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**RESEARCH, INNOVATIONS
AND EXTENSIONS**

**RESEARCH ARTICLE****SURVEY ON ETHNO-MEDICINAL PLANTS USED FOR CUTS, WOUNDS AND INFLAMMATIONS BY MALAPANDARAM TRIBAL COMMUNITY OF ADICHIPUZHA, PATHANAMTHITTA, KERALA.**

*Devi Priya M., Akhila Gangadharan, Alin R. and Amrutha Mohan.

St. Thomas College, Pazhavangadi P.O., Ranni, Pathanamthitta 678 695.

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Abstract

Plants have a crucial role in maintaining fitness of human beings in one way or other. These medicinal plants with complicated secondary metabolites provide medicinal and curative properties. Medicines based on plant and plant products, is the tradition of Kerala, which is now used as the basis of many of the modern medicaments. There are many plants, which are used by folklore for the treatment of cuts, wounds and burns that promote the repair mechanisms in the natural way. Since our traditional knowledge is on the verge of extinction, the present study was undertaken to document some of the medicinal plants used by Malapandaram tribal community settled at Adichipuzha, near Ranni to treat cuts and wounds.

*Corresponding Author:- Devi Priya M.

Introduction:-

Wounds have affected humans since prehistoric times and the treatment and healing of wounds is an art as old as humanity (Robson *et al.* 2001). It is defined as the disruption of the cellular and anatomic continuity of a tissue; it may be produced by physical, chemical, thermal, microbial or immunological insult to the tissue (Bennet 1988), which results in an opening or breaking of the skin that cause disturbance in the normal skin anatomy and function. Wound healing process is a complicated series of event that begins at the moment of injury and can continue for months to years. It is a well organized biochemical and cellular event leading to the growth and regeneration of wounded tissue that restores the function and integrity of damaged tissues (Agarwal *et al.* 2009). It involves the activity of an intricate net work of blood cells, cytokines and growth factors which ultimately leads to the restoration to normal condition of the injured skin or tissue (Jaina and Patil, 2011).

The presence of wide range of life-sustaining constituents in plants has urged scientists to examine these plants with a view to determine potential wound healing properties (Syed *et al.* 2008). These are not only cheap and affordable but are also safe as hyper-sensitive reactions are rarely encountered with the use of these agents (Narayan *et al.* 2011). These natural agents induce healing and regeneration of the lost tissue by multiple mechanisms. Several plant products have been reported to promote the process of wound healing, which contains bio-molecules like triterpenes, alkaloids, polyphenols, tannin, flavonoids (Sharma *et al.* 1990; Chithra *et al.* 1995; Suguna *et al.* 1998; Shenoy *et al.*, 2009; Francesko *et al.* 2011; Gautam *et al.*, 2013). Triterpenoids are known to wound-healing process mainly due to their astringent and antimicrobial property, which seems to be responsible for wound contraction and increased rate of epithelialisation (Scortichini and Rossi 1991). Saponins also promote wound healing process due to their antioxidant and anti-microbial activities (Senthil *et al.* 2011). Methods of preparation of the plant/part(s) for healing wound vary like fresh plant part, their juice, paste or decoction. The raw material base for drugs used for different conditions of wound such as ulcers, syphilitic ulcers, maggots, septic-wounds, cellulitis, purulative ulcer, diabetic carbuncle and other related disorders are derived from plants (Ramya *et al.* 2009).

Investigation of Phytochemicals, Total Phenols and Total Flavonoids Content of Two Anti-Arthritic Plants

Christy K. Jose, Francis Mathew, N. A. Aleykutty

Abstract:- Phytochemical investigation, total phenols and total flavonoids content of *Strobilanthes ciliatus* root and *Calophyllum inophyllum* leaves was carried out in the present inquiry. Various extracts of *Strobilanthes ciliatus* root was prepared by sequential extraction separately with solvents ranging from polar to non-polar. Methanolic extract of *Calophyllum inophyllum* leaves was prepared by maceration. The extracts were subjected to phytochemical screening, total phenols and total flavonoids estimation by using standard procedures. Total phenols and flavonoids content of methanolic extract of both the plants were comparatively higher and this may be due to the phytochemicals present in these extracts.

Keywords:- *Strobilanthes ciliatus*, *Calophyllum inophyllum*, phytochemical screening, total phenols, total flavonoids.

I. INTRODUCTION

Natural sources such as plants have received considerable attention for discovery and development of leads as new drug molecules, because of its diversity. *Strobilanthes ciliatus* Wall. ex Nees of Acanthaceae family is a extremely promising medicinal plant in Ayurveda, used in the treatment of inflammatory disorders (Thomaset *al.*, 2000). The plant is used for a variety of ailments like rheumatism, lumbago, sciatica, limping, chest congestion, strangury, fever, leucoderma, skin diseases, inflammations, cough, bronchitis, odontalgia and general debility (Warrier *et al.*, 1994). The roots are bitter, sweet, causes production of heat, emollient, diuretic, febrifuge, diaphoretic, depurative, anti inflammatory, expectorant and tonic. *Calophyllum inophyllum* L. of Clusiaceae family has been routinely used for the treatment of rheumatism, skin diseases, dysentery and bleeding piles (Nadkarni, 1954). The entire plant is medicinal and carries compounds such as xanthenes, triterpenes, coumarins and glucosides. The anti-inflammatory effect of *C. inophyllum* was reported earlier (Saxena *et al.*, 1979).

II. MATERIALS AND METHOD

A. Plant collection:

The roots of *Strobilanthes ciliatus* were collected from Ranny, Pathanamthitta, Kerala. The leaves of *Calophyllum inophyllum* were collected from Changanacherry, Kottayam, Kerala. Both the plant specimens were authenticated by Dr. Vinod kumar T.G., St. Thomas College, Ranny.

B. Extraction of plant material:

The roots of *Strobilanthes ciliatus* were thoroughly washed, shade dried, powdered (1kg) and was subjected to sequential extraction separately with solvents ranging from polar to non-polar in a Soxhlet extractor. The extracts were concentrated to dryness. The obtained extracts were kept in desiccators to remove moisture and stored properly until used. The extracts were administered to qualitative phytochemical investigation for recognition of various phytochemicals. Determination of tot.phenols content was done using FC reagent and tot.flavonoids content was approximated using AlCl_3 method.

The leaves of *Calophyllum inophyllum* were thoroughly washed, shade dried and roughly powdered (750 gm). The powder was macerated with methanol in a round bottom flask for 7 days. To ensure the efficiency of the extraction the contents of flask were stirred intermittently. The essence was filtered and the filtrate was evaporated. The procured extract was kept in desiccators to abolish moisture and stored properly until used. The extract was subjected to qualitative phytochemical investigation for identification of various phytochemicals. Determination of tot.phenol content was done using FC reagent and tot. flavonoid content was approximated using AlCl_3 method.

