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CHAPTER SIXTEEN

THE CONTRIBUTION OF INDIGENOUS KNOWLEDGE OF THE *KHASIS* IN ECOSYSTEM MANAGEMENT

JASMINE T. SAWIAN, LARIHUN JEENGAPH AND MICHELLE KHONGWIR[1]

1. Introduction

All life on earth is part of a great and interdependent system which interacts with and depends on the non-living components of the planet- the atmosphere, ocean, fresh water, rock and soil. Humanity depends totally on this community of life. Today, as always, human beings are not only dependent on nature for their sustenance, health, well-being and enjoyment of life, but also derive all of its food and medicine and industrial products from the wild and domesticated components of the biological diversity. The indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature. The territories of most of the indigenous people around the world overlap with the regions rich in biodiversity. The indigenous people occupy and protect vast forests that are being assessed and presented in the REDD market for Global Climate Change mitigation. The strengths of the indigenous people as conservation and development partners include their diversity, self-organizing abilities, knowledge, their internal accountability, and their locally-adapted cultures (Alcorn 2010, 1).

Meghalaya ($20^0$1'N–$26^0$5'N latitude and $85^0$49'E–$92^0$2'E longitude) - "the abode of clouds" in Sanskrit, is one of the eight states of North East India. Meghalaya covers an area of approximately 22,430 square

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AN EASY INTRODUCTION TO INTEGRAL CALCULUS

Manbhalang Chyne

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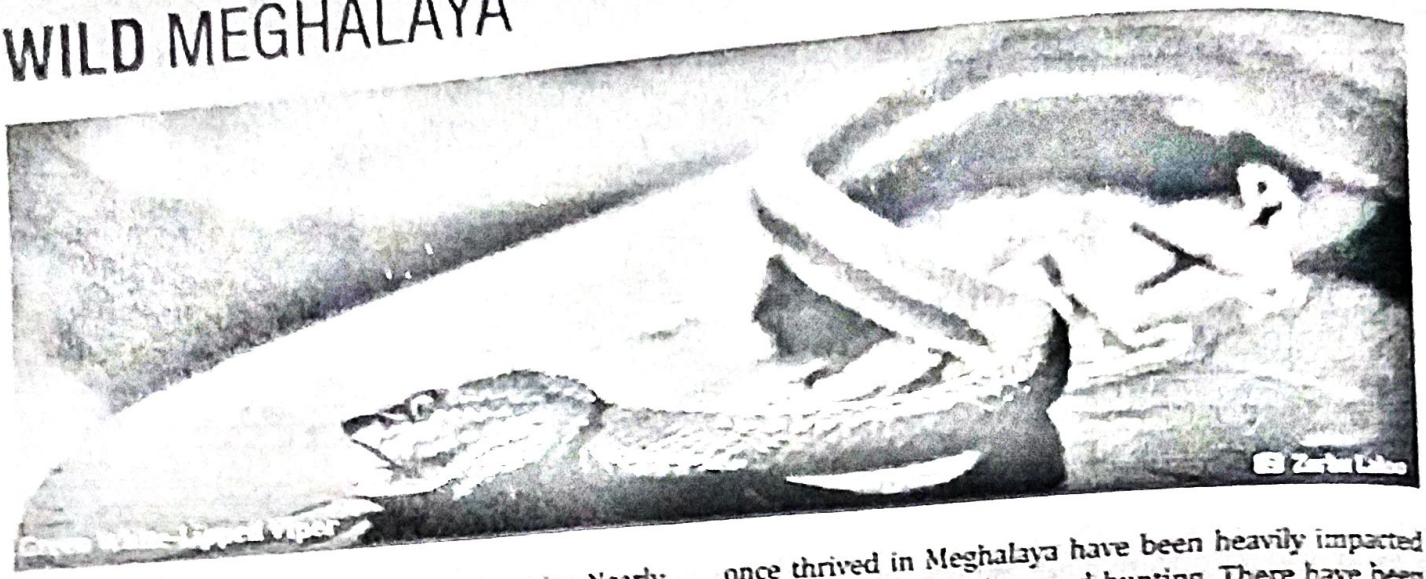
WILD MEGHALAYA

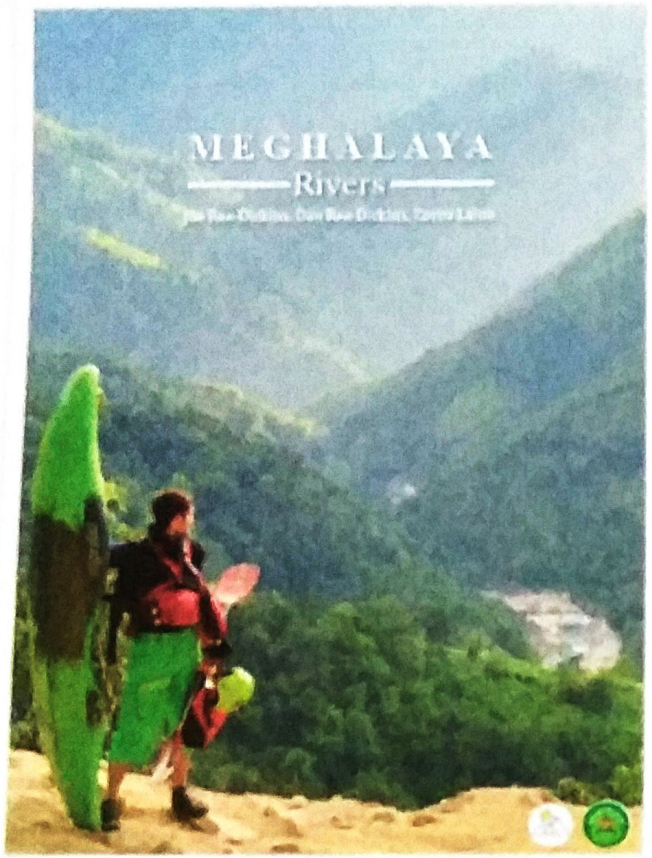


Meghalaya is home to incredible biodiversity. Nearly every animal you can think of from The Jungle Book, and many more, are indigenous to Meghalaya. The geographical position of North East India, bound by the Himalayas to the north and the Bengal basin to the south, makes it a corridor zone where the flora and fauna of Southeast Asia and Peninsular India can be found together. The sad reality is that many animals that once thrived in Meghalaya have been heavily impacted by pollution, habitat loss and hunting. There have been very few studies on the populations of most animals in Meghalaya, so it is difficult to ascertain the current status of its rich biodiversity. This problem is not helped by the extreme difficulty of spotting an animal in the deep, impenetrable jungles that are characteristic of Meghalaya.

Bengal Monitor Lizard

Golden Tortoise Shell Beetle

Giant Golden Orb Weaver



Meghalaya Rivers

Joe Rea-Dickins, Dan Rea-Dickins, Zorba Laloo

Hidden away off the beaten path in North-East India is the small culturally rich hill state of Meghalaya. Meghalaya receives the heaviest rainfall anywhere on Earth and all this water creates rivers that are some of the steepest and most powerful on the planet. Its rivers are steeped in a folklore that was shared over campfires and hearths back in a time when its people had no written word. These rivers are the bedrock of folklore and are surrounded by diverse natural beauty. This wild frontier has recently caught the attention of whitewater paddlers from all over the world.

Six years of research by international and local paddlers has culminated into this one-of-a-kind book. More than just a guidebook, *Meghalaya Rivers* shares previously unpublished folk stories, personal accounts from river descents, detailed maps, insights into the unique culture, history, flora, fauna, environment and geography of this enchanting part of the globe. Not only is this book full of breathtaking photography from some of the most difficult-to-reach corners of Meghalaya, it is also packed with all the information needed to take you to these wild places. Now all you need to do is go and see them for yourself.

