped that the same miracles would be repeated in Tulunadu. The missionaries were constantly at war with the ubiquitous demons of Tulunadu, whose conquest became the precondition of their success. Thus the Bhutas of Tulunadu were likened to Devil not only to show that they were unworthy of worship but also to represent the hegemony which Christianity should put an end to in order to announce the triumph of God and the Gospel.

The missionaries in Canara thought it necessary to excite the minds of the natives and correct their ideas according to the requirements of 'God'. Therefore they took up the task of preaching Bible in bazaars, streets and even in 'heathen' festivals. However, they realized soon that the work of preaching was not yielding any expected result. It was painfully slow. The missionary literature always complained of the hurdles in this task; they found opposition from the upper castes, educated elites, rival factions like Jesuits and of course, the conciliatory policy of the colonial government on 'heathen' religious practices. The missionaries thought that they would not be able to handle such work without the native help. Therefore, they selected native assistants to work under their supervision. The status of the native assistants in the mission and the European attitude towards them resembled the position of Indians in the colonial administration. Other than preaching, they established schools, medical centres and press as means of spreading 'Good News' among the 'heathen'.

When the number of converts increased, the missionaries found it necessary to cater to their spiritual needs, which, they found far more difficult than preaching. They made frequent complaints that the congregation was lethargic to spirituality. They often realized that the changes among their converts were only skin-deep and that they often felt discouraged when they saw the native Christians clinging to their old ways and habits. Christianity, for them, was larger in body but smaller in heart. Some times it remained only as something that distinguished them from their neighbours. The missionaries found that there

were heathen residues which neophytes still clung to. They pointed that in the Dravidian religion demonolatry and sorcery were the chief moving power to which the Brahmanical religion provided only an out-ward gloss. Among the neophytes the missionaries saw the continuation of several cases of sorcery in Malabar and in the Tulu churches. They referred the sickness to the astrologer who was called to use his spells and charms and they administered the medicine given by him, prepared under incantations. The missionaries even forced their converts to give up impertinent occupations such as toddy tapping. Continuation of heathen practices and exposure to temptations among the native Christians irritated them. Therefore, the missionaries found the need to tame the neophytes in true Christian sense of the West. Disciplining the congregation formed an important agenda of the missionary activities in Canara. Denial of Lords Supper, making them to sit in the punishment benches and excommunicating the defaulters were looked upon as effective methods of controlling the congregation. Thus the missionaries only remained as teachers who commanded from above and punished members of the congregation when they disobeyed them. They always kept a distance from the native congregation even though they proclaimed that the natives were brought to the brotherhood of Christ. There was also a feeling among the missionaries that they belonged to the ruling nation or, at least, the ruling race.²³ There is no single case of a German missionary marrying a native Christian. Probably it was beyond the imagination of Germans. Not only the congregation but also the native pastors were racially discriminated in Canara. The missionaries believed that they knew what was best for the heathens and the Christian converts. But they found that their task was frustrated by the society and the character of the people they were commissioned to work with.

European writings on the Tulu country are as rich as they are varied. They reflect the different moods and compulsions of the colonial rule in its primary aspect of administration, and more interestingly, in its secondary, but no less involved, concerns of the missionaries. These writings indeed are a web of manifold responses, which are rooted in the foreignness of the foreign rule, trying to negotiate with the need to get closer to the subjects who yet had to be placed at a measure of distance. This dilemma, though at times resolved at the

individual level, is always present in the colonial writings, and the case of the little Tulu country is no exception. The colonial project in Tulunadu is reflected in the European writings as a miniature of the larger scenario. The portrayal of conquest as redemption is typical of colonial historiographical idiom. It is a kind of self-righteous, self-appraisal which accompanies the colonial progress. The ideology itself cannot be separated from the performance, while the performance produced, and itself consisted of, the ideology.

The missionary presence in Canara offers to us certain interesting parallels to the colonial predicament. The European-ness and its accompanying sense of superiority were always associated with the missionary efforts. The hope that the magic touch of the true religion would transform savages into civilized beings was often frustrated. Not only in terms of the numbers but also in the quality they revealed, the missionary balance-sheet was seen as less than flattering. Their terrain itself was seen as something of a battlefield. They did indeed exert well to acquaint themselves with the religions of the natives. But it had to be combated and evicted before the regime of the true Gospel could be established. Missionary writings are full of this crusading mood.

These writings reveal many hues of hopes, conceits, frustrations, romantic visions and downright prejudices. They not only reflect several official and institutional stances but also unfold many personal preferences and predicaments of individual actors and victims, which do not necessarily gel with the received picture of colonial domination. But together they show the complexities of colonial experience in Tulunadu.

NOTE

¹ Mathew H. Edney, *Mapping an Empire*, New Delhi: Oxford, 1999, p.3.

² G. R. Gleig, *Life of Sir Thomas Munro*, London: Revised and condensed edition, 1861, pp.127-128.

³ *Census of India*: Madras Imperial Series, 1911, Vol. XV, p.1

⁴ Gleig, *op.cit.*, pp.141-142.

⁵ *Ibid.*, p.142.

⁶ *Ibid.*, pp.132-133.

⁷ Alexander J. Arbuthnot, Major General Sir Thomas Munro, Governor of Madras:

Selection from His minutes and other official writings, Madras, 1886, p.90.

⁸ Sturrock, *op.cit.*, p.16.

⁹ Jacques Pouchepadass, 'British Attitudes Towards Shifting Cultivation in Colonial South India: A Case Study of South Canara District 1800-1920', in David Arnold and Ramachandra Guha, Eds., *Nature, Culture and Imperialism: Essays on the Environmental History of South Asia*, Oxford University Press, New Delhi, 1998, p.133.

¹⁰ . Sturrock, *Madras District Manuals: South Canara*, Vol. I., Madras, 1894, p.17; Also see Jacques Pouchepadass, *op.cit.*, pp.143-144

¹¹ Thomas R. Metcalf, *Ideologies of the Raj: The New Cambridge History of India*, III.4, New Delhi: Cambridge University Press, 1995, p.171

¹² Nicholas B. Dirks, *Castes of Mind: Colonialism and the making of Modern India*, Permanent Black, Delhi, 2003, pp.45-46.

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¹⁴ Bernard Cohn, 'Notes on the history of the study of Indian Society and Culture', in Milton Singer and Bernard Cohn, eds., *Structure and Change in Indian Society*, Chicago, 1968, p.15.

¹⁵ Sturrock, *op.cit.*, p.154

¹⁶ Dick Kooiman, *Conversion and Social Equality in India: London Missionary Society in South Travancore in the 19th Century*, New Delhi: Manohar, 1989, pp.176-177

¹⁷ Sturrock, *op.cit.*, p.157.

¹⁸ David Arnold, 'Bureaucratic Recruitment and Subordination in Colonial India: The Madras Constabulary', in Ranjith Guha, Ed., *Subaltern Studies* Vol. IV, New Delhi: Oxford University Press, 1985, p.13.

¹⁹ *Ibid.*, pp.6-7.

²⁰ Dharma Kumar, *Land and Caste in South India*, Cambridge, 1965, p. 67

²¹ B. Surendra Rao, 'South Kanara in the 19th Century: Contradictions in the Colonial Discourse' in B. SurendraRao and K. Chinnappa Gowda, Ed., *The Retrieved Acre: Nature and Culture in the World of the Tuluva*, Mangalagangothri: Prasaraanga, 2003, p.104.

²² R. D. N. Simham, *Civic Survey of Mangalore Municipality, 1929: A Study of Local and Civic Conditions in Mangalore Town*, Mangalore Municipal Council, 1930, p.5.

²³ Kooiman, *op.cit.*, 1989, p.44.

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SAGUNA AS A PROTOTYPE OF FEMINIST RESISTANCE TO EVANGELIC DISCOURSE

–Sylvia Rego

ABSTRACT

Saguna, the first Autobiographical Novel in English by an Indian Woman was written by Krupabai Sattianadhan in the nineteenth century. It raises some very significant issues that are related to women even in the twenty-first century. Notions of gender and normative femininity, choice of career, simmering tensions related to race, caste, nation and religion abound in the text. This article hopes to explore some of these concepts from the perspective of Christianity, the religion to which her Brahmin parents had converted. The supposed egalitarianism of the adopted religion and the actual practices that were dominated by hierarchies and patriarchal notions are analysed in the current article. It also deals with the ways in which Saguna/Krupabai carved a narratorial space for herself that was emancipatory and enabling.

Key Words: polyphonic voices, subterranean, transgression, paternalism, Victorian domesticity, fragmented self, performative, androcentric

Krupabai Sattianadhan's autobiographical novel *Saguna* is one of the earliest of its kind to be written in English by an Indian woman. It incorporates within itself the features of both genres and can be seen as a record of native Christian life in the nineteenth century. The polyphonic and contestatory nature of this autobiographical novel that engaged itself with the complexities of contemporary evangelic discourse was however sought to be sanitised, domesticated and recuperated within a hagiographic representation of the text on account of the reviews and the preface that framed it in its original publication.¹ However, a close reading of *Saguna* reveals the multiple shades of meanings that simmer within it and which gesture towards what Patricia Meyer Spacks calls the 'subterranean' selves lying encoded within a seemingly normative femininity.² Like other Christian converts like Cornelia Sorabjee and Pandita Ramabai, Krupabai

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occupies a liminal space in the interstices of conflicting cultural identities – a ‘hybrid’ performing multivalent roles governed by the turbulence of a transitional stage between colonial modernity and native tradition. Krupabai’s nuanced writing of the self, though fictionalised, reveals rich shades of complexity and ambivalence that renders any facile interpretation of categories of race, community and gender difficult. As she negotiates the tortuous terrain of crafting a narrative selfhood connoting a unified personality, the text simmers with deeper layers that gesture towards other selves – the exilic, the nostalgic, the Brahminic, the evangelist-skeptic, the nationalist-anglophile and feminist to name a few. This article is largely restricted to the influence of Christianity and evangelism as seen in the converts in *Saguna*.