III. PHYTOCHEMICAL INVESTIGATION:

Phytochemical investigation was conducted as per standard procedure. (Trease and Evans, 1983; Harborne, 1973).

A. Test for alkaloids:

Warmed a small amount of various extract with 8 ml of 1% hydrochloric acid separately, and filtered. The resultant filtrate were treated separately with Mayer's [Potassium mercuric iodide solution] and Dragendorff's reagents [Potassium bismuth iodide solution]. The presence of cream coloured precipitate for Mayer's test or reddish brown precipitate for Dragendorff's test indicated the presence of alkaloids.

B. Test for Glycosides:

In Killer-Killani test, Gl. acetic acid containing traces of FeCl_3 and concentrated H_2SO_4 are added to each of the extract and observed for formation of red- brown color at the junction of two layers and blue green color at the upper layer indicated the presence of glycoside.

In Borntrager's test, benzene and few drops of dilute NH_3 solution are added to the extracts and noticed for formation of red-pink color.

- **Legal test:** To the concentrated extract added few drops of 10% sodium hydroxide solution to make it alkaline

Evaluation of In-Vitro Antioxidant Activity of Two Anti-Arthritic Plants by DPPH° Method

Christy K. Jose, Francis Mathew, N. A. Aleykutty

Abstract:- The antioxidant properties of two anti-arthritic plants – *Strobilanthes ciliatus* and *Calophyllum inophyllum* was quantified by DPPH° method. These plants are proved to be rich in phytochemicals like phenols, flavonoids, turpenoids, etc. Roots of *Strobilanthes ciliatus* and leaves of *Calophyllum inophyllum* was taken for the study. The % inhibition of DPPH° was found and IC₅₀ value was calculated. From the results obtained it is found that a good correlation exists between phenolic phyto constituents & antioxidant property by DPPH° scavenging method.

Keywords:- *Strobilanthes ciliatus*, *Calophyllum inophyllum*, DPPH° scavenging method, IC₅₀ value.

I. INTRODUCTION

Since ancient time, herbal medications find applications for relief of ailments (Maqsood et al., 2010). As crude concentrates or their active constituents natural antioxidants are very adequate to inhibit the damaging processes formed by oxidative stress. Medicines of natural origin are much safer than synthetic drugs. (Vongtau et al., 2005). Antioxidants maintain or inactivate free radicals, often before they attack targets in biological cells. The role of free radical reactions in disease pathology is well known and is found to be involved in many acute and chronic ailments in human beings, such as diabetes, atherosclerosis, aging, immunosuppression and neurodegeneration.

The antiarthritic properties in plants are greatly influence by the antioxidant activity. There are a number of plants used for the treatment of arthritis in traditional medicine. In the present study the roots of *Strobilanthes ciliates* and leaves of *Calophyllum inophyllum* was selected because both these plants are traditionally used for the treatment of arthritis. The extracts of both plants on qualitative phytochemical investigation was found to be rich in Phenolics, Flavonoids, Glycosides, Terpenoids, Sterols and saponins. Determination of total phenol content and total flavonoid content of the extracts revealed high phenolic and flavonoid contents in both the plants. Therefore the present study was aimed to analyse the extracts for antioxidant activity by DPPH° method.

II. MATERIALS AND METHOD

A. Plant collection:

The roots of *Strobilanthes ciliates* were collected from Ranny, Pathanamthitta, Kerala. The leaves of *Calophyllum*

inophyllum were collected from Changanacherry, Kottayam, Kerala. Both the plant specimens were authenticated by Dr. Vinodkumar T.G., St. Thomas College, Ranny.

B. Extraction of plant material:

The roots of *Strobilanthes ciliatus* were thoroughly washed, shade dried, powdered (1kg) and was subjected to sequential extraction separately with pet. ether (60-80 °C), CHCl₃, ethyl acetate, methanol and water in a Soxhlet extractor. The extracts were concentrated to dryness. The obtained extracts were kept in desiccators to remove moisture and stored properly until used.

The leaves of *Calophyllum inophyllum* were thoroughly washed, shade dried and roughly powdered (750 gm). The powder was macerated with methanol in a round bottom flask for 7 days. To ensure the efficiency of the extraction the contents of flask were stirred intermittently. The essence was filtered and the filtrate was evaporated. The procured extract was kept in desiccators to abolish moisture and stored properly until used.

C. In-vitro Antioxidant Activity by Free radical scavenging activity on DPPH°

The DPPH° radical scavenging activity of ethyl acetate, methanol and aqueous extracts of *Strobilanthes ciliatus* roots and methanolic extract of *Calophyllum inophyllum* leaves was measured. (Blios, 1958). Concentration of concentrate to decrease the initial concentration of DPPH° by 50% (IC₅₀) was calculated.

3ml of 0.004% DPPH° solution in methanol was mixed with 2ml of plant extract solutions of varying concentrations (12.5, 25, 50, 100, 200, 400 µg/ml). Analogues blank sample were prepared and Ascorbic acid was used as reference standard. Mixer of 3ml methanol and 1ml DPPH solution was used as control. The reaction was carried out in triplicate and the decrease in optical density was measured at 517nm after 30 minutes in dark using UV-Vis spectrophotometer. The inhibition % which is the radical scavenging capacity was calculated using the following formula.

$$\text{Inhibition \%} = \frac{Ac - As}{Ac} \times 100$$

Where Ac = absorbance of the control

As = absorbance of the sample or standard.

Annual subs. ₹ 150



ജീവധാര

നവമാധ്യമങ്ങളും
സ്വഭാവരൂപീകരണവും

പത്രാധിപർ

സണ്ണി മണിയാക്കുപാറ

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സൈബർലോകവും സാമ്പത്തികചിന്തകളും