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Understanding the TRIBES of Asia

Tradition
Roots
Identity
Belief
Environment &
Security

David Arnold Kharchandy

CHAPTER 14

A Folkloristic View of the Khasi Society-Understanding the General Social Structure through Selected Folklore of the Khasis

F. E. J. SYNGAI

The Khasis are one of the major tribes inhabiting the state of Meghalaya, in India's North East. The Khasis have their own culture, tradition, language, religion and system of governance. The most striking feature of the Khasi tribe is the practise of Matriliny, where descent is traced through the female line and inheritance is also affected through the female. The Khasis follow the matrilocal rule of residence, a stringent rule of clan exogamy, and a well-defined kinship system. The term 'Khasi', Hamlet Bareh suggests, has a particular significance. *'Kha'* means 'born of' and *'Si'* refers to an ancient mother. (Lyngdoh, 1991:19). Literally, the word Khasi means 'by the woman sprang the clan'. There are three levels of kinship organisation amongst the Khasis identified as- *'Kur'* or clan; *'Kpoh'* or womb or lineage and *'Iing'* or the family. Likewise, the *Kur* is the biggest, followed by the *Kpoh* and then the smallest unit, the *Iing*. Kinship roles are assigned to each and every person at family, lineage and clan levels.

The Khasis are rich in their folklore tradition and in the absence of volumes of historical records, folklore provides valuable information about the past history and experiences the tribe had undergone over the long years of its existence. 'Folklore' is literally understood as the 'the lore of the people'. The word was firstly used by William Thoms, in The Athenaeum, in 1846 to refer to the commonly shared understanding of the world, the physical setting and the social and cultural

Sudhir Sopory · Editor

Sensory Biology of Plants

Springer

The Light Awakens! Sensing Light and Darkness

2

Eros Kharshiing, Yellamaraju Sreelakshmi, and Rameshwar Sharma

Abstract

In the late nineteenth century, Charles Darwin observed that 'light exerts a powerful influence on most vegetable tissues, and there can be no doubt that it generally tends to check their growth' (*The Power of Movement in Plants*, 1880). Subsequent to this seminal work, light has been recognised as an important regulator of plant growth. Over the next 150 years, research on light regulation of plant growth and development by immensely imaginative and talented researchers in various laboratories across the globe has given us tremendous insights into how light governs plant growth both at the organismal and molecular levels. The discovery of light-responsive photoreceptor proteins that are activated by red, far-red, blue/UV-A and UV-B light has helped further our understanding of how plants respond to the light that falls on the surface of the earth. This chapter brings together the recent developments in our understanding of how plants sense light by using photoreceptors and the various molecular mechanisms involved in light perception and transmission of the light signal within the plant. Furthermore, the chapter discusses recently ascribed functions of photoreceptors such as the ability of plants to distinguish their kin from non-kin through the action of phytochrome, the role(s) of cryptochrome as a magnetoreceptor and the role of phytochrome and phototropin as temperature sensors. The chapter also rekindles the debate about whether plants can have vision despite the lack of optical or light-sensitive organs such as eyes.

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Chapter 9
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Bioinformatics Based Investigation on the Assortment of Industrially Accessible Azodyes with Azoreductase Enzyme of *Pseudomonas putida*

Bikash Thakuria[1] and Samrat Adhikari[1*]

DOI: 10.9734/bpi/csbbt/v1

ABSTRACT

Azo dyes are the most widely applied chemical dyes that have also raised great concerns for environmental contamination and human health issues. There has been an increased interest in discovering new novel bioremediation strategies to degrade azo dyes for environmental issues and also economic purposes. Azoreductase are key enzymes evolved in nature capable of degrading the azo dyes. As azoreductase enzyme is a key enzyme in degrading these azo dyes, they are good and potential candidates for industrial wastewater treatment and environmental restoration. The initial critical step of reduction of azo bond during the metabolism of azo dyes is catalysed by a group of NADH and FAD dependant enzyme called azoreductase. Although several azoreductase have been identified from microorganisms and partially characterized, very little is known about the structural basis of the substrate specificity and the nature of catalysis. Azoreductase enzyme of Pseudomonas putida has a wider broad spectrum of substrate specificity and capable of degrading a wide variety of azo dyes. In the present study, the crystal structure of the enzyme from PDB and 10 azo dyes from NCBI PubChem compound were retrieved and their interactions were studied. These azo dyes were then docked with the FMN-dependent NADH-azoreductase enzyme to analyse the binding affinity of the azo dyes with the enzyme and predict the catalytic sites. Consequently, the catalytic residues of FMN-dependent and NADH dependent enzyme were then analysed in terms of properties including function, hydrogen bonding and flexibility. The results suggest that Ala-114, Phe-172 and Glu-174 play a predominant role as catalytic site residues in the enzyme. Furthermore, the approach emphasis on predicting the active sites of this enzyme where substrates can bind in order to give a better understanding of the biodegradation of some of the commercially important azodyes mediated by azoreductase. These results will pave way for further increase in azoreductase activity and for better understanding of the dye degradation pathway. In addition to it, the different types of azo reductases can be further biochemically characterized for their novelty in near future.

Keywords: Azoreductase; NADH; FMN; chemical properties; docking; active sites.

1. INTRODUCTION

Azodyes are known to be generally utilized class of colors that are exceptionally toxic and contain cancer-causing mixes. Despite the fact that parcel of research has been done for their expulsion from modern effluents, almost no consideration is given to changes in their lethality and mutagenicity during the treatment forms [1]. Azo colors speak to practically 70% of the material dyestuffs created and the effluents discharged into the water framework upsets the biological parameters of for the most part water bodies [2]. Because of colossal modernization the most hazardous condition contamination in the wastewater are the effluents discharged from creation of colors and the coloring businesses. These remaining colors in modern effluents are a danger to general wellbeing due to its high poisonous quality and cancer-causing nature [3,4]. The uncontrolled arrival of these mixes in the earth causes extreme issues by diminishing light ingestion which altogether influence photosynthetic

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Aging of the Endocrine System

Bantelskhem Kharwanlang, St. Edmund's College, Shillong, India
Ramesh Sharma, North Eastern Hill University, Shillong, India

Glossary

https://www.ncbi.nlm.nih.gov/pubmedhealth/PMHT0022071/2018 (accessed on 13/09/18)

AXES A systematic arrangement of the hypothalamus, pituitary, endocrine glands and target organs exhibiting a specific endocrinal function, along with the feedback control loop.

Endocrine glands A group of specialized cells synthesizing/storing hormones. They release hormones into the blood circulatory system.

Endocrine system A systematic anatomical arrangement of glands synthesizing hormones and organs perceptive to hormones.

Endocrinology The science of studying cells or organs communication via hormones.

Gerontology The scientific study of the process of aging.

Homeostasis A steady state equilibrium of chemical messengers released from the endocrine glands to elicit a specific response in the targeted organ.

Hormones A chemical messenger released from the endocrine glands or specialized cells to elicit a specific response in the targeted organ.

Receptors A molecule on the targeted cell surface or in cytoplasm/nucleus which interacts with the hormone and activates downstream intracellular signaling pathway to produce the required biological function.

Signaling pathway/cascade An array of molecular interactions which relay, transduce and amplify the hormonal signal into the effective biological action.

Encyclopedia of Biomedical Gerontology, 2020, 159–172

Expression Analysis on RNA Seq Data

January 2020

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Authors:

Reema Joshi
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Citations (3) References (377)

Abstract

Survey of Methods Used for Differential Expression Analysis on RNA Seq Data

Reema Joshi(✉) and Rosy Sarmah

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Abstract. Gene expression indicates the amount of mRNA produced by a gene under a particular biological condition. Genes responsible for changes in biological conditions of an organism will have different gene expression values across different conditions. Gene expression analysis is useful in the domain of transcriptomic studies to analyse functions of and interactions among different molecules inside a cell. A significant analysis is that of a differential gene, that is a gene that exhibits strong change in behaviour between two or more conditions. Thus behavioural cell changes can be attributed to the differentially expressed genes. Statistical distributional properties in the read counts that constitute RNA-seq data are used for detecting the differentially expressed genes. In this paper we provide a comparison study of different tools which aid in RNA-seq based differential expression. It is important to note how the results of these tools differ and which tool provides more statistically significant results for the same.