The missionaries in Western India as elsewhere launched a frontal attack on heathenism to dispel the native ‘darkness’, through the ‘light’ of Christianity by hectic efforts to study the vernacular languages, translate Sanskrit texts including the Vedas, circulate tracts and pamphlets, preach in bazaars and on streets, visit native homes and open bookshops disseminating Christian tenets. They mounted a trenchant attack on what they perceived as the superstitious, pantheistic and idolatrous attributes of popular Hinduism and severely condemned the belief in the caste system with its inegalitarian hierarchies, karmic fatality and patriarchal oppressions.³ However, the missionaries too were susceptible to the insidious effect of caste denominations in that they coveted the souls of upper caste men, or ‘trophies’ as Robert Frykenberg puts it,⁴ which would endorse the superiority of Christianity and thereby ensure large conversions from other castes. That they failed in their aspirations and had to settle for souls of lesser mortals often lured by concerns other than purely religious ones as seen in *Saguna* is another matter. The racist and hierarchical nature of the relationship between the native Christians and the white missionaries usually expected the co-option of the former within a larger imperial agenda, as manifested in *Saguna*.

Another instance of ambivalence seen in the evangelists was the contradictory nature of the professed egalitarianism between men and women and the actual discriminations that were practised. One area where the missionaries appropriated the civilising mission of the British government was the rhetoric of the degraded

status of native women which in a way legitimized both colonial rule and the imposition of an alien religion on the subjects. Almost every other missionary text of the times validates christianisation of the country through the upliftment of the ignorant, coarse-tongued, heathenish native women who nonetheless were supposed to wield such clout in religious matters that even those men inclined towards Christianity would quail before the iron-willed wife and mother, steeped in orthodoxy.⁵ The new dispensation of Christianity however, did not rupture existing gender equations radically, as is evident in *Saguna*. It never sought to empower women with a freedom that might encourage them to throw off the yoke of patriarchy – of marriage and the domestic sphere, which incidentally, was unabashedly acknowledged by missionaries as their destiny. Women for practical purposes, were not supposed to receive the same kind of education that men got, for that would soon go to their heads and if they were placed low down the socio-economic rungs, it would never do to have a disgruntled educated woman rebelling against domestic strictures.⁶ In fact, quite a few women like Rukhmabai, Tarabai Shinde, Pandita Ramabai, Cornelia Sorabjee and to some extent Krupabai Sattianadhan did indeed prove the truth of missionary fears about the recalcitrant and socially transgressive educated woman.

Hence, a limited curriculum that would make them efficient home-makers and companionate wives was all that was advocated. In fact, foisting a patently Victorian Christian domesticity upon the native women brought in its wake the attendant Christian virtues of passivity, suffering, sacred motherhood, and chastity along with neatness, order, a disciplined work regimen and scrupulous upbringing of children. The institutions, organisations, Victorian notions of femininity and the specific modes of being associated with the Christian West in nineteenth century India were inserted into the lives of ‘reformed’ women or New Women⁷ like Krupabai Sattianadhan in many ways especially since these new modes often coincided ideologically with existing native practices. In fact, nineteenth century India is remarkable for the sculpting and ‘recasting’⁸ of the New Woman through the intertwining discourses of nationalism, colonialism, evangelism and native patriarchy. The emergence of the New Woman is complete with the intertwining of Christian/western reform with the nation’s regeneration through Zenana missions that Krupabai undertakes later on after her marriage. Her brother

Bhasker's exhortation that she help in redeeming the nation's women through her bold endeavours is reined in by his advice that like their elder sister, she should always remain 'modest, gentle, and kind, a real woman' (Saguna, 25). The enlightened New Woman, setting forth to help dispel native darkness is never to exceed her limits, never to transgress social roles. Christianity, nationalism and native patriarchy collude in sculpting her in the necessary virtues of propriety, decorum and humility that were to check the New Woman from ever turning round in challenge on her creators and their ideology.

The hectic evangelism notwithstanding, Christianity did open up new spaces to women with the mobility that inadvertently came as a result of the education of women. These women made strategic use of Christian ways of life to lead more enabling lives, as seen in the autobiography of Krupabai Sattianadhan. The Christian influence in *Saguna* offers a glimpse into the author's dual consciousness as seen in the crafting of her narratorial selfhood. Leslie Fleming says that the 'dual identity' i.e., English and Indian influences of Christian women like Pandita Ramabai Saraswati, Krupabai Sattianadhan and Cornelia Sorabjee gave them 'uniquely complex angles of vision from which to view their own and other women's lives'.⁹

Krupabai's autobiographical novel explores the complex dimensions of conversion as filtered through the narrative perspective of her mother Radhabai and partially through her imaginative filling in of the gaps. It reveals the male prerogative of her father Haripunt, whose decision to convert incidentally, is an autonomous and intellectual one, to hope that his reluctant and orthodox wife Radha would some day see reason and accept Christianity. The reasons advocated for this desired conversion of Radhabai are that, bereft of her husband's protection, who himself was now excommunicated forever as a polluted creature, the Hindu wife would be reduced to a living death under the status of an embittered widow with a shaven head and would become the butt of barbs and social ridicule. Krupabai writes that her mother quivered with rage, shook the door of the room where she was locked up in the missionary's house, and darted looks of anger at her husband like an 'avenging angel' for thus 'degrading' and 'polluting' her, a Brahmin woman (Saguna, 59). Even after her conversion, she is always full of

the 'Hindu notion of things' and for quite some time before she succumbs to the gentle influence of her husband's changed personality under the new Christian dispensation, she is 'rebellious', 'uncontrollable' and clings to her idols, fasts, festivals and other Brahminical practices. Even later on, Radha could never be prevailed upon to give up her orthodox way of wearing a sari. A cultural and religious trauma of dislocation accompanies Radhabai who eventually, as the property and responsibility of her husband, is bound by her *pativrata dharma* to ironically break away from the very Shastras that dictated to her those injunctions on wifely devotion. A similar 'epistemic violence', to use a term made famous by Gayatri Chakravorty Spivak, can be gleaned from the autobiographical writings of Lakshmibai Tilak, wife of the Brahmin convert Narayan Waman Tilak.

Thus the woman's conversion in *Saguna*, which is *fait accompli*, reveals the messy strands of narratorial perspectives that are interwoven into that of Haripunt's – perspectives that include indignant voices – of the wife, the mother, the community, all of which are to be sacrificed eventually, to show a semblance of order, an ironing out of creases. The emotional and cultural upheaval of this turbulent conversion of Haripunt's is shown in the hysterical crowd that surrounds the Mission House. The nationalist ideology of patriotism too is evoked by the desperate Brahmin community to coerce Haripunt into recanting. The reasons cited for their objections to what Haripunt projects as the obvious superiority of Christianity over native Shastras is that it was 'unpatriotic' to embrace what was patently a 'foreign religion', a religion of the 'conquerors' who were *mlecchas*. On finding that her attempt to poison her son has failed (the logic being that it was better to have a dead and 'honoured' son than a disgraced and 'polluted' one who was alive), his mother (representative of the heathenish and ignorant mother of missionary rhetoric) falls at his feet pleading that he kill her rather than reduce her to this pitiable status, bereft of a good name. This account reveals how the strong hold of the ideology of sacred and loving motherhood is by necessity subordinated to the hold of the greater ideology of caste, kinship, community and nation. Killing and being killed become legitimate options now for the honour of the family failing which the entire family faced social chastisement for its defilement. It is this cardinal act of 'heresy' and the charge of treachery towards the nation by one's conversion that makes Krupabai's brother Bhasker

groan under the weight of alienation from one's roots – the binding factor of community from which the converts were now cut off. The fragmented self of the convert Bhasker, clings to hopes of winning over the estranged Brahmin community by vowing to pay the supreme price of giving up his life for the nation as a true patriot who was a 'Brahmin to the backbone' (Saguna, 25). Incidentally, in the case of the conversion of the illustrious Pandita Ramabai, the stridency with which the custodians of nationalism denounced her as a traitor, reveals social repugnance towards women who arrogated to themselves the right to think and act independently and without even the cold comfort of subtle male coercions in their decisions of religious conversion.¹⁰

Krupabai herself in an unconscious expression of Brahminist solidarity with a Bible-woman, resents the condescending way in which a missionary woman Miss Roberts wants to relegate this Bible-woman to the kitchen since it never did to receive 'servants' in the drawing room. In a fervent display of nationalist feeling, Saguna simmers with her own notion of Brahminic patriotism as inhering in the aristocracy that she shared with the poor Brahmin Bible-woman. She also compares the middle-class missionary women who came over from England for a living, to Sudras, thereby revealing shades of caste-pride masquerading as pride in the nation (Saguna, 115). Christian imperialism gets rejected for Brahminic nationalism and the colonising missionary women get equated with upstart low-castes for committing the cardinal racist sin of calling the Brahmin converts 'natives'. This inverse racism reverses the hierarchies between the rulers and the ruled, the 'savage natives' and the 'civilising' evangelists.¹¹ In yet another encounter with a 'fat' and 'ugly' low-caste girl daring to acquire an education at the new missionary institute for girls, Saguna/Krupabai shares a collective sense of indignation with other upper-caste converts at such temerity. Her sense of superiority and the resultant hostility though momentary, is a historically shared resentment at the polluting presence of low-caste students that would often result in the withdrawal of upper-caste students from mission schools. The ingrained sense of pollution and purity are hard to get rid of despite conversion to Christianity and for a moment she struggles with herself before reaching out in compassion to the inconsolable girl (Saguna, 137).

Like Cornelia Sorabjee, Krupabai essays to draw a contrast between the Christian and the Hindu ways of life. If Radhabai the child-wife had had to suffer harsh disciplining and torture in her Hindu home under her ignorant mother-in-law and was consistently ignored by her husband, there was a now a transformation in her conjugal relationship, based on the Christian tenet of equality, love and companionship. The ‘unnatural fetters of custom’ which demanded that a Hindu husband feign aloofness towards his wife in order to demonstrate his loyalty to his elders, now fall away. She writes: ‘they met and talked with the freedom of children’ (Saguna, 62). Krupabai’s sense of superiority as a refined person brought up in a proper Christian atmosphere is also evident in the way she pities the Hindu girls and their parents for their ‘impoverished, stunted minds’ that make them ‘flippant’, ‘vain’ and ‘stupidly proud of their hoarded gold and jewels’. Writing in the fashion of evangelists that ‘these daughters of India’ are in dire need of reform, she distances herself from them with the words that the ‘refined, civilised mind shudders or looks down with pity’ on their displays of wealth as a ‘relic of savagery’ (Saguna, 37). She also sees Christianity as heralding a new order, a new dawn that dispels the darkness of the primitive and heathen Hindu world - a world which was ‘shadowy, dark, mystic, weird, with superstition and bigotry lurking in every corner’ (Saguna, 23). With the arrival of Christianity, it is possible for the converts to see nature in a new light, as seen in literary works of Wordsworth and Milton and which is reflected in *Saguna*. Gauri Vishwanathan’s analysis of the role of missionaries in indirectly disseminating Christianity through the advocacy of English literature in the higher classes where the upper caste pupils were bound to be influenced,¹² is also seen in the way Bhasker goes into raptures over Milton’s works that manifested the role of God in nature’s grandeur. *Paradise Lost* and other works thus effectively become vehicles to proclaim Christianity.