സജനി ജയപ്രസാദ്*

ആമുഖം

പുതിയ നൂറ്റാണ്ടിന്റെ ചിന്തകളേയും വേഗത്തേയും സ്വാധീനിച്ച അതിർവരമ്പുകളില്ലാത്ത ലോക ശക്തിയാണ് അതിനൂതന സാങ്കേതിക വിദ്യകൾ. മനുഷ്യകുലത്തിന്റെ ഓരോ ചുവടിലും ശാസത്തിലും ഇന്ന് ഈ ശക്തി ആഞ്ഞടിക്കുന്നു. ലോകത്തെ വിരൽത്തുമ്പിലേക്കെത്തിക്കാൻ സാങ്കേതികവിദ്യകൾക്കായി എന്നത് വിസ്മരിക്കാനാകാത്ത വസ്തുതയാണ്. ലോകം വീരലുകളിലെത്തുമ്പോൾ വിവരസാങ്കേതികവിദ്യ സാമൂഹിക, സാമ്പത്തിക, സാംസ്കാരിക, മാനസികതലങ്ങളിൽ വിവിധങ്ങളായ മൂല്യങ്ങൾ പതിപ്പിക്കുന്നുണ്ട്. ദിനംപ്രതി പുറത്തിറങ്ങിക്കൊണ്ടിരിക്കുന്ന നൂതന വാർത്താവിനിമയ സൗകര്യങ്ങൾ ദൈനംദിന ജീവിതത്തെ വളരെയധികം മെച്ചപ്പെടുത്തുകയും അതോടൊപ്പം ജീവിതത്തിന്റെ ഭാഗമായി അവ മാറ്റപ്പെടുകയും ചെയ്യുന്നു. ഇരുപത്തിയൊന്നാം നൂറ്റാണ്ടിലെ പ്രത്യേകതയായി എടുത്തു പറയേണ്ടത് മൂല്യത്തിന്റേയും സംസ്കാരത്തിന്റേയും നിശ്ചലാവസ്ഥയും നവമാധ്യമങ്ങളുടെ വർദ്ധിച്ചുവരുന്ന സ്വാധീനവുമാണ്. തലമുറ വ്യതിയാനങ്ങൾ, വ്യക്തി വ്യതിയാനങ്ങൾ, ലിംഗ വ്യതിയാനങ്ങൾ എന്നിവയ്ക്കനുസരിച്ച് ഇതിന്റെ പ്രഭാവം വ്യത്യസ്തപ്പെട്ടിരിക്കും. ഒരേസമയം രണ്ടു വ്യത്യസ്ത മൂലങ്ങളുള്ള ഇരുതല വാളാണ് നൂതന വിവരസാങ്കേതികവിദ്യ. ഇതിന് ആദ്യം ഇരകളാകുന്നത് പുതുതലമുറയായിരിക്കും എന്ന കാര്യത്തിൽ സംശയമില്ല.

തലമുറകളും സൈബർ ലോകവും

ദിനംപ്രതി നൂതന സാങ്കേതികവിദ്യയും വിവിധങ്ങളായ മാധ്യമങ്ങളും നമുക്കിടയിലേക്ക് കടന്നുവന്നുകൊണ്ടിരിക്കുന്നു. വിവിധങ്ങളായ

* യുവ എഴുത്തുകാരിയായ ലേഖിക റാന്നി സെന്റ് തോമസ് കോളേജിലെ സാമ്പത്തിക ശാസ്ത്ര വിഭാഗം അസിസ്റ്റന്റ് പ്രൊഫസറാണ്.

അറിവുകളുടെ കലവറതന്നെയാണ് നവസാങ്കേതിക വിദ്യകളടങ്ങിയ മാധ്യമങ്ങൾ. എന്നാൽ അവയുടെ ഉപയോഗത്തിന്റേതാണ് ശ്രദ്ധിക്കേണ്ടത്. മനുഷ്യൻ പല നൂറ്റാണ്ടുകളായി നേടിയ അറിവുകൾ, ജീവിതവേഗം എന്നിവ നിമിഷനേരത്തിനുള്ളിൽ നമ്മുടെ വിരൽത്തുമ്പിലേക്കെത്തുമ്പോൾ, ആ അറിവുകളുടെ ഉപയോഗം മാനവരാശി ശരിയായ രീതിയിലാണോ വിനിയോഗിക്കുന്നത്, എല്ലാ തലമുറയിൽപ്പെട്ട മനുഷ്യരും സൈബർ ലോകത്തിന്റെ ഉപഭോക്താക്കളോ ഗുണഭോക്താക്കളോ ആണ്. ഇതിന്റെ പ്രതിഫലനം ഓരോ പ്രായത്തിലും വ്യത്യാസപ്പെട്ടിരിക്കുമെന്നുമാത്രം. സൈബർ ലോകം എങ്ങനെ നമ്മുടെ ജീവിതത്തെ സ്വാധീനിക്കുന്നുവെന്നു വ്യക്തമാകണമെങ്കിൽ പ്രതിഫലനത്തെ വിവിധ കോണുകളിൽനിന്നും വീക്ഷിക്കേണ്ടതായുണ്ട്.

സാമൂഹിക പ്രതിഫലനങ്ങൾ

സമൂഹമെന്നത് വിവിധ തലമുറകളുടെയും വിവിധ പ്രായത്തിലുള്ളവരുടെയും കൂട്ടായ്മയാണല്ലോ. സമൂഹത്തിന്റെ നിലനിൽപ്പുതന്നെ പരസ്പരസഹകരണത്തിലും സഹവർത്തിത്വത്തിലുമാണ്. എല്ലാവരെയും ഉൾക്കൊള്ളാനുള്ള മനസ്സ് ഓരോ സാമൂഹിക ജീവിതമുണ്ടാകുകയും വേണം. ഈ സഹകരണമനോഭാവത്തിന്റേയാണ് സൈബർ ലോകം ആദ്യമായി കടന്നുകയറിയത്. ടെലിവിഷൻ രൂപത്തിൽ എൺപതുകളിൽ ഓരോ കുടുംബത്തിന്റേയും സമയം നിർണ്ണയിക്കുവാനുള്ള കഴിവോടുകൂടി ഇവയെത്തി. ആദ്യകാലത്ത് എല്ലാവരും ഒരുമിച്ചിരുന്ന് ടെലിവിഷൻ കാണുക സാധാരണമായിരുന്നു. തൊണ്ണൂറുകളിൽ കുടുംബത്തിന്റെ സമയക്രമം നിർണ്ണയിക്കാനുള്ള ശക്തി ഇവയാർജ്ജിച്ചു. എപ്പോൾ ഭക്ഷണം കഴിക്കണം എപ്പോഴുറങ്ങണം എന്നു തുടങ്ങി നാം സ്വയം നിർണ്ണയിച്ചുകൊണ്ടിരുന്ന പല തീരുമാനങ്ങളും ടെലിവിഷൻ നിർണ്ണയിച്ചു. പിന്നീടുള്ള അവസ്ഥ പ്രായമായവരും കുട്ടികളും യുവതാവും തമ്മിലുള്ള ടെലിവിഷൻ പോരാട്ടമെയാണ്. ഓരോരുത്തർക്കും അവരവരിഷ്ടപ്പെട്ട പരിപാടികൾ കാണണം. ഇക്കാര്യത്തിൽ യാതൊരുവിധ വിട്ടുവീഴ്ചയ്ക്കും ഒരു തലമുറയും തയ്യാറായതുമില്ല. ഒരു വീട്ടിൽ ഒരു ടിവി എന്ന രീതിമാറി ഓരോ മുറിയിലും ഓരോ ടിവി എന്ന പുതിയ നയം നടപ്പാക്കുകയാണ് നാം ചെയ്തത്. സ്വകാര്യത എന്നത് ആവശ്യമുള്ളിടത്തും ഇല്ലാത്തിടത്തുമൊക്കെ ഉപയോഗിക്കുന്ന ഒന്നായി മാറി. ഒരു കുടുംബത്തിനുള്ളിൽത്തന്നെ പല സ്വകാര്യതകളായി. ഓരോ മുറിയിലും സ്വകാര്യത.