Keywords: RNa-seq · Differential expression · Differential gene · Empirical study · Differential expression tools

1 Introduction

A gene is a small section of genetic material called DNA which contains genetic information. Every cell in an organism contains the whole genome (i.e. the DNA), which contains heritable information. The DNA is a helical-structured, double stranded molecule that is capable of undergoing certain biological processes to produce useful products such as proteins. Protein making goes through two stages: (1) Transcription, in which the DNA is converted into mRNA (messenger RNA) molecules with the help of an enzyme called the RNA polymerase (2) Translation, which occurs after the messenger RNA (mRNA) has carried the transcribed 'message' from the DNA to ribosomes [2], where proteins are made. Though thousands of transcripts are produced every second in each cell, the amounts and types of mRNA molecules in a cell reflect the function of that cell. Gene expression can also be understood as a measure of the activity level of a gene as it goes through the two stages mentioned above. Gene expression levels differ for different genes across cells and this is indicative of the function of a particular cell. As mentioned earlier, only a fraction of genes contained in the DNA are used in a cell at a given time. Measuring the expression level of each gene helps biologists understand cell

S. Dehuri et al. (Eds.): BITMDM 2019, LAIS 10, pp. 226–239, 2020.
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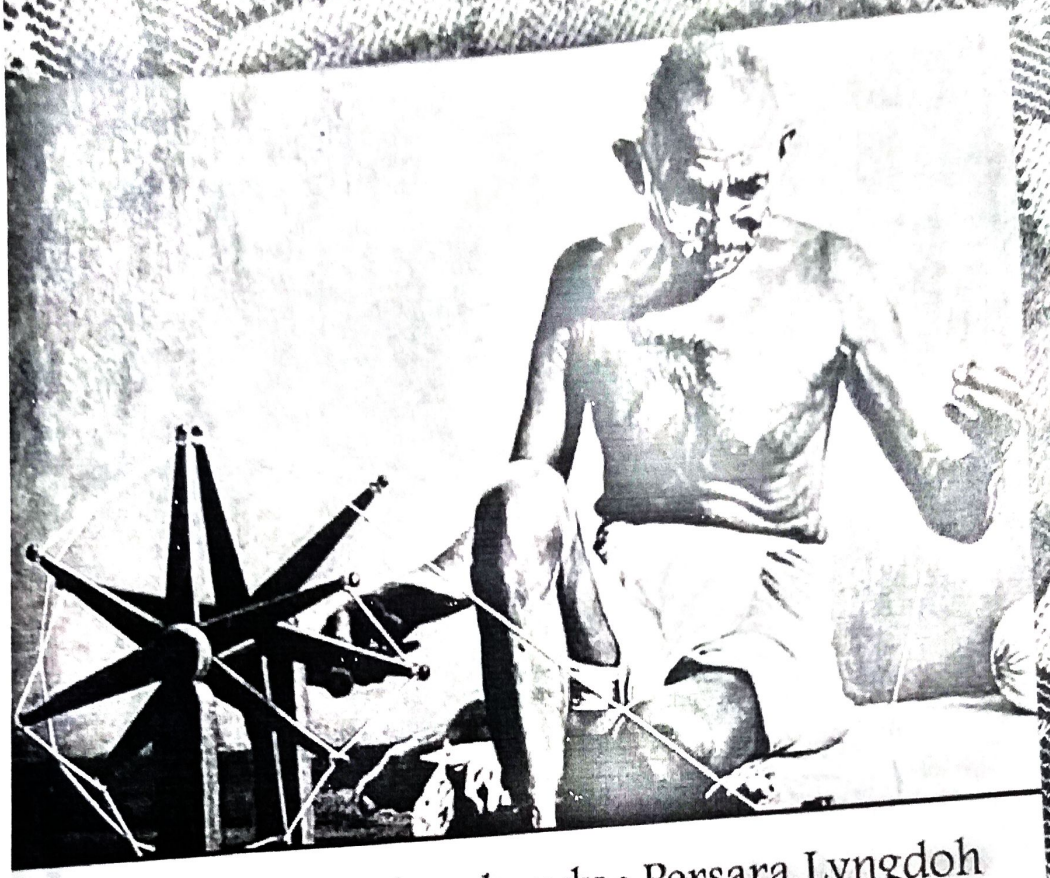

David Arnold Kharchandy • Persara Lyngdoh

CELEBRATING THE MAHATMA

9

Gandhi on Society

F. E. J. Syngai

To begin the journey into the life of the 'Mahatma', let me start with this quotation of Albert Einstein - "Generations to come will scarce believe that such a one as this ever in flesh and blood walked upon this earth". It is the deep implications of these lines that compel one to have a closer look at the impact Gandhi had and is still having on society, not just in India but the world at large. Some look at him as 'Bapu', others see him as a 'guru' or a god, others still as shrewd politician, a man with a 'naked ambition', and some as a social activist and reformer. None the less, the greatness of the man will be further understood as one remembers to keep in mind the political scenario of his times, and most of all the society he lived in. It was no easy task to reform society and fight for independence side by side. Gandhi had to find his way into the powerful institution of state and politics on one hand, and caste system on the other. Those who understood him praised him and those who do not, criticized him. Yet, he was aware of this and wrote, "I will not let anyone walk through my mind with their dirty feet" (quotes, 2014). It is in this context, this paper will focus on the relationship, relevance and impact of Gandhi's life and work on society, with special reference to caste. This paper will stress more on Gandhi's work or efforts on the 'Untouchables'.

There is no dearth of literature on Gandhi. He has been called the 'Father of the Nation' and a 'great soul in beggar's garb'. A frail man with a will of iron, he provided a blueprint for future social movements around the world (Blakemore). He introduced

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16

Folklore and Nature in the Context of the Khasis: A Look at Some of the Cave Lores

Finley Syngai

Introduction

There has always been a close relationship between humans and nature. Studies about the evolution of culture, social thought and religion in different parts of the world reflect on this close-knit relationship between the two. 'Folklore' literally understood as "the lore of the people" particularly explains the relationship between humans and nature. The Oxford Dictionary defines it as "The body of traditions and knowledge on a subject or held by a particular group". Further lore is a set of doctrines or precepts. It is the accumulated knowledge that has formed a set of communications and dialogue "within a group reflecting the environmental and socio-cultural life and ethno-history" (Sen, 2005). Folklore consist of legends, music, oral history, jokes, proverbs, popular beliefs, fairy tales, stories or customs included in the tradition of culture, sub-cultures or group. It also includes the set of practices through which those expressive genres are shared. The word was coined by William Thoms, in *The Athenaeum*, in 1846 to refer to the shared understanding of the world, the physical setting and the social context of people. As Botkin remarks in the introduction to his work *A Treasury of American Folklore* (1944), "What makes a thing a folklore is not only that you have heard it before yet want to hear it again, because it is different but also because you want to tell it again because it is anybody's property". It is the lore of the people. Folklore studies enables, as Dundes says it, the

CELEBRATING INDIA @ 75

David Arnold Kharchandy
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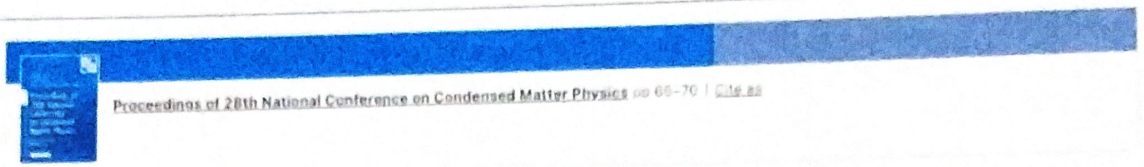
CHAPTER 27