This however, should not be taken as representative of her autobiography since it is also redeemed by Krupabai’s sensitive and finely etched descriptions of regional history in the form of what Meenakshi Mukherjee calls ‘*sthalapuranas*’.¹³ Besides, *Saguna* also offers nuanced views of the life of native Christians that makes it difficult for critics to summarily dismiss her as an orientalist/evangelist for some of the more stereotypical expressions in the text.

Saguna offers vignettes into the aspirations of native Christian girls, outcast from the Hindu fold. Some of them are brought up on sentimental English novels that the girls identify with readily in order to escape acknowledging the dreariness of their lives as a miniscule community alienated from the mainstream. Her friend Prema spoke English as her mother tongue, called her parents *Pa* and *Ma*, went to a European school and explained to the much younger Saguna : ‘Young ladies wear *long trains* and not *short skirts*’. Krupabai however has no such glorious illusions about native Christian life and bluntly pens thus: ‘the native Christian community was very small...there was no society to speak of, neither *long skirts* nor *short skirts*. Her mother wore a *saree*’ (Saguna, 80). This ‘unconscious imitation of English customs and manners’ was, she felt, practised by the rising native Christians as well as the aspiring Hindu community as ‘necessary concomitants of a higher stage of civilisation.’ She maintains a level-headed distance from such mimicry of the West and advocates a balanced acceptance of tradition and modernity. She writes: ‘I sincerely hope that my countrywomen, and for the matter of that, my countrymen also, in their eagerness to adopt the new will not give up the good that is in the old’ (Saguna, 80). Krupabai’s *Saguna* has to be taken also as a legitimate and historical expression of burning contemporary issues that churned the intellect and faith of educated natives including many in Western India. Nor is it bereft of complex and agonising bouts of skepticism and soul-searching that threatened to fissure her very identity as a Christian. She is not immune to the influence of European radicals of the day who doubted the divinity of Christ and the foundational tenets of Christianity. As observed by Rosalind O’Hanlon, native intellectuals exposed to works of European radicals learnt not to accept arbitrary religious texts but to base their deism on ethics and moral conduct revolving around ‘the simple idea of human reciprocity’.¹⁴ *Saguna* reveals the ways in which Krupabai mentally wrestles with her faith, endeavouring to base it on a seemingly paradoxical and conflictual process of ratiocination that threatened to submerge her in the tide of religious doubt sweeping across Europe. She writes that even earlier on, she had tried to brush aside such claims of the ‘scoffing professors’ that ‘Christianity was a myth’ as ‘the ‘foolishness of wise men’. Now when it was no longer possible for her to escape confronting her own hidden ghosts of doubt and confusion, she wonders if Christ was merely human

like her after all, 'full of dismal failures'. However, she gives a neat narrative closure to this episode with a reiteration of her abiding faith in Christ.

She also portrays the differing degrees of firmness in native Christian faith, with the intensity waning as one descended the caste ladder. She is repulsed by the shallow faith of poor low-caste converts who nostalgically speak of the tea, milk, money and clothes that they obtained under the early missionaries and which they accused were now sold by the present bunch of missionaries who were more interested in fields, harvests and weather-forecasts than on improving the lot of the poor Christians. They resent the missionary efforts to discipline them into the new order signaled by Christianity (Saguna, 104-105). Krupabai's initial excitement at visiting this Christian colony of low-caste converts at Vishrampoor can be seen as the longing of the exile cast adrift from the original Hindu/Brahmin fold, for a firm rooting in a community bond – the bonding of the 'foreigner who discovers a colony of his own people in some strange land', as she exclaims (Saguna, 94). Understanding that there might well be a material dimension to conversion is unpalatable to her fervent spirit as an upper-caste convert.

The racial tension is again brought out in the curt and condescending manner in which her mother is received by the white missionary who was 'accustomed only to the visits of native Christians around who came to him always for help of some kind'. The wide chasm in cultural codes not shared by the two races including clothes, language and manners also aggravated the existing sense of racial superiority of the white missionaries - a superiority that her mother meekly accepts as natural and in keeping with the order of things. Feeling a keen sense of inadequacy at her own poor clothes and smarting from the supercilious looks thrown at them, Krupabai/Saguna cries out to her mother; 'Don't you ever take me to a missionary's house again' (Saguna, 99). The autobiography reveals the inbuilt sense of material, racial and moral superiority displayed by the white missionaries towards the low-caste converts. The latter are stereotyped as being inherently dishonest and in constant need of being lectured to on how to lead their lives. They are plied with readings from the Bible and discourses that exhort them not to lie and cheat. She writes that the 'discourses were interspersed with

a great deal of 'Do you hear?' 'Do you understand?' This inescapable hierarchy is yet again maintained in the paternalistic treatment meted out to the natives, who were seen as being akin to children now, in the salutations that were dutifully offered to the missionary couple at prayer meetings: 'Salaam! Papa, Salaam! Mamma!' The yawning gap between them is also carefully maintained in the different seating arrangements to signal social and racial superiority at the prayer services (Saguna, 100). The earlier animosity of the European missionary towards her family now gives way to a deliberate alignment with the upper-caste converts in the way the two now share chairs on the same platform and place themselves on a higher footing than the low-caste converts occupying the humbler benches below. Pointing out this discrepancy between the professed egalitarianism of Christianity and the reality of shifting power alignments practised by the white missionaries, Krupabai registers her sense of unease at such displays. The autobiography also reveals the strategies used by the natives to cope with such power structures in the way they gossiped freely about the missionaries behind their backs and irreverently mimicked their mannerisms to show that the performative aspects of being 'good' Christians were undercut by their irrepressible native wit.

The whole text of her autobiography is thus laced with an oblique critique of some aspects of Christianity, though it was sought to be recuperated within the fold of faithful Christianity during her own time. For instance, the vast gulf that separated the native Christians from the race of white civilising missionaries is vividly depicted in the autobiography. She astutely sketches the skewed power relation that existed between the natives and the European missionaries that gave rise to overt and covert shades of resentment and suspicion on both sides, ending on one occasion in the burning of a missionary's haystack.

That conversion alone to Christianity could never help a native woman overcome ingrained racial, religious and gender bias towards her aspirations for a higher life is seen from the author's own heroic efforts to pursue an unconventional career for women i.e., medicine. *Saguna* shows the tremendous alignment of racial power, money and masculine superiority invested in the missionary Mr. A who could make or mar her career, not the least as a spiritual

mentor. This missionary who had once seemed to her like an angel of mercy and a true man of God, now appears cold and calculating as he personifies western male superiority in denying her the sponsorship to study medicine in England. The reason, one that was frequently trotted out to curb native talent was that as a woman and as an Indian, her constitution would not withstand the strain of intensive study in an alien land. Besides, he unabashedly admits to the Christian reservation about the acceptable careers that a woman could choose. He says: 'The feeling even in England is very strong against a girl learning medicine, and here it is stronger still. You will have to bear a great deal' (Saguna, 151). He reminds her that she would have to 'brave opposition, loneliness and life in a strange place and among strangers'. Her impatient reply is 'Oh, never mind about that. I will bear anything.' But the feeling that the whole world despised her and had forsaken her for her transgression haunts her throughout the lonely train journey to the medical college. Her 'unruliness' in failing to select a curriculum more appropriate for a good Christian woman whose destiny was supposed to be marriage, alienates her from her peers and superiors.

However, the incipient feminism revealed in her choice of career and her fiery retort to her suitors against marriage as the goal towards which every girl ought to strive, is finally subsumed within the Christian normative of the feminine. However, her choice of partner for her marriage is her own. The ambivalence of the diverse conflicting and overlapping perspectives that are tortuously registered in her recuperation within domesticity also reveal the ways in which she uses Christian notions of 'sacrifice' in the rather tame ending of her glorious dreams of independent work for the nation. Her feminism is perceived as egoistic 'selfishness' which therefore has to be contained within this discourse of Christian sacrifice. Her cooption into Victorian Christian domesticity simultaneously reveals the compulsions within an androcentric Christian world to which she capitulates and the strategic assertion of her own needs – affective, social and sexual within a society paranoid towards overtly radical and feminist gestures.

As seen in other autobiographies, *Saguna* too points towards the changes wrought in a woman's consciousness by Christian education. The sense of orderliness, importance of following rules and the scheduled ways in which every

activity in the students' lives was structured by systematically organised units of time and space was typical of Christian schools as is seen in the new foreign missionary institute that Krupabai went to. Gender and Christianity were both to be seen as a performative – an act of 'doing' that would meet with social and religious approval. Such an organisation of one's life in the name of Christian dedication and discipline is unappealing to the rebellious and disorderly Krupabai/Saguna, used as she is to a wild and an independent life in the midst of nature. It is this independent streak that her mother wishes to see curbed and tamed in the Christian institute – a spirit that refused to comply with accepted gender roles. The mother hopes that here she would be groomed into the Christian normative of femininity like other compliant girls of her age. The production of 'docile' female bodies under the Christian dispensation is achieved also by curbing any act that signaled one's difference and recalcitrance. Thus a few moments spent alone in the moonlight apparently 'idling' one's time, is interpreted as a transgressive act. She is coldly informed: 'You are not supposed to be doing nothing at this time; go inside and do something' (Saguna, 128). A good Christian woman not only had to make the best use of her time, but even when obviously not doing anything earth-shattering, had to at least appear to be engrossed in some work, however trivial it might be. The two European missionary women with whom she is made to board earlier on for some time in order that she be rendered more socially acceptable, tell her as much. But Krupabai in her typical forthrightness fails to see the point in such pretence where a 'good' Christian woman had to seem busy with mindless needle-work that would keep them out of trouble and away from the real world of public affairs dominated by men.