ഇത്രയും പഴയ കഥ. പുതിയ കഥയുടെ തുടക്കം വീഡിയോ ഗെയിമുകളുടേയും, മൊബൈൽ ഫോണിന്റേയും, ഇന്റർനെറ്റിന്റേയും, ഓർക്കുട്ടിന്റേയും, ഫേസ്ബുക്കിന്റേയും വ്യാപക ഉപയോഗം തുടങ്ങിയ

RELIGION AND LIFE, SOME NEW TRENDS, A STUDY ON THE PILGRIM HEAD QUARTERS OF KERALA

Deepa Roselin Joseph

Assistant Professor, Department of History, St. Thomas College,

Pazhavangady, Ranny, Pathanamthitta, Kerala, India

ABSTRACT

Religion is an important characteristic of the people in any country. This paper studies the changes in the religious trends of a hilly district of Kerala, Pathanamthitta, which is regarded as the pilgrim headquarters of Kerala. As far as religion is concerned, Pathanamthitta district is special in many ways. Belief in God is like breathing air to this pilgrim district of the State. Due to this reason, even the river sand bed of the district is rich with a religious color. Besides the traditional religious groups, the district is witnessing the growth of new sects probably in need of upward mobility. This is also because almost every other aspect of life here is deeply related to religion.

KEYWORDS: Religion, Pathanamthitta, Witnessing

Article History

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INTRODUCTION

Religion is an important characteristic of the people in any country. Pathanamthitta district of Kerala is well known as the headquarters of pilgrim worship in Kerala. Historically, from the beginning of the Christian era, the district has been able to house new religions and religious sects. When the Brahmins from the other parts of the country established 32 settlements in Kerala, some of them like Aranmula Thiruvalla, Venmani were also in this district. Some other settlements are close to the district on the banks of river Pamba. This had geographical factors behind. The rich and fertile river valleys in the district made it best suitable for wetland agriculture and thus the Brahmins chose to settle down there. One of the most popular pilgrim centers of India, Sabarimala is located in this district. Recently, a number of new sects and new religious formations have either originated or come to prevalence in the district. The trend of emergence of new sects is seen mainly in Christianity and Hinduism. The geography, history, and economy of the district along with migration and such factors influence the religious profile of the district and the change in it over the course of years.

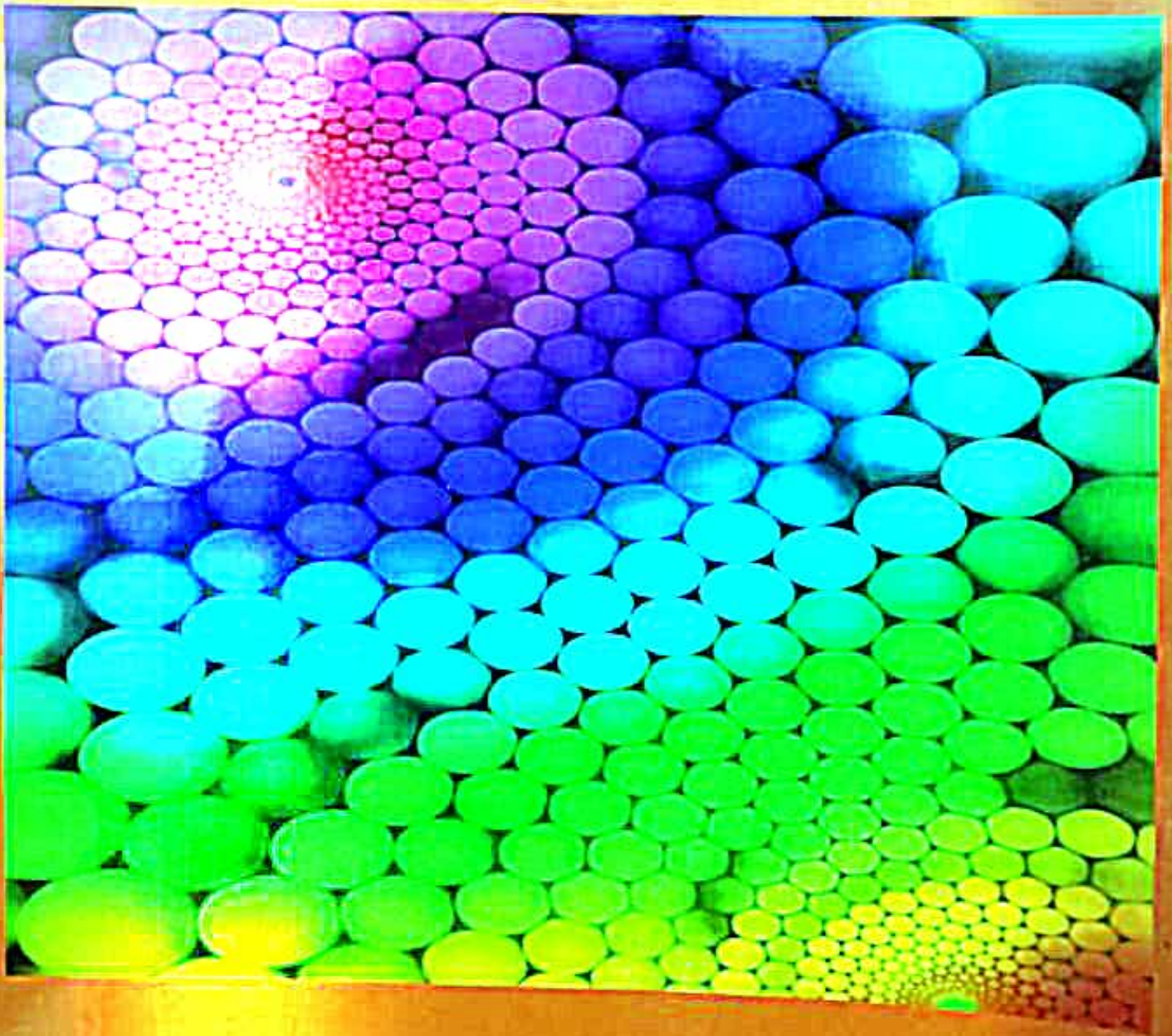
Population by Religion

The major religions groups in the district are Hindus, Christians, and Muslims. The other religious communities like Sikhs, Jains, and Buddhists are insignificant as their percentage to total population is very negligible.