Emerging Food Culture with Special Reference to North East India

FINLEY E. J. SYNGAI

India at 'Seventy Five' implies a growing and changing India. Being inevitable in nature, change is bound to enter and affect all aspects of life and society. The word 'change' denotes any alteration, modification or difference, in anything observed over some period of time. As we attempt a glimpse of India at seventy five, we are also accepting most consciously, that a static society is a utopia; it does not exist. The caption "India at Seventy Five" implies a comparative study of the Indian society then and now. Though the rate, momentum, magnitude and direction of change may not be uniform throughout, we accept the occurrence of change. When India gained its Independence in 1947, sociologists observed tremendous changes in the society. M. N. Srinivas brought such observations in the published work "Social Change in Modern India" (1963). Similarly, Yogendra Singh wrote about the "Modernization of Indian Tradition" (1973) and described the changes and alterations produced out of prolonged contact with a western culture, and the changes taking place in the society of a 'Free India'. Both these books concentrated more on the changes in the caste society, and also reflected on the social and cultural changes as observed in the behaviour of the people at the individual and societal level respectively. Similarly there have been efforts made by historians, sociologists and research scholars to report of the transitions and changes the North East Region of India is also undergoing. The valuable contributions of Prof. David R. Syiemlieh, Dr. Helen Giri, Prof. Soumen Sen, Prof. Desmond L. Kharmawphlang, Prof. A. K. Nongkynrih, Prof. C. Nunthara, Prof. A. C. Sinha



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Development of Electrode Plates Using Vapour Deposition Method for RPC Detectors

Hemen Ch. Medhi & P. K. Boruah

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244 Accesses

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Abstract

Resistive plate chambers (RPCs) are rugged and affordable gaseous detectors that have found wide application in High-Energy Physics and astroparticle experiments. The main features of these detectors are the very large pulse height, reduced cost per unit area of coverage and good time resolution approximately 1 ns. The ease of design makes its application not only in the detection of charge particles but medical imaging also. RPCs are designed using a constant and uniform electric field on parallel electrode plates which are made of a material with high volume resistivity of the order of 10^{10}–10^{12} Ω cm. The electrodes used in this experiment is float glass, Al is deposited on the glass plate to make them conductive electrode plates. This paper deals with the design of glass electrode based single gap, glass RPC prototype of 15 cm × 15 cm size, using vapour deposition method and its testing using front end electronics.

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Chapter 10

The Role of Community Reserved Forests in the Conservation of Anuran Amphibians in Meghalaya, North-East India

Ronald Kupar Lyngdoh Tron, Duwaki Rangad, Wankitlang Shangpliang, Baiakmenlang Manners and Iasyllok Rynjah

Abstract

The state of Meghalaya is situated in the north-eastern India and it comprises three major regions, namely, the Khasi Hills, the Jaintia Hills and the Garo Hills inhabited by three main tribal groups, the Khasis, the Jaintias and the Garos respectively. The tribal communities of Meghalaya protect and nurture the forests located close to their habitation and consider them as sacred. These Community reserved forests are managed by the community for their benefits and they comprise almost about 90% of the total forest cover in Meghalaya. With the recent trends of development and construction in the state many habitats are getting destroyed at an alarming rate. These community reserve forests have been seen to provide the maximum number of existing and stable habitats for many amphibian (anuran) species. In addition, they served as suitable sites for the breeding activities and oviposition by anurans. Discovery of many new anuran species have also been reported from such reserved forests.

Keywords: Anurans, Amphibians, Conservation, Community reserved forests, Meghalaya, India

1. Introduction: Meghalaya- the people, the forests and conservation

Meghalaya (in sanskrit, Meghalaya meaning "abode of clouds") is one of the seven states that are popularly known as the seven-sisters, located in the North Eastern part of India. Lying between 25° 47′ and 26° 10′ N latitude, and 89° 45′ and 92° 47′ E longitude the state of Meghalaya is represented by an irregular terrain in the western and northern regions, and steep slopes to the south and west sharing a 496 km long international border with Bangladesh (**Figure 1**). It has a wide range of altitudinal variation ranging from about 50–1950 m [1], with Shillong peak as the highest peak. With a geographical area of 22 429 square km. [2], the diverse topography of the state provides for a variety of unique vegetation types at different levels of altitude accompanied by varied climatic conditions and edaphic composition. In general, the forests types in Meghalaya can be broadly classified into temperate and tropical mainly based on the rainfall, altitude and composition of dominant species [3].

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CHAPTER 10

A Study on the Diversity of Faunal Species found in Myntdu River, West Jaintia Hills District, Meghalaya

Damewanmi Suchiang, Bethesda Sumer, Emidaoopaya Sumer, Larihun Jeengaph and Jasmine T. Sawian

Introduction

Fresh water resources are very precious for life on our planet. Rivers and their catchment areas constitute an important part of the natural environment and play an integral part in the sustainability and livelihood of communities in the vicinity of such river basins (Ekwere et al., 2011). The quality of water is an important aspect that affects the health and wellbeing of a number of living organisms that depend on this vital resource. Many species evolved in running waters and subsequently invaded stagnant waters. Biodiversity in river systems is therefore the most diverse and complex of the world's fresh water bodies (Higler, 2009). The ecosystem of a river is viewed as a system operating in its natural environment, and includes biotic (living) interactions amongst plants, animals and micro-organisms, as well as abiotic (nonliving) physical and chemical interactions (Angelier, 2003; Campbell et al., 2003).

Fresh water ecosystems support large numbers of species of plants and animals. Fish inhabiting freshwaters comprise 25% of living vertebrates (about 55,000 described species) and represent 13-15% of the 100,000 freshwater animal species (Le've'que, 2005). Fresh water ecosystems are now one of the most vulnerable and threatened ecosystems in the world. As a consequence of human development, nature has been adapted to our needs, and rivers are foremost among the habitats to have been conquered (Higler, 2009). Aquatic ecosystems are important and have a large number of economically important animals, especially fishes, which are an important source of food. Fresh water resources are used for various purposes like agricultural, industrial, household, recreational, environmental activities etc. Several authors have documented a number of freshwater fish fauna with a high level of endemism from Western Ghats (Sanjay et al., 2012).

India, being a mega-diverse country, harbors many freshwater fish species in the riverine systems. In recent years much interest has developed in the study of the phylogeny and taxonomy of the freshwater fishes in the country (Sutar, 2018). The freshwater fishes are well studied and documented across the country

Gopal Kumar Das
Nemai Chandra Pal
Premananda Bharali

Inequality, Poverty and Development in India

Issues from the North Eastern Region

Chapter 13

Levels of Living in the North Eastern States of India

Anika M.W. Kshiar Shadap

Abstract This chapter attempts to examine the levels of living and assess the disparities across the states in the North Eastern Region (NER) of India. It also discusses the changes in the levels of living over the years. Data from varied sources like the National Sample Surveys on consumer expenditure and employment and unemployment, the Census of India and the National Family Health Surveys have been used. The level of living has been measured by a wide range of indicators like employment, per capita consumption expenditure, nutritional intake, educational attainment, demographic structure, literacy rates, household amenities, consumer durables and summary health indicators. In this chapter, each of these indicators have been presented, discussed and have also been combined into a composite index called the standard-of-living index. For comparative purposes, the analysis in the chapter is carried out for each of the eight states in NER and also for the all India average. The study covers a period of about 20 years from 1991 to 2012. Results for rural and urban areas have been presented separately. The chapter highlights the disparities in the NER and underscores the fact that development has mostly bypassed the rural areas.