Saguna is thus dense with many other complex signifiers that gesture towards a contested space that she struggles to create for herself, often in opposition to established and approved modes of being or rather, 'doing' Christian. The text is a rich documentation of her resistance to the entrenched performative aspects of a 'good' Christian life, replete with exhibitions of devout Bible reading sessions, unquestioning and regular attendance at Church service and an overtly appreciative participation in the prayer/Gospel meetings at the missionary institute where she was put up. Her profound bond with Christ makes her turn privately to Him in every crisis and in every happy moment spent in the midst of nature which for

her is a sublime manifestation of God's grandeur. Yet, in the shallow ways of professing Christianity as mentioned above, she is found wanting. On one occasion she tries desperately to convince herself that she was ailing when the truth, as a very radical American missionary doctor put it, was that she would prefer to utilise her time in better things than to register her presence at enervating Church services that had nothing to offer to her keen intellect and faith. She is stunned at being accused of being 'ungodly' and falling prey to the devil who, like those people professing intellectual superiority, was himself said to be very clever. Small transgressions like the ones Krupabai attempted are sought thus to be contained by a liberal invocation of a register of words including 'ungodly', 'sin' and 'devil' to evoke spiritual guilt pangs at one's difference from the rest (Saguna, 132). In spite of these efforts to thwart her assertion of self in religious matters, she is filled with admiration for the recalcitrant missionary doctor who breaks every unwritten rule in the code of conduct for pious Christian women and chooses to nonchalantly be an authority unto herself.

The autobiography does not spare the elite native Christian men either in its satiric critique of many of her suitors. The autobiography captures in fine detail the affectations and superficially westernised ways of educated Christian men, disenchanted with traditional native life and not truly belonging to the West either. Their patriarchal mindset regarding the proper sphere of a woman's life had not changed in any way, despite their education because there was essentially no major contradiction to this enculturated view even in Christianity. On the contrary, the two converged conveniently on the issue of gender roles and education. If the pretentious doctor-suitor patronisingly tells her that only those girls who could not find suitable husbands like himself needed to study and work for a living, the student-suitor jeers at her aspirations for a higher intellectual life by suggesting that getting married was all the education that a girl really needed! She hotly resists such demeaning stereotypes and refuses to become a compliant Christian wife and retorts: 'Marriage is not the goal of every girl's ambition.'

In conclusion, it can be said of this text that her perseverance in perpetuating her own name by sculpting a narratorial self is more a sign of her own distinct flavour of individualism than either a paean to male figures or even a seemingly

innocuous need to document and propagate native Christian faith. It is through her crafting of a female narratorial self that she usurps male privileges of authorship¹⁵ and through which alone the male perspectives of Bhasker and Haripunt are brought to life. Krupabai Sattianadhan's *Saguna* registers the multiplicity of female selfhood as seen in the subterranean identities in the text. She sculpts an alternative concept of female identity that can be read as a challenge to dominant missionary and patriarchal assumptions.

Note:

¹ Parinitha, "Saguna: The Fashioning of the 'New Woman,'" *Journal of the School of Language, Literature and Cultural Studies* (New Delhi: JNU, 2008).

² Patricia Meyer Spacks, *The Female Imagination: A Literary and Psychological Investigation of Women's Writing* (New York: Alfred A. Knopf. Inc., 1973).

³ Rosalind O'Hanlon, *Caste, Conflict, and Ideology: Mahatma Jotirao Phule and Low Caste Protest in Nineteenth-Century Western India* (New Delhi: Orient Longman, 1985).

⁴ Robert Eric Frykenberg, ed. *Christians and Missionaries in India: Cross-Cultural Communications since 1500* (London: Routledge Curzon, 2003) 12-13.

⁵ Jacob Chamberlain, *The Kingdom in India: Its Progress and Promise* (London: Fleming H. Revell Company, 1908) 162.

⁶ "World Missionary Conference, 1910," *Education in Relation to the Christianisation of National Life* (Edinburgh: Oliphant, Anderson & Ferrier, 1910) 48.

⁷ For a more detailed understanding of the idea of the New Woman, see Geraldine Forbes' *The New Cambridge History of India: Women in Modern India*. (Kundli: Replika Pvt. Ltd., 2004).

⁸ Kumkum Sangari and Sudesh Vaid, eds. *Recasting Women: Essays in Colonial History* (New Delhi: Zubaan, 2006).

⁹ Leslie A. Flemming, "Between Two Worlds: Self-Construction and Self-Identity in the Writings of Three Nineteenth-Century Indian Christian Women," *Women as Subjects: South Asian Histories*, ed. Nita Kumar (New Delhi: Stree, 1994) 81-82.

¹⁰ For a brilliant analysis of the life of Pandita Ramabai see Uma Chakravarti, *Rewriting History: The Life and Times of Pandita Ramabai* (New Delhi: Kali for Women, 1998).

¹¹ With the arrival of educated and unemployed white women from middle class backgrounds eager to venture out into the exotic orient in the cause of evangelism, the zenana missions acquired a feminised stamp of fervent piety and imperial legitimacy to advertise western culture among the heathenish women. Kwok Pui-Lan observes ironically that these women missionaries who took upon themselves the less disturbing and more convenient responsibility of advocating native women's emancipation from socio-religious tyrannies were in fact considered conservative by radical political feminists in the West fighting for women's rights. See Kwok Pui-Lan, "The Image of the "White Lady": Gender and Race in Christian Mission," *The Power of Naming: A Concilium Reader in Feminist Liberation Theology* ed. Elisabeth Schussler Fiorenza (N Y: Orbis Books, 1996) 255.

¹² See Gauri Vishwanathan, *Masks of conquest: Literary Study and British Rule in India* (London: Faber and Faber, 1989). She writes that the colonial government used English literature with its strongly Christian contents propounded in the works of Shakespeare, Milton and other writers as 'surrogate religion' that would be edifying for a barbaric people with a defective and immoral national character. As a mask of its imperial cultural hegemony, English literature steeped in Christian values was intended to produce compliant, trustworthy and industrious native workers in the service of the empire.

¹³ Meenakshi Mukherjee, *The Perishable Empire: Essays on Indian Writing in English* (New Delhi: OUP, 2000) 74.

¹⁴ Rosalind O'Hanlon, *Caste, Conflict, and Ideology: Mahatma Jotirao Phule and Low Caste Protest in Nineteenth-Century Western India* 82

¹⁵ Parinitha, "Saguna: The Fashioning of the 'New Woman.'"

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FIDELITY TO LAND AND COMMUNITIES: BERRY'S CRITIQUE OF AMERICAN CULTURAL CRISES

– Alwyn V D'Sa

ABSTRACT

In literary and rhetorical studies, the study of nature writing reveals some of the ways that language and literature reflect and shape our relationships with the non-human world. It helps us to see how language comes from the earth and how our attempts to understand and explain natural phenomena result in some of our most fundamental and powerful cultural metaphors. Good narratives not only convey facts but also indicate something about the significance of those facts. One of the nature writers who has consistently been writing narratives of this sort and insisting upon an 'organic culture' just by being faithful to nature is Wendell Berry. From the corpus of the writings of Berry, we can describe him as a farmer, a poet, a novelist, an essayist, and a teacher. But most of the scholars in nature writing would just call him "a lover of the land." Both his writings and way of life are replete with a deep sense of respect, appreciation and love for the land.

Key Words: *Literature, nature writings, relationships, cultural metaphors, Organic Culture, respect, appreciation, love for the Land.*

Wendell Berry's agenda seems to be one of strengthening the ties between human beings and the land. As we make a close study of his seminal works, we find that he was impelled to join the movement in America that works towards 'reclaiming' land. It is obvious that this Kentucky farmer does not, in any way, become a party to harming nature and its balance. In this paper, the major literary works of Wendell Berry have been considered to assess the contrasting approaches that have infused the ensemble of American Nature Writing. Berry emerges as a scholar-activist who vehemently denounces modern technology and agri-business which has been ruining the land and its fertility for years. He does not apparently sound like a missionary for the cause of preserving land and

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communities, his works provide ample insights into the organic dimension of nature and emphasize the mutual interdependence between land and human communities. Some of the works of fiction by Berry are *Nathan Coulter* (1960), *A Place on Earth* (1967), and *The Memory of Old Jack* (1974). Besides, a study will be made of his collection of essays like *A Continuous Harmony* (1972), and *The Unsettling of America* (1977).

Wendell Berry believes that management of ecology is quite similar to effective economic management of a household. If it is accepted, then we have a system of national accounting that bears no resemblance to the national economy whatsoever. It is not the record of our life at home, but the fever chart of our consumption. In Berry's opinion, American national economy-the health of which might be indicated by our net national product, derived by subtracting our real losses from our real gains-is perhaps a top secret.

One reason for this is the geographical separation that frequently exists between losses and gains. Agricultural losses occur on the farm and in farming communities, whereas the great gains of agriculture occur in cities, just as the profits from coal are realized mainly in cities far from where the coal is mined. Almost always the profit is realized by people who are under no pressure or obligation to realize the losses, people who are so positioned by wealth and power that they need assign no value at all to what is lost. The cost of soil erosion is not deducted from the profit on a packaged beefsteak, just as the loss of forest, topsoil, and human homes on a Kentucky mountainside does not reduce the profit on a tonne of coal.

If this peculiar estrangement between losses and gains, between products and their real costs, is institutionalized anywhere it is in the ubiquitous word, 'resource'. One definition of this word is close to the meaning of the Latin root of the word, *resurgere*, to rise again. In this sense, a resource is a dependable, which is to that it is in constant supply. A resource, in this sense, rises again as a spring rises, refilling its basin, after a bucket of water has been dipped out. And this is what the topsoil and what the human culture of farming can do under the

right “household management”, the right economy. They replenish themselves. They are self-renewing. They can last as long as the earth and the sun. The right economy, of course, is right insofar as it respects the source, respects the power of the source to resurge.

But there is another, an opposite, definition of resource: “Means that can be used to advantage”. That is the definition of the word as we now use it. Berry comments that in the contemporary scenario, everything is looked upon as a resource of this kind. Every country and states of the world has a Department of Human Resources. In other words, a resource is something that has no value until it has been made into something else. Thus a tree has value only insofar as it can be made into lumber. Schools which are more understood and justified as dispensers of “job training,” are thus based on the implicit principle that children have no value until they have been made into employees.