Demographically speaking Hindus constitute more than half of the population in the district in the three censuses which is in accordance with the all Kerala pattern. Regarding the Muslim population, Pathanamthitta is the district with the

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MIGRANT WORKERS IN CONSTRUCTION SECTOR IN KERALA. A STUDY IN KOTTAYAM

Rengi Abraham,
St. Thomas College, Ranni.

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Abstract

Construction sector in Kerala is constituted with Large and small scale construction which provide the largest labour opportunities in Kerala. The Large scale civil engineering projects of central and state governments, building construction, shopping malls, hospitals, factories and apartments, convention centres in all districts of Kerala in the private sector and building of houses in rural as well as in urban areas are the minor constructions in Kerala. Both these sectors run with the Migrants labourers and they became indispensable to the unorganized sectors in Kerala. Why the migrants engage in construction sectors than others? This study focuses to their perceptions and what they could accomplish in the actual and the vulnerability allied to the Labour Diaspora. In minor construction the migrants are coming through the informal channels like social networks. Malayalee contractors or the Native contractors among them are their employers. The contractors take the labourers from 'Nakas¹' and the workers from West-Bengal, Odisha, Assam, Bihar, Chattisgarh, Jharkhand are available in this Nakas and couples by leaving their children with their relatives also visible in the Nakas in Kerala. This study emphasizes on the small-scale construction sectors where the migrants highly concentrated and to know the pattern and the factors responsible for the migration. The role of labour Nakas in the small-scale construction industry in Kerala with particular reference to the Kottayam district and the relationship between the employer contractor-migrant are also analyzed by viewing their difficulties in the migration.

.....
Keywords: Migrant workers, Construction sectors, Employer/Contract/Migrant relationship

Introduction

Migration is phenomenon among not only in human kind, it can be viewed as an instinct in almost all
indispensable and adaptive as it were circumstances. The
begins from the desire to escape from the
which is the dominating
from the



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**BRANCH PRODUCTIVITY
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BRANCH PRODUCTIVITY IN INDIAN COMMERCIAL BANKS

Roni Jain Raju¹

Assistant Professor,
Post Graduate Department of Commerce,
St Thomas College, Ranny (P.O),
Pathanamthitta, Kerala,

Dr. Benson Kunjukunju²

Professor & Research Guide,
Mar Thoma College of Science and Technology
Chadayamangalam (P.O), Kerala.

ABSTRACT

Banking industry plays a pivotal role in the economic development of the country. It is the most intensively synchronised industry as it deals with others money. The success of a bank depends not merely on its financial performance but also depends upon its productivity of its branches. Banks are very much concern on the role of branch and their efficient utilization as they are important factor on the operational efficiency and other parameters of banks performance. Performance of the banks depends upon the efficiency of its branches in performing banking functions. Hence branch productivity is an important factor while measuring overall productivity and .operational efficiency of banks. In the present study, to analyse the branch productivity four parameters like deposits, advances, business and profitability (spread - burden) are selected and tools like average and average annual growth rate have been used for analysing the data. The time period selected for the study is 2006-2018. This study reveals that performance growth rate of State Bank Group was much superior as compared to other bank groups. This study helps the commercial banks in India for utilising their branches effectively.

Keywords: Branches productivity, Operational Efficiency

1.1 INTRODUCTION

The Indian financial system consists of different types of financial institutions which are responsible for the development of the country's economy. Financial institutions can broadly be classified into banking and non-banking institutions. The most active sector of the financial system is the commercial banking sector. They are the financial intermediaries which perform the dual functions of mobilisation of deposits and deployment of surplus fund to the diverse sectors of the financial system. Commercial banks are institutions, which deal with money and credit primarily for earning profit. It serves as the central channel for all economic activities.

Commercial banks constitute the heart of the financial structure as they have the capability to put in to the money supply and thus generate extra purchasing power. This characteristic

distinguishes commercial bank from other financial institutions. It is one of the many institutions that impinges on the economy and affects its performance. These banks occupy a predominant place in the modern banking structure and are considered to be the mart of the world, the nerve centre of economies, finance of a nation and the barometer of its economic perspective.

Prior to nationalization, the growth of Indian banking sector was not up to the mark as they are giving more importance to socio-economic requirements of the country. But after nationalization the banking sector in India has made a praiseworthy progress and it extended its geographical coverage and functional reach. Along with the commendable growth and development in the post-nationalization period, some problems of the banking sector have developed reflecting a turn down in productivity and efficiency and reduction of the profitability as an outcome. Thus, maintaining continued viability and productivity can be regarded as the greatest challenge before banks during this decade. Thus it is very much imperative to assess ' productivity and efficiency. Such an analysis becomes particularly significant in Indian ban' scenario since the banking sector has been undergoing various far reaching structural reforms : 1991.

1.2 CONCEPT OF PRODUCTIVITY

Productivity is the key to prosperity of every nation. The overall growth of a nation depends to a great extent on the efficiency and productivity of each and every sector. Every sector including the banking sector should struggle hard to enhance the productivity as the increase in productivity aims at the effective and efficient mobilisation of resources. In economics, Productivity is the ratio of output produced per input. Symbolically,

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

Fabrication and characterization of $Ba_8Zn(Ta_{6-x}Sb_x)O_{24}$ microwave ceramics

M. K. Suresh & Sam Solomon

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Fabrication and characterization of $\text{Ba}_8\text{Zn}(\text{Ta}_{6-x}\text{Sb}_x)\text{O}_{24}$ microwave ceramics

M. K. Suresh¹ · Sam Solomon²

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Abstract

$\text{Ba}_8\text{Zn}(\text{Ta}_{6-x}\text{Sb}_x)\text{O}_{24}$ ceramics have been prepared through the solid-state ceramic route. The X-ray diffraction analysis showed the ceramics have hexagonal perovskite structure with space group $P6_3cm$. The structure of the system was confirmed using Fourier transform Raman spectroscopy. The microstructure of the sintered pellet was analyzed using scanning electron microscopy. A correlation study is performed between the structure and the measured dielectric properties. The τ_f values of the samples were reduced from 38.6 to -1.6 ppm/°C with the increase in Sb concentration. The compositions have good microwave dielectric properties and are suitable for dielectric resonator applications.