Keywords Levels of living · North–East india · Standard of living index

13.1 Introduction

The North Eastern Region (NER) of India comprises eight states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Sikkim. This region is isolated from the rest of India and is connected only through the very narrow Siliguri Corridor which is just about 20 km wide. It is surrounded by International borders with China in the north and north–east, Bhutan and Nepal in the north–west, Myanmar in the south and south–east and Bangladesh in the south–

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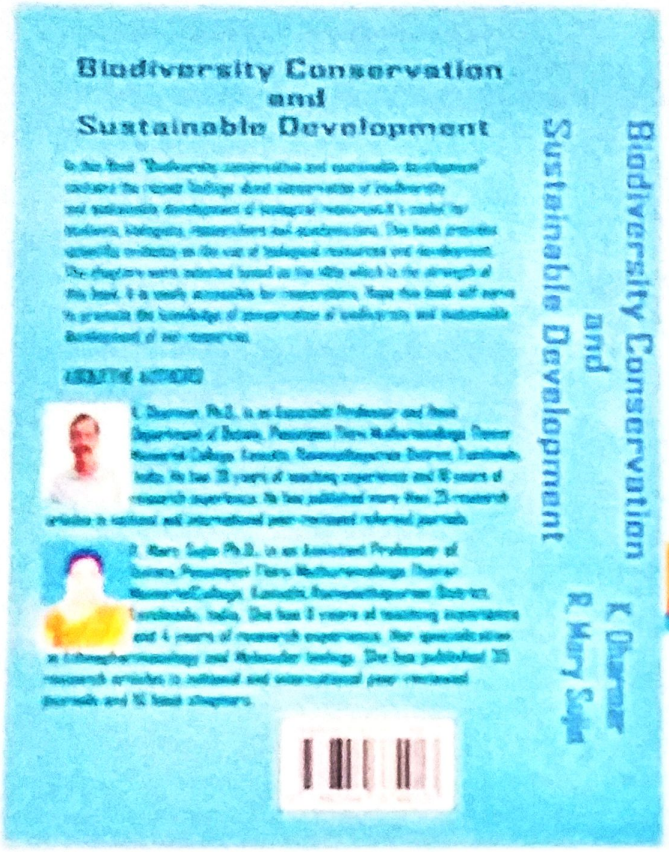

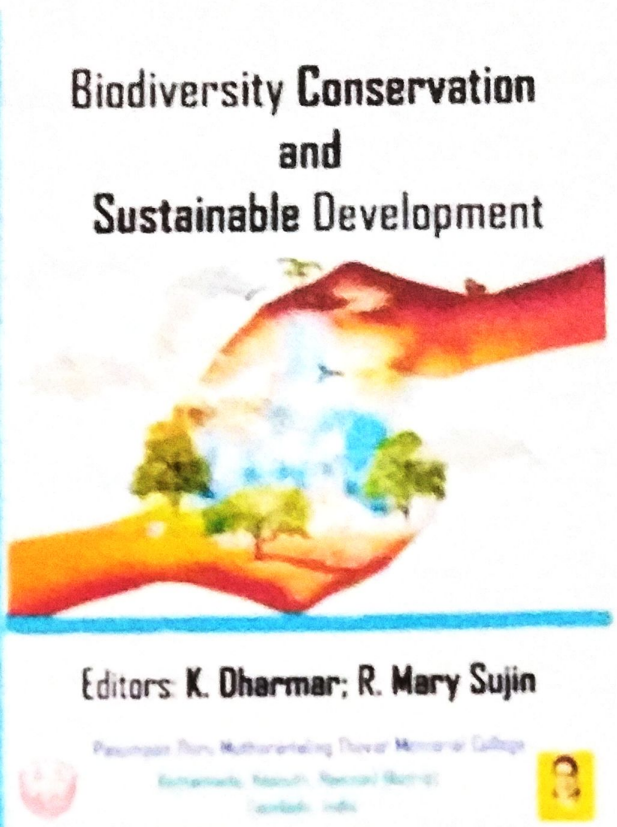

BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT

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Pasumpon Thiru Muthuramalinga Thevar Memorial College,
Kamudhi, Ramanathapuram District,
Tamilnadu, India

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Chapter 14

Medicinal Plants in the Home Gardens in Nongkrem, East Khasi Hills, Meghalaya

Jasmine T. Sawian and Baiahunlang Dkhar*

Department of Environmental Science, St. Edmund's College,
Shillong - 793003, Meghalaya

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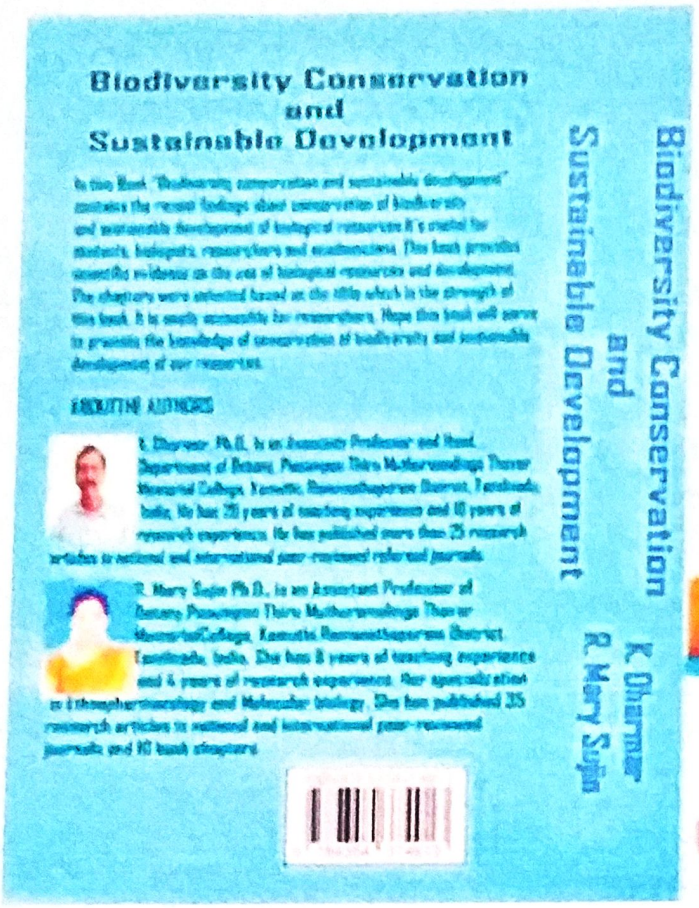
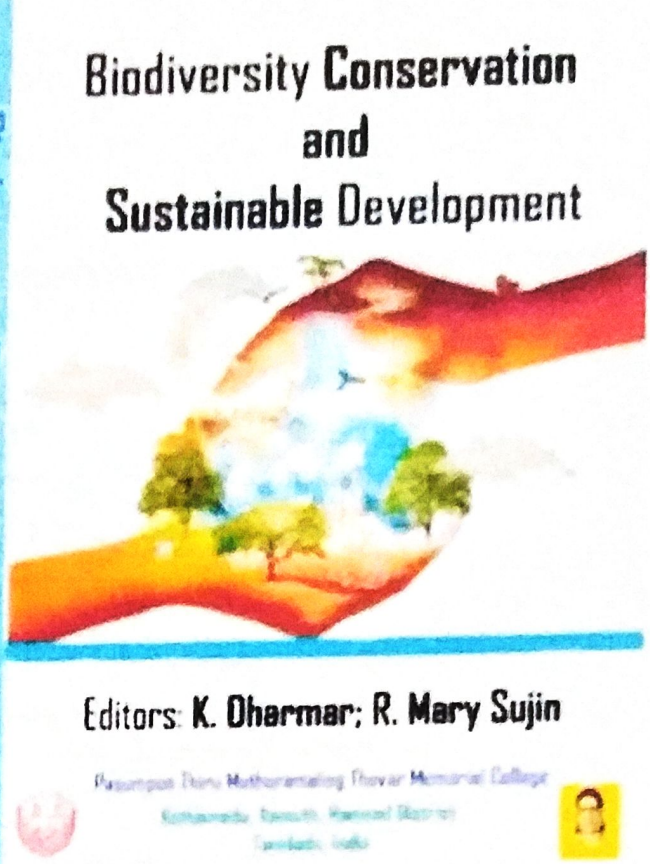
ABSTRACT

A number of medicinal plants used by the Khasi tribe were recorded and documented in the home gardens in Nongkrem village, in the East Khasi Hills district of Meghalaya. A total number of 88 plant species belonging to 78 genera under 52 families were found to be ethnically domesticated in the home gardens of the people in the village. Most of the plants grown are known to be a cheap source of nutrition for the locals, and a number of them are also known be used in traditional herbal remedies or home remedies. The documented medicinal plants were used for treatment ranging from simple headaches, toothaches and stomach aches, to complicated conditions like in the treatment of diabetes and cancer. The results of the present study indicate that the use of plants from home gardens in traditional medicine is probably due to the fact of their near proximity and ease in use in treating basic health problems, and as such these plants will remain the best alternative for the local people.