Common sense suggests that it is not possible to make a good thing out of a bad thing. It is known that it is not possible to prepare a good meal from poor food, to produce good food from poor soil, to maintain good soil without good farming, or to have good farming without a good culture—a culture that places a proper value on the proper maintenance of the natural sources so that the needed resources are constantly available. People know that food is a product, both natural and cultural, and that good cooking must be said to begin with good farming. A good economy would value bodily nourishment in all of its transformations from the topsoil to the dinner table and beyond, for it would place an appropriate value on our excrement too, and would return it to the soil; in a good economy there would be no such thing as “waste”, bodily or otherwise. At every stage of its making, man’s nourishment would be a “finished product” in the sense of being “done with”.

We must also notice that as the natural energy approaches human usability, it passes through a declension of forms less and less complex. A potato is less complex than the topsoil, a steak than a steer, a cooked meal than a farm. If, in the human economy, a squash on the table is worth more than a squash in the

field, and a squash in the field is worth more than a bushel of soil that does not mean that food is more valuable than soil. It means simply that we do not know how to value the soil. In its complexity and, at least its potential longevity, the soil exceeds our comprehension. We do not know how to place a just market value on it, and we are not going to be able to learn how. Its value is inestimable; we must value it, beyond whatever price we put on it, by respecting it, by taking good care of it.

The industrial economy, on the other hand, reduces the value of a thing to its market price, and it sets the market price in accordance with the capacity of a thing to be made into another kind of thing. Thus a farm is valued only for its ability to produce marketable livestock and/or crops; livestock and crops are valued only insofar as they can be manufactured into groceries; groceries are valued only to the extent that they can be sold to consumers. An absolute division is thus made at every stage of the industrial process between “raw materials”, to which, we accord no respect at all, and “finished products”, which we respect only to the extent of their market value. A lot could be said about the quality of the “finish” of these products, but the critical point, here, is that in the industrial economy, value in the form of respect is withheld from the source, and value in the form of price is always determined by reference to a future usability; nothing is valued for what it is.

If we make an overall assessment of the contribution of Wendell Berry to nature writing and the significant difference that he has made in understanding nature and man’s place in it, he comes across as an obvious contrast to other contemporary nature writers in America. Berry is, no doubt, an activist for the cause of nature. His prose is emphatic in its tone and themes and persuades people not to harm ecology any further as he has been doing for the past few decades in Kentucky. He has been versatile in his journalistic writings which voiced his ideology and philosophy of education informing the national education policies and legislations. His poetry has given a perspective to the ideals and principles giving it an imaginative tinge. Though he has a strong religious lineage, his approach is more pragmatic and down-to-earth than the other nature writers

of his time. As we study the whole gamut of his writings, we find that land is a cause rather than a mystical presence demanding our attention and respect. Berry's writings come across as inspirational and provocative enthusing and demanding immediate action. In this sense, they are intensely persuasive in tone and style. Hence he can rightly be called a scholar activist unlike other contemporary American nature writers whose writings expressed deeply mystical attitude towards nature that helps individuals to accept and resign to nature in an incursive exercise.

Contemporary circumstances suggest that, in recent years, concern for the fate of rural communities and the fate of the environment have again become 'pressing' issues. Wendell Berry's work has contributed to the renewed interest in the cause for preserving land and communities. Like Emerson and Thoreau before him, Berry is skeptical about the ability of public schools to direct social change. "Institutions," writes Berry, "unless constrained by the moral vision of the persons in them...move in the direction of power and self-preservation, not high principle" (*The Unsettling of America* 212). Berry, nonetheless, believes that rural schools might contribute more than they do to the well-being of rural society and to the quality of life in America generally. He takes issue with many observers in identifying the shortcomings of modern schooling. He maintains that "the purpose of education in the United States has been to prepare people to 'take their places' in an industrial society" (*The Unsettling of America* 25). He claims that schools are too practical, too intent on creating students who are merely producers and consumers.

In a commencement address delivered in June 1989 at the College of the Atlantic in Bar Harbor, Maine, Berry gave some advice that to most modern graduates would sound old fashioned. But the advice he gave was timeless, and his reminder seems apocalyptic in view of the world's current environmental crisis and, as Berry sees it, America's cultural crisis.

Viewed in the context of Berry's canon, this represents far more than a neo-romantic or agrarian appeal to return to "simplicity." To think of his advice in this

way is to misinterpret it, for it is more of an oracular warning; “either rethink our attitudes toward each other and the natural world,” Berry implores, “or continue on a path toward natural, cultural, and self-annihilation” (*The Unsettling of America* 78). Although Berry’s tenets echo those of many of his literary ancestors in American literature, his advice is more critical than that of his predecessors, for we now more than ever threaten our existence with destructive potentials unimaginable only a few decades ago. Berry explains our critical condition in “The Loss of the Future,” an essay in *The Long-Legged House*:

“We have reached a point at which we must either consciously desire and choose and determine the future of the earth or submit to such an involvement in our destructiveness that the earth, and ourselves with it, must certainly be destroyed. And we have come to this at a time when it is hard, if not impossible, to foresee a future that is not terrifying” (*Long Legged House* 23).

Berry’s work is an ongoing exploration of man’s use of and relationship to the land and his writing constitutes, as Gary Tolliver has said, one man’s “continuing search for avenues of reentry into a proper state of harmony with the natural world” (*Long Legged House*, 46). To proponents of modern “progress,” Berry’s ideas would seem regressive, unrealistic, and radical.

Berry’s life, his farm work, his writing and teaching, his home and family, and all that each involves are extraordinarily integrated. He understands his writing as an attempt to elucidate certain connections, primarily the interrelationships and interdependencies of man and the natural world. One of his premises in *The Unsettling of America* at once evinces his notion of cultural and natural interdependency: “Everything in Creation is related to everything else and dependent on everything else” (*The Unsettling of America*, 98).

The traditional community is one of Berry’s central metaphors for cultural and natural harmony. Such a community is a highly intricate alliance in which individuals function as “parts” of a membership, each depending on and affecting all the others. The traditional community, like the traditional farms within it, is a model of interdependency. Berry explains, “A community is the mental and

spiritual condition of knowing that the place is shared, and that the people who share the place define and limit the possibilities of each other's lives" (*Long Legged House* 61).

People at work in communities three generations old would know that their bodies renewed, time and again, the movements of other bodies, living and dead, known and loved, remembered and loved, in the same shops, houses, and fields. That, of course, is a kind of community dance. And such a dance is perhaps the best way we have to describe harmony (*Long Legged House* 76). Berry uses the dance metaphor throughout his poetry to describe harmony between humans and nature, between the living and the dead of a community, and between members of the living. The music accompanying the dancers is sometimes the music of the spheres, the notes of which are so drawn out they can be heard only over years, decades, even centuries. Other sources of the music are farmers working or whistling a work song in a field, people working together harmoniously in communities, water running in a stream, and rain.

The modern agricultural crisis, as Berry sees it, is a consequence of widening the gap between the way nature farms and the way man farms. Many modern agricultural theories and practices assume universal applications. But such attitudes and practices constitute an affront to Nature, that is, the particular Nature of a particular place. Traditional farmers are sensitive to the particular needs of their farms; through the years and generations they have looked to the Nature of their place to judge which practices, plants, and animals work and thrive the best, given the farm's conditions: "A man ought to study the wilderness of a place" (*Long Legged House* 206). He explains in *The Unsettling of America* that "the land is too various in its kinds, climates, conditions, declivities, aspects, and histories to conform to any generalized understanding or to prosper under generalized treatment.... To treat every field, or every part of every field, with the same consideration is not farming but industry" (*Long Legged House* 31). Farmers, he says in a later essay, "must tend to farms that they know and love, farms small enough to know and love, using tools and methods that they know and love, in the company of neighbors that they know and love" (*Long Legged House*,

86). Thus, Berry stresses that a traditional farmer will always consider and adapt his practices to the needs of the land's primal character. Successful and sustainable agriculture, then, as Berry understands it, is possible only by maintaining a cyclic vision, one attuned with Nature rather than a linear vision that seeks conquest of Nature.

The more a person is removed from the substance of his work, Berry argues, the greater is his tendency to neglect or to ignore it. He says that a traditional farmer "will walk his fields out of interest; the industrial farmer or manager, only out of necessity" (*The Unsettling of America* 91). Traditional care requires a comprehensive, intimate, often passionate knowledge of the Nature of one's place. Berry writes, for example, in *The Unsettling of America*, "A healthy farm culture can be based only upon familiarity and can grow only among a people soundly established upon the land; it nourishes and safeguards a human intelligence of the earth that no amount of technology can satisfactorily replace" (73). Berry is the fifth generation of his father's family and the sixth generation of his mother's to farm in Henry County, Kentucky. Loyal to the cyclic vision, he knows the history of his ancestors on the land, and he understands how each has affected the other.

Berry's artistic vision of agricultural work, then, is diametrically opposed to the industrial vision which maximizes agricultural mechanization in order to minimize human interaction with and care of the land. Separating humans as far as possible from Nature in practice has created a character-killing and "community-killing agriculture, with its monomania of bigness" (*The Unsettling of America* 41).

The modern linear view of progress not only has destroyed many of America's farmlands; it also has been the driving force behind strip mining, deforestation, pollution, and has widened the gap between culture and nature. The current natural resource crisis, in Berry's view, is a direct consequence of our character, and thus the only real hope lies in the change of attitudes. But for such a change to occur and be effective, Berry contends, it must begin on the local level, not

under the guise of national “movements.” Berry says in “The Futility of Global Thinking” that “the civil rights movement has not given us better communities. The women’s movement has not given us better marriages or better households. The environmental movement has not changed our parasitic relationship to nature” (17).

Apart from our suicidal depletion of natural resources, one of Berry’s concerns is that our attitude towards the land necessitates our estrangement from it. Berry has said that “my sense of values comes from what I’m rooted in, what I believe in” (*Ehrlich* 11). To him, Nature, more specifically, the Nature of his particular place, serves as a moral teacher. In “The Nature Consumers,” an essay in *The Long-Legged House*, Berry explains one of the dangers inherent in our longing to separate ourselves from the land:

Man cannot be independent of nature. In one way or another he must live in relation to it, and there are only two alternatives: the way of the frontiersman, whose response to nature was to dominate it, to assert his presence in it by destroying it; or the way of Thoreau, who went to natural places to become quiet in them, to learn from them, to be restored by them. To know these places, because to know them is to need them and respect them and be humble before them is- to preserve them. To fail to know them, (because ignorance can only be greedy of them), is to destroy them (41-42).