1 Introduction

Ceramic dielectrics are widely used in microwave communication systems including cellular phone, direct broadcasting satellite and global positioning systems. The advantage of using microwave dielectric ceramics is the size reduction of microwave components. These dielectric materials should have a high dielectric constant (ϵ_r), low dielectric loss (high $Q_u \times f$) and a near-zero temperature coefficient of resonant frequency (τ_f). These three parameters are related to the size, frequency selectivity and temperature stability of the system, respectively [1, 2]. Several complex perovskite ceramics $\text{A}(\text{B}'_{1/3}\text{B}''_{2/3})\text{O}_3$ ($\text{B}' = \text{Zn, Co, Ni or Mg}$; $\text{B}'' = \text{Ta or Nb}$) are widely used in the area of wireless communication systems. Extensive amount of work is going on tantalate and niobate cubic perovskites due to the high polarizability of these elements produced by multiple bonding to oxygen and wide compositional tuning opportunities offered by the substitutional flexibility of mixed B-site perovskites. The materials such as $\text{Ba}(\text{Mg}_{1/3}\text{Ta}_{2/3})\text{O}_3$ and $\text{Ba}(\text{Zn}_{1/3}\text{Ta}_{2/3})\text{O}_3$ are examples of these kinds of compounds and many researchers are working on such compounds [3, 4]. The microwave dielectric properties of 1:1 or 1:2 cation ordering perovskites

such as $\text{Ba}(\text{Y}_{1/2}\text{Nb}_{1/2})\text{O}_3$ and $\text{Ba}(\text{Co}_{1/3}\text{Nb}_{2/3})\text{O}_3$ are studied by Molodesky et al. [5]. Abakumov et al. [6] have analyzed the crystal structure of $\text{Ba}_8\text{Ta}_6\text{NiO}_{24}$ ceramic and found that it has hexagonal perovskite structure with a space group of $P6_3cm$ in which Ta and Ni cations has the symmetric sixfold oxygen co-ordinates in the TaO_6 and NiO_6 octahedra. Davies et al. [7] found densified single phase sample of $\text{Ba}_8\text{ZnTa}_6\text{O}_{24}$ is isostructural with $\text{Ba}_8\text{NiTa}_6\text{O}_{24}$, a structure based on $8\text{H}(\text{cchc})_2$ close-packed arrangement of BaO_3 stacking sequence. Moussa et al. [8] synthesized $\text{Ba}_8\text{ZnTa}_6\text{O}_{24}$ and its crystallographic properties were characterized using Rietveld refinement. Thirumal et al. [9] reported that $\text{Ba}_8\text{ZnTa}_6\text{O}_{24}$ is a hexagonal perovskite and which is found to be a stable secondary phase, formed as a result of the loss of ZnO from $\text{Ba}(\text{Zn}_{1/3}\text{Ta}_{2/3})\text{O}_3$ microwave dielectrics during the high temperature calcinations and sintering treatments. They reported the microwave dielectric properties of $\text{Ba}_8\text{Ta}_6\text{ZnO}_{24}$ ceramic and its τ_f value is about $+36$ ppm/°C at 8.9 GHz. Kawaguchi et al. [10] studied the microwave dielectric properties of $\text{Ba}_8\text{Ta}_6(\text{Ni}_{1-x}\text{M}_x)\text{O}_{24}$ ($\text{M} = \text{Zn \& Mg}$; $x = 0 \sim 1$) solid solutions and they could reduce the τ_f value towards 18 for the value $\text{Mg} = 1$. The very good Q values and excellent sintering properties of $\text{Ba}_8\text{ZnTa}_6\text{O}_{24}$ suggest that it could have useful applications; however, addition or substitution will be needed to reduce the temperature coefficient of resonant frequency to an acceptable value.

In this paper, we report the synthesis and characterization of $\text{Ba}_8\text{Zn}(\text{Ta}_{6-x}\text{Sb}_x)\text{O}_{24}$ ($x = 0, 0.3, 0.6, 0.9, 1.2, 1.5, 1.8$ and 2.4) ceramics.

✉ M. K. Suresh
sureshrni@gmail.com

¹ Department of Physics, St. Thomas College, Ranni, Kerala 689673, India

² Department of Physics, Mar Ivanios College, Thiruvananthapuram, Kerala 695015, India



Protection of Metallic Copper from the Attack of Sulphuric Acid Using HDMMA, a Schiff Base Derived from L-Cysteine and 2-Hydroxy-1-naphthaldehyde

Mathew Kuruvilla² · Anupama R. Prasad¹ · K. M. Shainy¹ · Abraham Joseph¹

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Abstract

Amino acids and its Schiff bases have been recognized as green corrosion inhibitors mainly due to its non-toxic nature and biodegradable properties. Considering its unique nature and significant contribution in corrosion inhibition, studies were undertaken with a Schiff base derived from L-cysteine, HDMMA [(E)-2-((2-hydroxyl-4a,8a-dihydronaphthalene-1-yl) methyleneamino)-3-mercaptopropanoic acid] as corrosion inhibitor for metallic copper in 1.0 M sulphuric acid. Techniques such as electrochemical impedance spectroscopy (EIS), potentiodynamic polarization (Tafel), basic computational calculations, and adsorption studies were employed in the present study. Results revealed that HDMMA offer attractive inhibition efficiency in lower and elevated temperatures. The inhibition effect advanced with the inhibitor concentration. However, with the increased temperature the inhibition efficiency showed a declining trend. The mechanism of the inhibition action is due to the adsorption of the inhibitor molecules on the metal surface which decrease the double layer capacitance and increase the polarization resistance.

Keywords Copper · HDMMA · EIS · Polarization

1 Introduction

The corrosion of metals became a serious issue in domestic as well as industrial sectors. It leads to destruction by converting them into oxides or other corrosion products. Mineral acids such as hydrochloric acid and sulphuric acid are commonly used for pickling as well as removal of rust and scale on metals in the industries. These acid solutions are highly corrosive in nature, attack the metal surface and initiate vigorous corrosion process. Due to this adverse impact of acid solutions on metal surface, almost all industries are suffering huge and incredible economic loss. Among the various techniques to prevent corrosion, use of inhibitors became a widely accepted mode due to its high efficiency and economic feasibility. Generally, inhibitors are adsorbed on the metal surface to form a protective barrier and interact

with anodic or/and cathodic reaction sites. A large variety of inhibitors have been employed for studies in various corrosive media and on several metal surfaces. Compounds containing heteroatoms like nitrogen, sulphur, phosphorous, and oxygen along with aromatic rings, multiple bonds or delocalized pi electrons are often found to be good inhibitors [1, 2]. The use of inhibitor is specific and depends on chemical composition of the solution, nature of the metal surface, the temperature of the reaction medium, and the potential at the metal–solution interface [3–5].

Copper is relatively a noble metal extensively used in chemical and micro electronics industries due to its excellent thermal and electrical conductivity. It is an active metal that does not resist corrosion as well. Copper requires strong oxidants for its corrosion or dissolution compared to other metals. Copper is vulnerable against corrosion in severe environments, although it is highly resistant to corrosion in neutral or slightly alkaline aqueous environments [6–9]. The use of an appropriate inhibitor is necessary to resist corrosion of copper in acidic chloride environment [10–13]. Local defects and pitting are important risks which are to be handled for protection of copper from aggressive environments [14, 15]. The use

✉ Abraham Joseph
drabrahamj@gmail.com

¹ Department of Chemistry, University of Calicut, Malappuram, Kerala 673635, India

² St. Thomas College, Ranni, Kerala 689673, India

Ecotoxicity of Heavy Metals (Cd And Pb) and its Decontamination by Earthworm Species

R. Aruna Devy

Department of Zoology, St.Thomas College, Ranni, Kerala- 689 673.