Introduction

Home gardening refers to the cultivation of a small portion of land which may be around the household or within walking distance from the family home (Odebode 2006). Home gardens can be described as a mixed cropping system that encompasses vegetables, fruits, plantation crops, spices, herbs, ornamental and medicinal plants as well as livestock that can serve as a supplementary source of food and income.Globally, home gardens have been documented as an important supplemental source contributing to food and nutritional security and livelihoods. According to Nimez (1987), home gardens can be defined as, "Food production on small plots adjacent to human settlementwhich is the oldest and most enduring form of cultivation".Home gardens are commonly established on lands that are marginal or not suitable for field crops or forage cultivation because of their size,





BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT

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Chapter 26

A study on the Nongkhyllem Wildlife Sanctuary in Ri-Bhoi District, Meghalaya

Arbanki Sungoh[1], Larihun Jeengaph[1], S. Jeeva[2] and Jasmine T. Sawian[1*]

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ABSTRACT

India is one of the world's megadiversity countries, supporting high biological diversity of both plant and animal species. As per the State of Forest Report (2011), published by the Forest Survey of India, the country has 78.29 million ha of forest and tree cover, which is 23.81% of the geographical area of India. However, several forest areas and important wildlife habitats have been diverted for cultivation, habitation and other uses or have been intensively degraded. Wilderness areas, wildlife habitats and forest are rich in biodiversity and needs to be protected for long term conservation of species. The objective of the present study is to find out the faunal diversity of Nongkhyllem Wildlife Sanctuary (NWLS) situated at Ri-Bhoi District, Meghalaya and wildlife management in the sanctuary.

Introduction

India has a diversity of geographical features which give rise to a variety of ecosystems and species. As per the State of Forest Report 2011, published by the Forest Survey of India, the country has 78.29 million ha of forest and tree cover, which is 23.81% of the geographical area of India (Saxena, 2012). The Himalayas is designated as one of the global biodiversity hotspots (Semwal et al., 2007). However, several forest areas and important wildlife habitats and have been diverted for cultivation, habitation and other uses or have been intensively degraded. It is now realized that all wilderness areas, wildlife habitats, and forest are rich in biodiversity

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11

A Quest for Identity and Love in Kamala Das's Poems, with Special Reference to "An Introduction" and "The Looking Glass"

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Department of English,
St. Edmund's College, Shillong – 793003, Meghalaya
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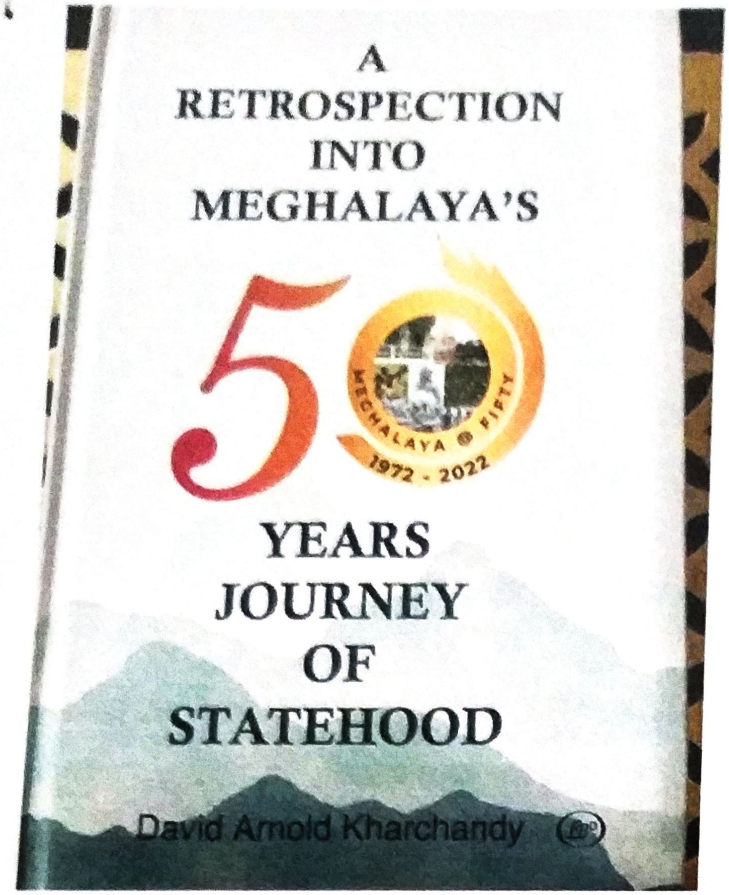
Abstract:

Kamala Das writes with no inhibitions about the inadequacies that women are subjected with every day. As a poet, she is aware of the patriarchal hands that are binding on society, projecting a woman as always inferior to her male counterpart. The lack of appreciation for a being that is human first before she is judged a woman is what is lacking in the home, the society, and the world at large. These discrepancies are what Kamala Das addresses in her poems Like "An Introduction". The yearning to create and to have an identity of her own makes her wonder if it is a longing that would ever be fulfilled. In carving a space of her own, Kamala Das is not hesitant about the way in which a woman must be honest about what she wants. Love is another quest that the poet desires but failed to achieve. Her marriage was mere sexual gratification. Hence, she was forced to look for love outside marriage. In the numerous affairs that she had, she had been sincere and honest in giving her man all that he deserves. But even there too, she sees only the fulfilment of the body and the soul. Her frank description of the body is as important as the frankness of her quest for identity and for love.

Keywords: Identity, love, side-lined, longings, hope.

Born in a family of writers, Kamala Das began writing at a very young age. She wrote both in Malayalam and English and it is in the English language that Kamala Das preferred to reach out to her readers expressing the angst and yearnings of a woman. Her works, especially her poems are an expression of experiences from her life as a woman who felt the restrictions experienced by women. Prejudices and distinctions made are experiences that women are made to go at home and even in the society at large. To be side-lined and to be viewed as a human being inferior to her male counterpart is a way of life for women. Kamala Das' poems are replete with stories that reflect theses discrepancies.

The autobiographical element in her poem "An Introduction" bears testimony to the truth that a woman is always placed in the periphery and is always dictated upon by the [illegible] on a journey of a woman from her childhood to the



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CHAPTER 33

The Role of Music in our 50 Years Journey- Retrospect and Prospect (with emphasis on the Khasi Hills)

FINLEY E. J. SYNGAI

Music has and will always be an integral part of human life and experience. Music is intrinsically linked to culture and it provides cultural identity to a group. Therefore, it is very difficult to ascertain if culture or music comes first. The fact remains music enriches culture and is enriched by culture. Music reflects the cultural characteristics of any given society. "Music is an expressive language of culture. It often tells a story, expresses emotions, or shares ideas with a society or within a society". (https://prezi.com). It teaches about the language and creative levels of expression where rhythm, melody (and words) are used to convey a message or tell of an experience. Music is like a time capsule and it can produce a burst of nostalgia, patriotism, and camaraderie. While anthems ring and national songs echo a sublime sense of unity, music has come in use in social movements and protests, elections campaigns, sporting arenas, movies and so on. In fact, music has the capacity to enhance in- group unity and out- group antagonism. A traditional tune or folk-songs can do this at once, and its impact is enormous. "Sarejaha se atcha" for instance has done its bit in igniting internal cohesion and external coercion in India's struggle for independence. Music touches emotions, and brings to rapture mental states that cannot be achieved by any means easily. Music can connect people. Thus, "the world's most famous and popular language is

Chapter

Electronic Structure of the Half-Heusler ScAuSn, LuAuSn and their Superlattice: A Comparative GGA, mBJ and GGA+SOC Study

September 2022
DOI: 10.2174/9789815049831122020007
In book: Advanced Materials and Nano Systems: Theory and Experiment - Part 2 (pp.34-48)

Authors:

Himanshu Joshi
Ensemble 3-Centre of Excellence, Warsa...