Berry’s canon constitutes an urgent call to reevaluate both our use of Nature’s “gifts” and our view of ourselves. And it is a plea to redirect our environmental concerns from the abstract notion of our “planet” to the more grounded, familiar notion of our “place” - our homes and our communities. In one of his addresses, Berry asked the Bar Harbor graduates, “How, after all, can anybody- any particular body-do anything to heal a planet?” and he answered, “Nobody can do anything to heal the planet. The suggestion that anybody could do so is preposterous. The heroes of abstraction keep galloping in on their white horses to save the planet- and they keep falling off in front of the grandstand” (*Futility* 16).

Berry's premise, implicit, often explicit, in almost all of his work, is that we must have a particular place, must identify with it, must learn from it, must love it, must care for it. And only by living in this place long enough, and by attending to the knowledge of those who have lived there before us, will we fully realize the consequences of our presence there: "We may deeply affect a place we own for good or ill," Berry writes, "but our lives are nevertheless included in its life; it will survive us, bearing the results" (*Long Legged House* 143).

Wendell Berry analyses how the farming community has progressively become redundant in the eyes of the state. He refers to the news report of the New York Times to demonstrate his position. In October 1990, *The New York Times* had announced that the United States Census Bureau would "no longer count the number of Americans who live on farms." In explaining the decision, *The Times* provided some figures as troubling as they were unsurprising. Between 1910 and 1920, America had 32 million farmers living on farms-about a third of the population. By 1950, this population had declined, but the farm population was still 23 million. By 1991, the number was only 4.6 million, less than 2 percent of the national population. That is, the farm population had declined by an average of almost half a million people a year for forty-one years. Also, by 1991, 32 percent of the farm managers and 86 percent of our farm workers did not live on the land they farmed. These figures describe a catastrophe that is now virtually complete. These statistics announce that America no longer has an agricultural class that is recognized by the government. The country no longer has a "farm vote" that is going to be of much concern to politicians. American farmers, who over the years have wondered whether they are counted, realized they do not count. Farmers had become statistically insignificant.

The matter of regret is that this statistical insignificance of farmers has been the successful outcome of a national purpose and a national programme of great effort and principles rigorously applied. This result was arrived at with the help of expensive advice from university and government experts, by the tireless agitation and exertion of the agribusiness corporations, and by the renowned advantages of competition-of American farmers among themselves and with

farmers of other countries. As a result, millions of country people have been liberated from farming, landownership, self-employment, and other *idiocies* of rural life. But what has happened to American agricultural communities is not exceptional any more than it is accidental. Berry goes on to speak of the revival of “a century old complaint about large, distant corporations exploiting Montana for its natural resources and then leaving after the land is exhausted” (*Long Legged House* 98) Berry is of the opinion that the same kind of thing is now happening in banking. He gives the example of an independent local bank recently taken over by a large out-of-state bank. Suddenly some of the local farmers and small business people, who had been borrowing money from that bank for twenty years and whose credit records were good, were refused credit because they did not meet the requirements of a computer in a distant city. Old and once-valued customers now find that they are known by *category* rather than *character*. He comments that the directors and officers of the large bank clearly decided to support one large enterprise than many small ones. He reprimands people to see that there is a limit beyond which machines and chemicals cannot replace people; there is a limit beyond which mechanical or economic efficiency cannot replace care and nurture. He is talking here about the common experience, the common fate, of rural communities America. It has also been, and it will increasingly be, the common fate of rural communities in other countries. They are interested in “job creation” only so long as the jobs can be done more cheaply by humans than by machines. They are not interested in the good health-economic or natural or human-of any place on this earth. And if one should undertake to appeal or complain to one of these great corporations on behalf of his/her community, they would discover something most remarkable: we would find that these organizations are organized expressly for the evasion of responsibility. They are structures in which, “the buck never stops.” The buck is processed up the hierarchy until finally it is passed to “the shareholders,” who characteristically are too widely dispersed, too poorly informed, and too unconcerned to be responsible for anything. The ideal of the modern corporation is to be (in terms of its own advantage) anywhere and (in terms of local accountability) nowhere. And this message has

a corollary that is just as plain and just as much ignored: The governmental and educational institutions from which rural people should by right have received help have not helped. Rather than striving to preserve the rural communities and economies and an adequate rural population, these institutions have consistently aided, abetted, and justified the destruction of every part of rural life. They have eagerly served the superstition that all technological innovation is good. They have said repeatedly that the failure of farm families, rural businesses, and rural communities is merely the result of progress and efficiency and is good for everybody. People are now pretty obviously facing the possibility of a world that the supranational corporations, and the governments and educational systems that serve them, will control entirely for their own enrichment-and, incidentally and inescapably, for the impoverishment of all the rest. This will be a world in which the cultures that preserve nature and rural life will simply be disallowed. It will be, as our experience already suggests, a post-agricultural world. But as we now begin to see, one cannot have a post-agricultural world that is not also post-democratic, post-religious, post-natural-in other words, it will be post-human, contrary to the best that we have meant by *humanity*. In their dealings with the countryside and its people, the promoters of the so-called global economy are following a set of principles that can be stated as follows. They believe that a farm or a forest is or ought to be the same as a factory; that care is only minimally necessary in the use of the land; that affection is not necessary at all; that for all practical purposes a machine is as good as a human; that the industrial standards of production, efficiency, and profitability are the only standards that are necessary; that the topsoil is lifeless and inert; that soil biology is safely replaceable by soil chemistry; that the nature or ecology of any given place is irrelevant to the use of it; that there is no value in human community or neighborhood.

These people see nothing odd or difficult about unlimited economic growth or unlimited consumption in a limited world. They believe that knowledge is property and power, and that it ought to be. They believe that education is job training. They think that the summit of human achievement is a high-paying job

that involves no work. Their public boast is that they are making a society in which everybody will be a *winner*-but their private aim has been to reduce radically the number of people who, by the measure of our historical ideals, might be thought successful: the independent, the self-employed, owners of small businesses or small usable properties, those who work at home. The argument for joining the new international trade agreements has been that there is going to be a one-world economy, and one must participate or be left behind-though, obviously, the existence of a one-world economy depends on the willingness of all the world to join, The theory is that under the rule of international, supposedly free trade, products will naturally flow from the places where they can be best produced to the places where they are most needed. This theory assumes the long-term safety and sustainability of massive international transport, for which there are no guarantees, just as there are no guarantees that products will be produced in the best way or to the advantage of the workers who produce them or that they will reach or can be afforded by the people who need them.

There are other unanswered questions about the global economy, two of which are paramount: How can any nation or region justify the destruction of a local productive capacity for the sake of foreign trade? And how can people who have demonstrated their inability to run national economies without inflation, usury, unemployment, and ecological devastation now claim that they can do a better job in running a global economy? American agriculture has demonstrated by its own ruination that you cannot solve economic problems just by increasing scale and, moreover, that increasing scale is almost certain to cause other problems-ecological, social, and cultural.

American people can't go on too much longer, maybe, without considering the likelihood that we humans are not intelligent enough to work on the scale to which we have been tempted by our technological abilities. Some such recognition is undoubtedly implicit in American conservatives' long-standing objection to a big central government. And so it has been odd to see many of these same conservatives pushing for the establishment of a supranational economy that would inevitably function as a government far bigger and more centralized than

any dreamed of before. Long experience has made it clear to the liberals-that to be free we must limit the size of government and we must have some sort of home rule. But it is just as clear-as we might say to the conservatives-that it is foolish to complain about big government if we do not do everything we can to support strong local communities and strong community economies.

But in helping anyone to confront, understand, and oppose the principles of the global economy, the old political alignments have become virtually useless. Communists and capitalists are alike in their contempt for country people, country life, and country places. They have exploited the countryside with equal greed and disregard. They are alike even in their plea that it is right to damage the present in order to make a *better future*. The dialogue of Democrats and Republicans or of liberals and conservatives is likewise useless. Neither party is interested in farmers or in farming or in the good care of the land or in the quality of food. Nor are they interested in taking the best care of forests. The leaders of these parties are equally subservient to the supranational corporations. Of this the North American Free Trade Agreement and the new revisions to the General Agreement on Tariffs and Trade are proof. These are not differences but divisions that ought not to exist because they are to a considerable extent artificial. The so-called urban economy has been just as hard on urban communities as it has been on rural. All these conventional affiliations are now meaningless, useful only to those in a position to profit from public bewilderment. A new political scheme of opposed parties, however, is beginning to take form. This is essentially a two-party system, and it divides over the fundamental issue of community. One of these parties holds that community has no value; the other holds that it does. One is the party of the global economy; the other could be called simply the party of local community. The global party is large, though not populous, immensely powerful and wealthy, self-aware, purposeful, and tightly organized. The community party is only now coming aware of itself; it is widely scattered, highly diverse, small though potentially numerous, weak though latently powerful, and poor though by no means without resources.

We know pretty well the makeup of the party of the global economy, but who are the members of the party of local community? They are people who take a generous and neighborly view of self-preservation; they do not believe that they can survive and flourish by the rule of dog eat dog; they do not believe that they can succeed by defeating or destroying or selling or using up everything but themselves. They doubt that good solutions can be produced by violence. They want to preserve the precious things of nature and of human culture and pass them on to their children. They want the world's fields and forests to be productive; they do not want them to be destroyed for the sake of production. They know you cannot be a democrat (small 'd') or a conservationist and at the same time a proponent of the supranational corporate economy. They believe-they know from their experience-that the neighborhood, the local community, is the proper place and frame of reference for responsible work. 'They see that no commonwealth or community of interest can be defined by greed. They know that things connect-that farming, for example, is connected to nature, and food to farming, and health to food-and they want to preserve the connections. They know that a healthy local community cannot be replaced by a market or an entertainment industry or an information highway. They know that contrary to all the unmeaning and unmeant political talk about "job creation," work ought not to be merely a bone thrown to otherwise unemployed. They know that work ought to be necessary; it ought to be good, it ought to be satisfying and dignifying to the people who do it, and genuinely useful and pleasing to the people for whom it is done.