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Abstract

The increase in soil pollution levels particularly by heavy metals has endangered human life. Prevention of heavy metal accumulation is one of the prerequisites for sustainable agricultural production. Earthworms, the major soil inhabiting organisms is efficient in the treatment of solid waste and is also reported to tolerate heavy metal accumulation in their tissue. They are both "protective" and "productive for environment and society. An ecofriendly vermicomposting method was experimented for decontaminating two heavy metals Cadmium(Cd) and Lead(Pb), which accumulated more in soils and plants and act as an accumulative slow poison.

To conduct this study, samples of clay and loamy soils contaminated with Cd and Pb, collected from paddy, vegetable fields and industrial areas were inoculated with two species of earthworms – *Eudrilus eugeinae*, an exogenic, epigeic form and *Lampito mauritii*, an endigeic, anecic form, to access their potential in soil amelioration. The earthworms densities and feed loading rates were maintained identical.

After assessing the initial metal (Cd and Pb) content of the soil samples, vermireactors were run in duplicate for 60 days. The epigeic, *Eudrilus eugeinae* demonstrated a better potential where the reduction in Cd contamination to the extent of 45.23%, 42.85%, and 38.18% was observed and Pb content was reduced by 22.35%, 24.7%, and 19.65% in paddy vegetable and industrial soil samples respectively. In soils treated with the anecic *Lampito mauritii* reduction in Cd content was by 47.61%, in the paddy field samples. The reduction in Pb content was 18.82% 17.64% and 18.8% in the three soil samples respectively. The efficiency of, *Eudrilus eugeinae* was 11.5% and 20.6% higher respectively in Cd and Pb decontamination than that by *Lampito mauritii*

Keywords: *Lampito mauritii*, *Eudrilus eugeinae*, Soil, Vermicompost, Ecotoxicity

Introduction

A revolution is unfolding in vermiculture studies for multiple uses in environmental protection and sustainable development. Earthworms have over 600 million years of experience as 'environmental managers' in the ecosystem. Vermiculture scientists all over the world knew about the role of earthworms as 'waste managers', as 'soil managers and fertility improvers' and 'plant growth promoters' for long time. But some comparatively 'new discoveries' about their role in 'treatment of municipal and industrial wastewaters', 'remediation of chemically contaminated soils' and 'development of life saving medicines', 'nutritive feed materials' for fishery and dairy industries and raw



BACKGROUND CAUSES OF HUMAN CATARACT IN THE THREE COASTAL DISTRICTS OF KERALA

Aleyamma Kuruvilla* and Issac Thomas

Department of Zoology, St. Thomas College, Ranni-689673 Pathanamthitta, Kerala, India

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Cataract, prevalence, districts, coastal, Thiruvananthapuram, Kollam, Alappuzha, background causes.

ABSTRACT

Introduction: - Cataract is considered as a condition and not a disease, they develops due to multiple reasons.

Methodology:- A structural questionnaire was distributed among the patients in the hospitals, as well as in the houses in the three coastal districts directly or through the nurses to identify the background causes of three southern coastal districts (Thiruvananthapuram, Kollam, Alapuzha) of Kerala state.

Result:- Among the peoples participated in the questionnaire method, prevalence were highest among rurals than urbans or coastals, females than males, unilateral cataract blindness than bilateral cataract blindness, rice used as staple food than wheat and non-vegetarians than vegetarians in all the districts.

Discussion:- It is thus concluded that cataract is a major public health problem in Kerala, many factors including aging, female gender, rural residence, history of other diseases and other drug taken, non- vegetarian food, rice used as staple food and firewood as cooking fuel operating in its causation. The above risk factors are of concern not only for cataract prevention but also for public health at large. The success of public health programs is dependent on a healthy partnership between the government and nongovernmental organizations, and also private sectors.

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INTRODUCTION

Cataract is considered as a condition and not a disease, they develops due to multiple reasons. Secondary cataracts develop from procedures performed to correct other vision problems such as glaucoma. Traumatic cataracts develop from injury to the eye lens or the eye as a whole. Congenital cataracts are genetic and are found in babies and sometimes develop in childhood. There are also radiation cataracts that develop after some kinds of exposure such as excessive sunlight, ultraviolet or infra-red light. It has been shown that cataracts can develop from long term use of certain steroids as well as some lifestyle habits.

Exposure to even low-level UVB radiation from sunlight increases the risk for cataracts. Neale *et al.*, (2003), provided new evidence supporting the link between sun exposure and nuclear cataracts. The risk was highest among those who had significant sun exposure at a young age.

Vegetables have so much to offer and yet we choose more of non-vegetarian. But the consequences are pretty clear when a person goes to old age.

Obesity and muscle weakness leading to arthritis, low bone density and cataract are very few problems to deal with non-vegetarian food liker's are more in this world than the vegetarian food liking people. It is solely for the reason that non vegetarian is tastier and looks delicious. But the more a person eats non vegetarian, the more he is prone to complex diseases. On the other hand, non vegetarian food, makes the body immune system and health (Bukisa., 2012). Ramakrishnan *et al.*, (1995) favors the idea that cadmium accumulating in the lens directly causes the damage. They have the cadmium data to support that hypothesis, but other components of tobacco smoke and their products in blood may play a role. The interactions of cadmium with various components of the lens have yet to be explored. Plasma membranes, structural proteins, channels, enzymes, receptors, etc are obvious candidates for study. If cadmium is playing a major role in the link between smoking and cataract then workers exposed to high cadmium levels in the cadmium plated steel industry, or those consuming cadmium enriched food - for example, rice in some parts of Japan, might have an increased risk of cataract (Harding, 1995).