Mahesh Ram
St Edmund's College

Nihal Limbu

Abstract

The discovery of new materials and the manipulation of their exotic properties for device fabrication is crucial for advancing technology. Nanoscience, and the creation of nanomaterials have taken materials science and electronics to new heights for the benefit of mankind. Advanced Materials and Nanosystems: Theory and Experiment covers several topics of nanoscience research. The compiled chapters aim to update students, teachers, and scientists by highlighting modern developments in materials science theory and experiments. The significant role of new materials in future technology is also demonstrated. The book serves as a reference for curriculum development in technical institutions and research programs in the field of physics, chemistry and applied areas of science like materials science, chemical engineering and electronics. This part covers 12 topics in these areas. 1. Recent advancements in nanotechnology: a human health Perspective 2. An exploratory study on characteristics of SWIRL of AlGaAs/GaAs in advanced bio based nanotechnological systems 3. Electronic structure of the half-Heusler ScAuSn, LuAuSn and their superlattice 4. Recent trends in nanosystems 5. Improvement of performance of single and multicrystalline silicon solar cell using low-temperature surface passivation layer and antireflection coating 6.

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Anticancer Effect of Aristolochia tagala and Curcuma caesia Acting Through Tumor Necrosis Factor-α: Mediated Nuclear Factor κB Pathway

Khetbadei Lynrah Hynniewta Hadem, Lakhon Kma, Rajeshwar N. Sharan, Arnab Sen

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Abstract

This chapter begins with a brief description of the events associated with carcinogenesis such as what led a normal cell to transform into a pre-neoplastic one, their multiplication, and development into cancer. The authors also described how reactive oxygen species (ROS) are generated endogenously and from carcinogens, their role in carcinogenesis, and the link between inflammation and cancer. Elucidation of how cancer arises contributes to understanding the molecular mechanisms of action of some natural products. Herbal natural products contain metabolites that exert a physiological action on human body. These metabolites are used therapeutically in modern medical practices to prevent and cure various diseases including cancer. This chapter discusses the anticancer property of two herbal plants Aristolochia tagala Cham. and Curcuma caesia Roxb. in diethylnitrosamine-induced mouse liver cancer and describes the most probable molecular mechanisms of action of the metabolites present in these plants contributing to their anticancer effect.

Chapter Preview

Top

Ros Involvement In Carcinogenesis

Reactive oxygen species collectively refers to radicals, ions or molecules that have a single unpaired electron in their outermost shell of electrons. ROS are unstable and highly reactive. Superoxide ($O_2^{\bullet -}$), hydroxyl radical ($^{\bullet}OH$), nitric oxide ($NO^{\bullet}$), organic radicals ($R^{\bullet}$), peroxyl radicals ($ROO^{\bullet}$), etc. are categorized as free oxygen radicals. Hydrogen peroxide (H_2O_2), singlet oxygen ($^1O_2$), ozone/trioxygen (O_3), organic hydroperoxides (ROOH), hypochloride (HOCl) etc. are categorized as non-radical ROS (Liou & Storz, 2010).

ROS are produced endogenously as byproducts of oxygen metabolism. During mitochondrial oxidative metabolism, single electron reduction of O_2 leads to the production of $O_2^{\bullet -}$ in the mitochondrial matrix. The mitochondrial electron transport chain is the major contributor of endogenous ROS in mammalian tissues (Saybaşılı et al., 2001; St-Pierre et al., 2002; Klaunig & Kamendulis, 2004). Enzymatic reactions catalysed by NADPH oxidase, xanthine oxidase, lipoxygenases

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NON-TRADITIONAL DIMENSIONS OF MARITIME SECURITY

Edited by:
Vice Admiral Pradeep Chauhan
Commodore Debesh Lahiri
Raghvendra Kumar

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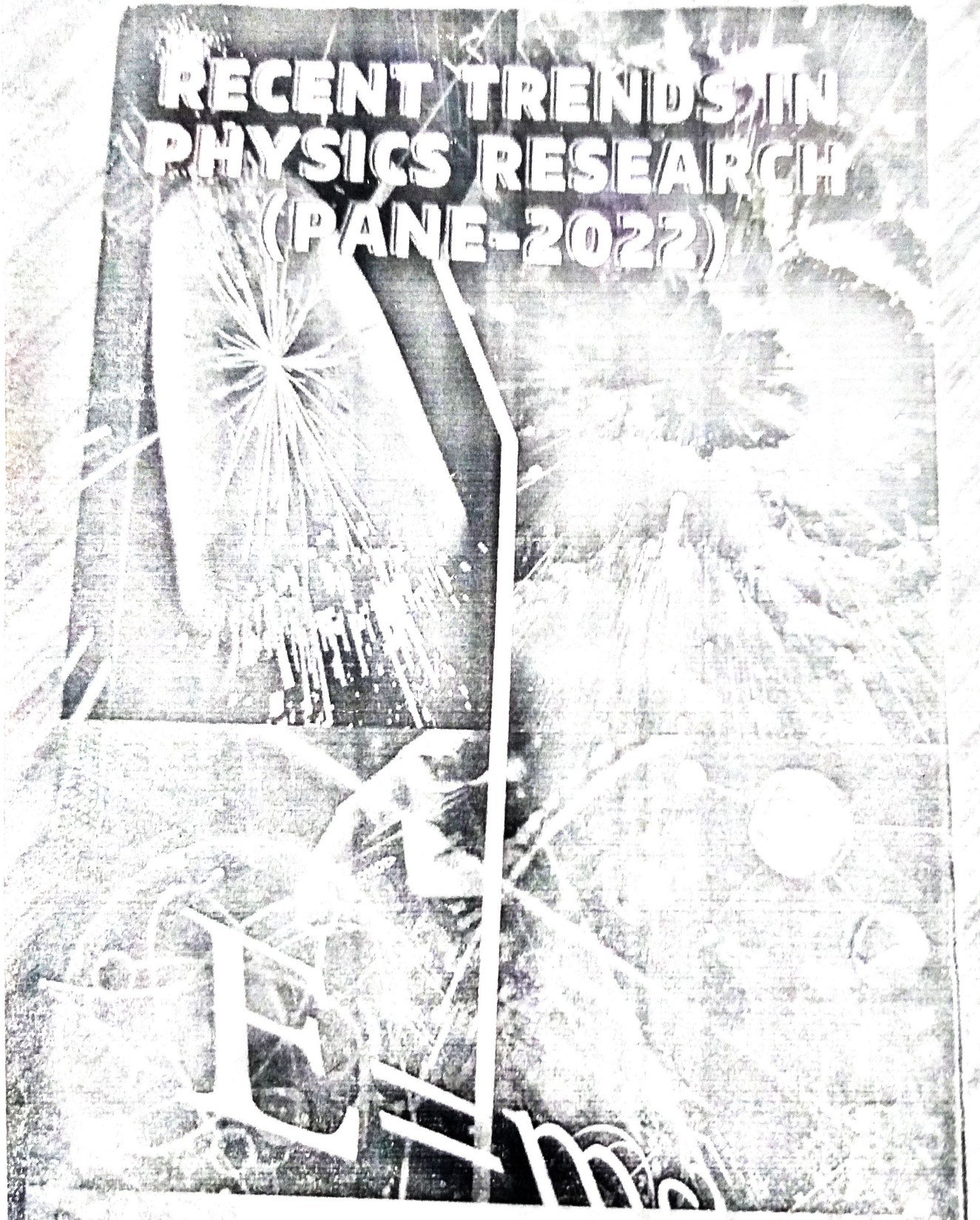

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Design of a PWM Based 50 Hz, 12 V DC/ 230 V AC, 2.5 KVA Solar Power Inverter

H.C. Medhi

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ABSTRACT: The epileptic property of power generation via traditional methods, lead us to shift our focus to alternate forms of power generation. On account of erratic nature of power, some communities are deprived for days, weeks or months from the nation's grid. This gap period of no supply or cut off from the grid, can be solved by designing and constructing an alternate source using solar power inverter suitable for house hold applications. The aim of this paper is to design and construct a 50 Hz, 12 V DC/230 V AC 2.5 KVA solar power inverter. The inverter circuit consists of four important stages which include the transformation stage, oscillator stage (implemented with IC SG3524 pulse width Modulator (PWM), driver stage (using MOSFET IRFP 260) which controls the switching and feed back stage.

Keywords: Inverter, Pulse Width Modulator, MOSFET, Feedback.