The party of local community, then, is a real party with a real platform and an agenda of real and doable work. And it has, we might add, a respectable history in the hundreds of efforts, over several decades, to preserve local nature or local health or to sell local products to local consumers. Now such efforts appear to be coming into their own, attracting interest and energy in a way they have not done before. People are seeing more clearly all the time the connections between conservation and economics. They are seeing that a community's health is largely determined by the way it makes its living. The natural membership of the community party consists of small farmers, ranchers, and marker gardeners,

worried consumers, owners and employees of small shops, stores, community banks, and other small businesses, self-employed people, religious people, and conservationists. The aims of this party really are only two: the preservation of ecological diversity and integrity, and the renewal, on sound cultural and ecological principles, of local economies and local communities.

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INVESTOR ATTITUDES TOWARDS STRATEGIC CORPORATE SOCIAL RESPONSIBILITY OF INDIAN COMPANIES

– Vishal Nayak and Sajna Arvind

ABSTRACT

Over the past few years, Indian corporations have viewed corporate social responsibility (CSR) with a more serious outlook than any other period in Indian business history. The returns on such investments can be beneficial in forms that transcend ordinary spheres of regulatory compliance. An investigation into this phenomenon was much called for and hence this study was conducted to determine investor attitudes towards strategic corporate social responsibility of Indian corporations with specific emphasis on investors in Mangalore. It endeavours to uncover important issues like investors' perception of CSR activities of corporations they prefer to invest in and the extent to which CSR activities contribute to investors' decision making process regarding future investments. A sample of 250 participants with at least some knowledge of CSR activities of six major corporations was surveyed. The results revealed that CSR activities of a corporation do contribute to investors' decision making process. The study also indicated that a substantial number of respondents who saw CSR activities of certain corporations as poor also shared the opinion that these corporations had a profit making agenda attached to their CSR activities. Further, the study also revealed that those who saw CSR activities of a certain corporation as good said those CSR activities did not have a profit driven agenda. The percentage of respondents saying they would not buy shares of a company that had no CSR activities was almost similar to the percentage of people saying they would buy the shares of a company which was a profit making venture even if it did not involve in CSR activities. Overall findings suggest it is important for future research to examine the formation of these perceptions more closely.

• **Keywords:** corporate social responsibility, csr activities in India, csr role in consumer attitude.

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INTRODUCTION

In the last twenty years, the relationship between companies, the state and society in India has embarked on a new phase brought about by the emerging emphasis on corporate social responsibility (CSR). From a vague concept twenty years ago, CSR has firmly entrenched itself in the business practices of numerous Indian companies. According to World Bank, corporate social responsibility spending of companies in India for the year 2009-10 was \$7.5 billion (approx. Rs. 30,000 crores).¹ As recently as mid-2012, a Parliamentary panel has recommended that corporate social responsibility must be made mandatory for Indian companies with an annual turnover of Rs. 10,000 crores, with further recommendation that companies earmark two percent of three years' average profit towards CSR activities.² Once passed, the bill will effectively make India the first and the only nation in the world that mandates companies to spend on CSR activities.

European Commission defines CSR as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.”³ Increasingly, companies are beginning to realise that in order to gain strategic advantage, they should look beyond business profits and invest in public goodwill and responsible business activities. The scenario in the Indian market offers a wide scope for Indian companies to display their accountability to society in which they operate. Indian companies now actively engage themselves in causes for the protection of the environment, upliftment of the lesser privileged etc. In fact, companies in India, concerned by the backlash for incidents like Bhopal and Dabhol, already seem eager to engage in CSR spending and create positive perceptions within the local and national community⁴.

Investors form very important strata of stakeholders for all companies across the world. However, research investigating how far CSR can be factor in Indian business scenario is minimal even though it is becoming increasingly imperative to have a thorough understanding of this very important factor and how it determines investment decisions among informed masses. This study addresses the question

of investors' attitudes towards corporate social responsibility with a specific goal of determining whether investors take into account the corporate responsibility of a company before investing.

CSR ACTIVITIES OF INDIAN COMPANIES UNDER STUDY

The study involved investigating investor attitude towards six companies chosen by the researchers for the purpose. These companies were selected because of their recognition value among target audience and their national and international reputation as leading business entities within their respective industries. These companies have annual revenue greater than US \$ 1 billion and have employees between 3,000 and 15,000 working for them.

MAHINDRA AND MAHINDRA

In 2005, the Group celebrated the 60th anniversary of its Corporate Social Responsibility activities. The group renewed its commitment to CSR by declaring to dedicate 1% of its profit (post-tax) towards Corporate Social Responsibility. Some of its CSR activities include Nanhi Kali project for the girl child, Mahindra All India Talent Scholarship for the economically underprivileged, free cochlear implants to 60 profoundly hearing-impaired, under-privileged children, Mahindra Hariyali, is a mass tree plantation initiative and 'Green Bombay' movement for development and maintenance of municipal gardens in Mumbai.⁵

BHARAT PETROLEUM

CSR activities of Bharat Petroleum include adopting several villages across India and providing them with medical assistance, education support, literacy, infrastructure development, veterinary assistance, awareness on HIV/AIDS, environment protection etc. BPCL also provides counselling services employees and non-employees affected by alcoholism and drug addiction and helping them to return to lead a normal life. Other environmental sensitive CSR activities include 'Boond' a Rain Water Harvesting Project with financial support from Oil Industries Development Board and implemented in collaboration with Bridge Public Charitable Trust, an NGO based in Mumbai⁶.

INFOSYS

CSR activities of Infosys include extending support the activities of institutes and Non-Government Organizations (NGOs) dedicated to healthcare and education, distribute notebooks to underprivileged children across Karnataka, training programmes for visually challenged and slum children, blood donation camps, medical camps, and provide facilities for rural schools and cleanliness drives. In addition, 'Project Ozone' campaign spreads environmental awareness and implements eco-friendly practices across development centers worldwide⁷.

DABUR

Dabur's CSR initiatives are driven through Sustainable Development Society or SUNDESH, a non – profit organization engaged in carrying out welfare activities in rural areas working towards causes such as children's literacy, improving healthcare services, skill development, and environment. In addition, Dabur Nepal's project on medicinal plants in Nepal aims to provide necessary resources for the required medicinal herbs of Himalayas to the farmers⁸.

WIPRO

Wipro's CSR activities range from community relief and rehabilitation in times of disasters to educational initiatives, Learning Enhancement Programmes at schools, health and wellness programs for the needy. As per the Greenpeace Greener Electronics Ranking Guide, 2009, Wipro is among World's Top 4 Green Brands. They aim to reduce employee energy usage, water footprint, and encourage rainwater harvesting, recycling waste and to preserve local biodiversity⁹.

BAJAJ

Their CSR activities include Shiksha Mandal and various other colleges and institutions aimed at lesser privileged children's education, program to help SC / ST students achieve academic excellence, seminars and consultative meets for Panchayat workers, special courses for trade union workers and women members of the Panchayats, distribution of solar-lantern & solar cookers, installation of bio-gas plants and tree Plantation/ Horticulture / Kitchen Gardens among others¹⁰.

RESEARCH OBJECTIVES

The objectives of the present research are to address three questions: (1) Whether investors are aware of the CSR activities undertaken by the company in which they have invested in (2) Whether CSR activities of the company play any role in investment decision-making process and (3) What are people's perceptions of CSR among investors?

METHODOLOGY

Prior to conducting the empirical research, the researchers conducted a study of the stock market performance of the six selected companies for the period for which their CSR activities were studied. This helped the researcher to analyse whether these CSR activities played any contributing role on the investors of these companies. The methodology chosen for the empirical research was a quantitative study through a survey method. A purposive sample was used to identify the participants because of its efficiency, convenience and effectiveness. The nationally representative sample (n=250) was drawn from the available pool of investors in the city of Mangalore. The target population was independent investors who have invested in one or all of the six companies selected for study. Respondents belonged to age group ranging from 20 years to 60 years. Questionnaires were distributed at various investment agencies, companies etc to ensure random selection of respondents. Before doing the empirical research, a pilot study was conducted with ten respondents that fulfilled the required criteria of the research population. Out of the 250 questionnaires given, 205 respondents contributed effectively to the purpose of the study as they had invested in the six Indian companies chosen by the researcher.

SURVEY CONTENT

Respondents were queried about their demographic classifications and their business media exposure patterns to understand their level of understanding regarding their preferred companies' CSR activities. Attitudinal questions came next with questions like "Do you consider the social/community welfare activities (E.g.: contribution to protection of environment, education) of the company while buying shares in the stock market?" CSR awareness questions came next with questions

like “How do you rate the performance of your company for the past one year in the stock market” Perceptual questions included “How do you rate the social/ community welfare activities of your company?” and “Do you think companies have profit making agenda while indulging in these developmental activities?”

RESULTS

The responses were entered into a single database. This was done by entering the data manually into a database created in the Statistical Packages for Social Sciences software. The methodological entry of data into the database ensured accuracy and also ensured minimizing of errors. Descriptive statistics were analysed and frequencies of all variables were computed. Demographic variables like age, gender and occupation were checked for possible relations with various individual variables.

Age

The respondents’ age varied from below 20 years to above 51 years. About 36.8 % (92) of the total respondents belonged to the age group of 21- 30 years while 31.2% (78) were between 31-40 years. Only about 3.6% (9) of the total respondents were below 20 years of age.

Gender

159 of the total respondents were male comprising of 63.6 % of the total respondents. 91 female respondents constituted the remaining 36.4 % of the total respondents.

Occupation

46.4 % (116) had a salaried job while 32.8% (82) were involved in business or were investors by profession. Only about 15.2% (38) were either retired or not employed while 5.6% (13) were students. A cross tabulation of the age and gender of the respondents reveal that there were no female respondents below 20 years of age. In all other age groups also, male respondents exceeded the number of female respondents.

Investment Behaviour

Out of the total 205 respondents who had invested in any of the six chosen

companies, a majority of 41 respondents had invested in Infosys while Dabur had the least number of investors-28. Mahindra and Mahindra had about 36 investors while Bharat Petroleum and Bajaj had equal number of investors-35. Wipro had 30 investors out of the total respondents.