PATIENTS & METHODOLOGY

A structural questionnaire was distributed among the patients in the hospitals, as well as in the houses in the three coastal districts (Thiruvananthapuram, Kollam & Alappuzha) of southern Kerala, directly or through the nurses to identify the background causes such as information in the current as prior

*Corresponding author: **Aleyamma Kuruvilla**

Department of Zoology, St. Thomas College, Ranni-689673 Pathanamthitta, Kerala, India

Histomorphological approach of hypertensive and diabetic cataractous lenses

Dr. Aleyamma Kuruvilla* and Dr. Issac Thomas 1

* Assistant professor, Dept. of Zoology, St. Thomas College, Ranni-689674
Pathanamthitta, Kerala, India. Former Research Guide, PG. Dept. Of Zoology, St. Berchmans College,
Changanacherry, Kerala, India
Corresponding Author: Dr. Aleyamma Kuruvilla

Abstract: Light microscopic study shows nuclear opacification and lysis, cortical degeneration and thickening, fibre fragmentation with partial dissolutions of the lenticular tissue, subcapsular degeneration, cell separations, dissolution and lens tissues with anteroposterior thickening in subcapsular cataract lens when compared with normal lens. In Scanning electron microscopic study cataractous lenses shows lamellated band of lens fibres of different density, disarranged and degenerated lens fibres with vesicles or globules, cortical rupture, large opacities or lesions, uneven cloudiness in the subcapsular region, necrosis, the swelling of the broken ends (asterisks), the porosity and granulation of the lens fibres and vacuoles or vesicles fused together in the form of spherical bodies or balloon like appearance when compared with the normal lens.

Key words :- hypertensive cataractous lens, diabetic cataract lens, Histomorphology, Light microscopy, Scanning electron microscopy,

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I. INTRODUCTION

According to Kalariyaet *al.*, (1998) in the lens fibers three main age-related fine structural alterations were found: i) membrane ruptures, ii) water vacuoles and iii) multilamellar bodies. The frequency of these alterations increased with age and they remained restricted to the superficial equatorial cortex. They were absent in the anterior and posterior cortex, supra nuclear equatorial cortex and nucleus. The membrane ruptures and water vacuoles are in morphological support of the view, based on biochemical evidence, that oxidative stress leads to destabilization and disintegration of membranes and consequently disturbs the water balance of fibers. It is postulated that the lamellar bodies are involved in the repair of ruptured membranes and breakdown of affected proteins thus explaining the late onset of senile cataractous changes

Cataract associated with aging (senile or age-related cataract) most often occurs in both eyes, with each cataract progressing at a different rate. Generally normal aging and cataractous changes in the lens are related to its metabolic activity. Cataract is a public health problem in many developing countries including India. Formation of granular and plaque-like opacities in the posterior subcapsular cortex often heralds the formation of posterior subcapsular cataracts. Posterior Subcapsular (PSC) cataracts-Posterior subcapsular cataract (PSC) is located just beneath the posterior capsule and takes place due to abnormal differentiation and migration of lens epithelial cells (LEC). This type of cataract, which develops between the back of the lens and the lens capsule, is the softest and most rapidly growing type. PSC cataracts tend to scatter light at night and thus interfere with night time driving. People with diabetes, high farsightedness or retinitis pigmentosa or those taking high doses of steroids may develop a sub capsular cataract.

According to Kalariyaet *al.*, (1998) in the lens fibers three main age-related fine structural alterations were found membrane ruptures, water vacuoles and multilamellar bodies. The frequency of these alterations increased with age and they remained restricted to the superficial equatorial cortex. They were absent in the anterior and posterior cortex, supra nuclear equatorial cortex and nucleus. The membrane ruptures and water vacuoles are in morphological support of the view, based on biochemical evidence, that oxidative stress leads to destabilization and disintegration of membranes and consequently disturbs the water balance of fibers. It is postulated that the lamellar bodies are involved in the repair of ruptured membranes and breakdown of affected proteins thus explaining the late onset of senile cataractous changes.

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Sneha Elcy Jacob

Asst. Professor of English

St. Thomas College, Ranni, Kerala

Email- snehajacobsneha@gmail.com

Dr. Asha Susan Jacob

Asso. Professor and H. O. D.

Post-graduate and Research Dept. of English

St. Thomas College, Kozhencherry, Kerala

Abstract

The history of travel and travel writing dates back to antiquity. But the genre is however regarded as a prerogative of the Europeans and the travel narratives of non-European travellers that predates European ones are often overlooked and ignored. European travel writing has been instrumental in upholding European supremacy and legitimising the continual subjugation of the East as well. However, recently, there have emerged travel narratives by some writers which subvert the long-held notions of European cultural high handedness in Western travel writing. Such narratives employ techniques and methods that render them antithetical to the generic tradition of Western travel writing and function as counter-discourse that subvert dominant discourses. Caryl Phillips' *The European Tribe* (1987) and Amitav Ghosh's *In an Antique Land* (1992) are two travel narratives written in this vein challenging many of the established norms and dominant discursive patterns of European travel writing.

Keywords: Travel, Eurocentrism, subvert, counter-discourse

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The history of travel is as old as the history of man. Travel writing, the literary by product of travel also has a long tradition. But today, as Justin D. Edwards and Rune Graulund remark, “the problem is that ‘travel’ has so often been conflated with ‘European(ized) travel’” (2). In fact, there had been travellers from Asia and Africa even before the travellers from the West emerged and they had crisscrossed the world much before the Western travellers set out for their journeys. There also existed textual and visual representations by Eastern travellers that were of great use to the European travellers. It is a misconception that it was the Western travellers who mapped the world. In *Other Routes: 1500 Years of African and Asian Travel Writing* (2006), Tabish Khair excellently makes a case that there is “textual and cartographic evidence of vast parts of the world being navigated and traversed by Asians and Africans before, during and after Europeans set out on

DEVELOPMENT POTENTIAL OF ECOTOURISM – AN EVALUATION OF PERIYAR TIGER RESERVE, IDUKKI DISTRICT, KERALA

Prof. Benny George

Assistant Professor in Economics, St.Thomas College Ranny, Kerala

Dr.Sajani Somanathan

Assistant Professor in Economics, St.Thomas College Ranny, Kerala

Abstract

Ecotourism is a new concept in tourism. It is a purposeful travel to natural areas to understand the cultural and natural history of environment, taking care not to alter the integrity of the ecosystem, while producing economic opportunities that make conservation of natural resources beneficial to local people. Kerala, of all the states in India, offers the maximum potential for the promotion of ecotourism. Miles and miles of endless serene beaches, tranquil stretches of emerald backwaters, pristine valleys and mountains, exotic species of rare flora and fauna, wild life sanctuaries and national parks, enchanting art forms, magical festivals and cultural monuments are all unique to Kerala and has given it the sobriquet of “Gods own country”. The national geographic traveler has labeled Kerala as one of the 10 paradises in the world. Kerala is thus ideally suited for the promotion of ecotourism and has already initiated several steps in this direction. This paper focused on the rural development potential of ecotourism with special focus on Periyar Tiger reserve.

Keywords: Ecotourism, Periyar Tiger Reserve, Environment Stability, Bio-Diversity Conservation, Development.

Introduction

Tourism has been identified as one of the world's largest smokeless industries and it is one of the fastest growing industries today. The significance of tourism has been well recognized in both the developed and developing countries. In recent times it has ushered-into a new area of expansion and importance and has emerged as an economic activity of immense global



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Email: editorijmie@gmail.com

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