Company Performance Awareness

Out of the 36 respondents who had invested in Mahindra and Mahindra, an equal number of people (12 each) considered the performance of the company as average, satisfactory and good. A majority of investors in Infosys (17) considered the performance of the company in the stock market in the past one year as satisfactory while an equal number of 12 each weighed it as average and good. In the case of Wipro, 16 respondents responded that the performance of the company was satisfactory while 9 people considered it good and 5 rated it as average. Bharat Petroleum had an equal number of respondents (12 each) stating the performance of the company was average and satisfactory while 11 respondents considered it Good. Dabur had a majority of its investors (13) stating the performance was satisfactory while 10 rated it as average and 5 as good. In the case of Bajaj, the highest number of respondents (14) rated the company’s performance as average while 12 considered it satisfactory and 9 as good.

Company CSR Activities Crosstabulation

Table 1: CSR activities contributing role in investment decision making

	CSR activities			Total
	No	Yes	NA	
Company NA	0	0	45	45
Mahindra & Mahindra	16	20	0	36
Infosys	11	30	0	41
Wipro	10	20	0	30
Bharat Petroleum	16	19	0	35
Dabur	10	18	0	28
Bajaj	12	23	0	35
Total	75	130	45	250

As the table shows a majority of the investors who had invested in these six different companies had taken into consideration the CSR activities of the companies before deciding to invest in it. It shows that Infosys had the maximum number of investors who had considered the CSR activities of the company before investing in it. Wipro and Dabur had the least number of respondents who did not consider the CSR activities of the company before investing in it.

Out of 75 respondents who did not consider CSR activities of the company before investing in it, 53 respondents indicated that companies should contribute towards the betterment of the society in which they operate. Out of the 130 respondents who considered the CSR activities of the company before deciding to invest in it, 5 of them felt it was not important for the company to contribute to the society.

CSR Activities Rating

40 out of 75 respondents who did not consider CSR activities while investing rated the CSR performance of the company as average while 49 out of 130 respondents who did consider CSR activities before investing rated the performance as average. Further more, the investors were found to be moderately satisfied with their respective company's CSR activities. The results show that except Mahindra and Mahindra and Bharat Petroleum, only a small number of investors in each of the other four companies have rated the CSR performance of their companies as poor. In the case of Infosys and Wipro, majority of their investors (14 and 12 respectively) have rated the CSR performance of the company as satisfactory. Infosys also has the largest number of investors (11) who have rated the CSR performance of the company as good.

Recommending Investment to Peers

Majority of the respondents who have rated the CSR performance of the company as average and the performance of the company in the stock market also as average have said they will not recommend the buying of shares of the company to others. However, a few respondents who have rated both the CSR and stock market performances of their company as good have also said that they will not recommend buying of shares of the company to others. It can be observed that while many respondents (153) who have rated the CSR performance as average

and above and the stock market performance as good (53) have recommended the buying of shares of this company to others. Some others in spite of rating the CSR performance as poor (7) and the stock market performance as average (25) and satisfactory (21) have recommended the buying of shares of the company to others.

Profit Making Agenda

51.6% of the respondents (129) felt that companies have a profit making agenda when they indulge in CSR activities. 30.4% (76) respondents did not consider that companies have any profit motive in their contributions to the betterment of society. In the categories of investors who had rated the companies as average, satisfactory and good, majority of them considered that companies do have a profit motive behind involving in CSR activities. 66 out of 89 investors who had rated the CSR performance as average, 37 out of 68 who had rated the CSR performance as satisfactory agreed to the profit making motive of companies. However, out of the 39 people who rated the CSR performance of the companies as good, a majority of 22 respondents did not consider that companies had any profit motive while only 17 considered that a hidden profit agenda exists.

Role of CSR on Future Investment in Other Companies

40% (100) of the respondents said that they would buy the shares of a company which was a profit making venture but did involve in CSR activities. 42% (105) respondents said that they would not buy the shares of a company that was a profit making venture but did no CSR activities. out of 75 investors who did not consider CSR activities of the company while buying stock, 57 said that they would buy the stocks of a company which was a profit making venture but did not involve in CSR activities while the remaining 18 said they wouldn't buy the shares of a company without CSR activities. Out of the 130 investors who said that they considered the CSR activities of the company before investing in it, 43 investors said they would buy the shares of a company even if it didn't indulge in CSR activities but was a profit making venture. A majority of 87 respondents said that they wouldn't invest in a company without CSR initiatives even if it was a profit making venture.

DISCUSSION

A representative sample of Internet users answered questions centering around three themes in addition to overall investor attitudes toward corporate social

responsibility: 1) investors awareness level of CSR activities undertaken by the company in which they have invested in 2) role of CSR activities of the company plays in investment decision-making process and 3) perceptions of CSR among investors? The results suggest that investors' perceptions of CSR are generally positive. Although investors were equally divided in the favorability of their CSR attitudes, nearly half found a company's CSR activities as not profit driven, were impressed by the company's CSR activities, and felt confident in reporting a positive role played by CSR in their for purchase decisions. Furthermore, of those with positive perceptions towards return on investments more appeared to be satisfied than dissatisfied with their companies' CSR performance too.

Given these favourable responses, it may seem surprising that majority of investors, who either considered CSR a necessary criterion for investment or not, rated their respective companies as average on the basis of CSR performance. Though majority were satisfied with the CSR activities, the satisfaction level did not extend beyond 'average' in most cases. This could be influenced by various factors such as awareness of the CSR activities of the company, demographics of the society in which the company operates in and size of the company. Also, irrespective of whether they considered the CSR activities before deciding to invest in the company, majority of the investors felt that companies are obliged to contribute to the betterment of the society in which they operate in.

Amongst the investors who responded that they wouldn't recommend the buying of shares of their respective companies to others, a majority of people had rated both the CSR performance and the stock market performance of the company as average. However, there were some investors who had rated the CSR performance and stock market performance of the company as good but had not recommended the buying of shares of the company to others. This indicates that there may be other factors such as brand loyalty or other factors that may affect the investors' perceptions of a company. The investors who said they will recommend the buying of shares of their respective companies to others have responded in this manner even if the stock market performance of the company was just average. Also, even if the stock market performance of the company was just average, satisfactory or good, a few investors had rated the CSR performance of the companies in each of this category as good. This indicates that CSR activities do play a positive role in people's perceptions of the company.

This study reveals the investors' perceptions of CSR activities of companies under study. It reveals that CSR does have a positive impact on investors as they do consider the social responsibility of the companies in which they invest in. However, it also reveals that a great number of investors are skeptical about the true purpose of the CSR activities of companies. This might be due to the lack of adequate transparency in the communication of the organisation's activities to its stakeholders, including investors. However, the CSR activities are now gaining increasing prominence and attention on the part of the investors for either positive or negative reasons. Therefore, it is important for companies to understand the significance of these socially relevant activities and also the need for communicating effectively with its stakeholders.

This study focused on studying the attitudes of investors in Mangalore city towards the CSR activities of certain Indian companies. Further study could focus on what specific CSR activities do investors prefer their companies to indulge in and the reason for the same. Also, in the rising competition in the market, the difference in the CSR activities of Indian companies as well as MNCs could be analysed and conclusions could be drawn on what these companies are trying to achieve through these activities. Further research can also be done to find out why some investors are skeptical about the CSR activities of the companies enabling these companies to be more transparent in their objectives and execution of plans.

NOTE

¹ The World Bank. "Corporate Social Responsibility: An Exercise with a Conscience" March 2012. Viewed on August 12, 2012, available at <<http://go.worldbank.org/WG74ZCHRVO>>

² 'Panel for making 2% spending on CSR mandatory', *Business Standard*, 8 July, 2012, viewed on 14 July 2012, available at <<http://www.business-standard.com/india/news/panel-for-making-2-spendingcsr-mandatory/177822/on>>

³ Commission Of The European Communities, Green Paper, Promoting a European framework for Corporate Social Responsibility, Brussels, 18.7.2001

⁴ Van Zile, Caroline, 'India's Mandatory Corporate Social Responsibility Proposal: Creative Capitalism Meets Creative Regulation in the Global Market', *Asian-Pacific Law & Policy Journal*, Vol. 13, No. 2, p. 269, 2012

⁵ Mahindra and Mahindra, Online, viewed on 14 July 2012, available at <<http://www.clubmahindra.com/ResortAboutUsSocial>>

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⁸ Dabur India Limited, Online, viewed on 15 July 2012, available at <<http://www.dabur.com/Media-CSR%20Initiatives>>

⁹ Wipro Technologies Pvt. Ltd., Online, viewed on 12 July 2012, available at <<http://www.wipro.com/about-wipro/sustainability/>>

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A. Books

- Lobo, Michael (1999): *Mangaloreans World Wide*. Mangalore, Camelot Publishers
- Drèze, Jean, Amartya Kumar Sen (2002): *India: Development and Participation*, New Delhi, Oxford University Press

B. Contributions to books

- Lobo, Norbert (2012) : "Impact of Human and Economic Development on Migration Destination", *Perspectives on Social Development*, Edited by Richard Pais, Rawat Publications, New Delhi, Chapter 10, pp 175-192

C. Journal and other articles

- Sundaram, K (2001): "Employment-Unemployment Situation in the Nineties: Some Results from the NSS 55th Round", *Economic and Political Weekly*, Vol 36, No 11, pp 931-39.
- Mehra, Rekha and Sarah Gammage (1999): "Trends, Countertrends, and Gaps in Women's Employment", *World Development*, Vol 27, No.3, pp 533-50.
- Dev Mahendra S. (2005): "Pro-Poor Growth in India : What do we know about the Employment Effects of Growth 1980-2002?", *Working Paper* No. 161, Overseas Development Institute.

D. Conference papers

- Chandel K.S. (2009): "Ethics in Commerce Education." Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

E. Unpublished dissertations and theses

- Prashanth S. (2006): "Customer Value: A Comparative Study of Rural and Urban Customers," Unpublished Ph.D. Thesis submitted to Mangalore University

F. Online resources

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

G. Website

- Kelkar V. (2009): "Towards a New Natural Gas Policy", *Economic and Political Weekly*, Viewed on February 17, 2011 <http://epw.in/epw/user/viewabstract.jsp>
- Chandrasekhar C.P. & Ghosh, Jayati (2006): 'Working More for Less', *Macro scan*, Nov 28, http://www.macrosan.org/the/employment/nov06/emp171106_Employment_Growth.htm
- Patnaik, Utsa (2005): "Global Capitalism, Deflation and Agrarian Crisis in Developing Countries", Paper No.: 15, UNRISD, Geneva, accessed from [www: google.com](http://www.google.com) on March 15,2012.

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