I. INTRODUCTION

The erratic nature of power supply has translated into high cost of production of goods and services. Power electronic solutions such as inverters convert direct current to alternating current for the purpose of domestic, commercial and industrial uses are increasing attention [1]. An inverter is an electrical device that converts direct current (DC) into alternating current (AC) which is possible with the appropriate design of transformer, oscillator, MOSFET driving stage, feedback section and associated electronic circuits. The inverter which are available in the market to drive light loads in the range of 500 to 1000 watts. This paper introduces a method to calculate total household electrical loads for realizing the higher wattages and sizing the entire system (inverter, PV array and battery) to meet such loads.

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10

Verbal Abuse in Relationship and It's Psychological Impact for Future

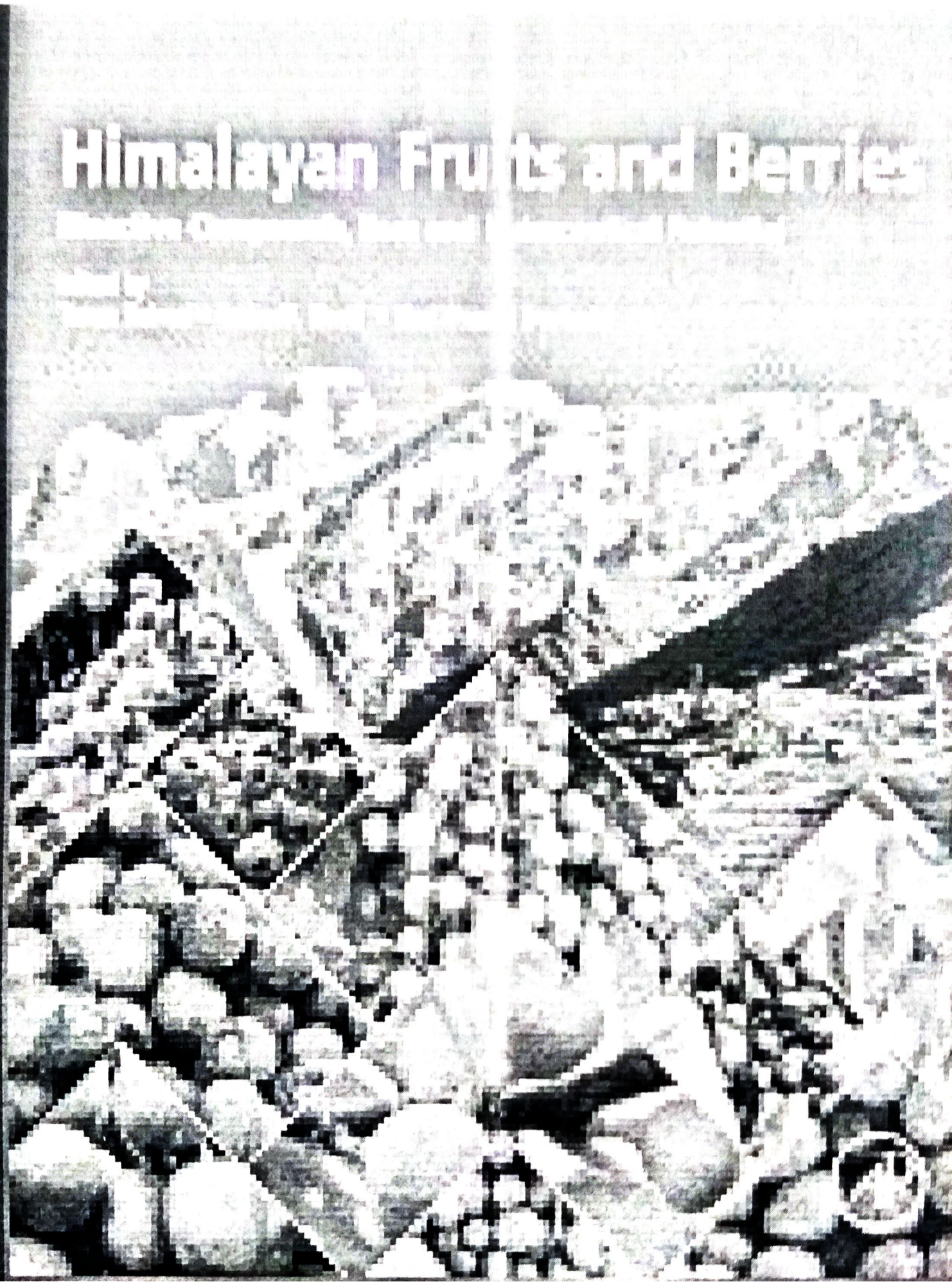
Ananya Bhuyan
Dr. Rituparna Rajendra

Abstract

This study is based on verbal abuse in a relation which refers to the way a person uses his words to create hurt. It is one method of deliberate conduct that one can use to acquire and retaining power and controlling one another in a close relationship. Verbal abuse is one aspect of psychological abuse, also called emotional abuse or outbursts of anger. It is seen as an insult, insults, slander, criticism, and other derogatory language harassment, intimidation, intimidation, humiliation, degradation and loss of the victim's self-esteem and sense of security. An online cross-sectional survey was conducted using a linear scale. The survey was administered in June 2021. The survey includes 36 respondents. Students from different government, private and central universities and colleges were included. The main aim and objective of this study are to examine the factors associated with verbal abuse in a relationship which is a concern for the impact on the future.

Keywords: *Verbal, Abuse, Relationship, Psychology, Survey.*

Himalayan Fruits and Berries



Chapter 28

Myrica esculenta

Clara L. Sawian[1], Aldonna M. Susngi[2], Balakmenlang Manners[3] and Jasmine T. Sawian[1]

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28.1 Introduction

Scientific Name: *Myrica esculenta* Buch.-Ham. ex D. Don

Family: Myricaceae

Synonyms:

Myrica sapida Wall.; *Myrica farquhariana* Wall.

Common names:

Hindi: kaiphal, kaphal; Sanskrit: katphala, mahavalkala; Khasi: sohphie; Pnar: saphal; Assamese: naga lenga; Adi: tatir, Ao: metiyong; Konyak: ytn; Zeliang: nrimchi; Mizo: keifang; Manipuri: nonganghei; Bengali: kaiphal, sasarila; Gujrati: kariphal, Punjabi: kaheta, kahi; Kanada: kirishivani; Malayam: maruta; Tamil: chavviyaci, chavviyacimaram; Telegu: kainaryamu; Nepali: kafal; English: box myrtle, bayberry.

28.1.1 Description

The name *Myrica is* derived from the Greek word *"myrike"* which means fragrance. *Myrica* Linn. (Family–Myricaceae) is a genus of more than 97 species of shrubs or moderately or large-sized evergreen trees, usually aromatic, distributed in the temperate and subtropical regions of the world (Yanthan et al., 2011) in Asia, Africa, North America, and Australia. The species shows maximum species diversity in Africa and Boreal America. Myricaceae is considered to be an ancient family by taxonomists, dating to the Tertiary Epoch of the Cretaceous Period with the living members representing relics of once extensive tracts of subtropical forests that spread across the territory that is now Central and Southern Europe (Cronquist, 1978; Takhtajan, 1969). Species that belong to the genus *Myrica* include *M. arborea* Hutch., *M. californica* Cham & Schltdl. (Pacific wax myrtle), *M. carolinaiensis* P. Mill. (Pocosin bayberry), *M. cerifera* Linn. (Wax myrtle), *M. esculenta* Buch.-Ham. ex D. Don (Box berry), *M. faya* Ait. (Faya tree), *M. gale* L. (Bog-myrtle), *M. hartwegii* S. Watson (Sierra bayberry), *M. inodora* W. Bartram (Scentless bayberry), *M. pensylvanica* Mirb. (Northern bayberry), *M. rivas-martinezii* A. Santos, *M. rubra* (Lour.) Siebold & Zucc. (Chinese bayberry), besides a host of other species. The species of *Myrica* found in India include *Myrica esculenta* Buch.-Ham. ex D. Don (Soh phie) and *Myrica nagi* Thunb. (Soh phie-nam).

28.1.2 Botanical classification

The genus *Myrica* belongs to Kingdom Plantae; Subkingdom Tracheobionta; Superdivision Spermatophyta; Division Magnoliophyta, Class Magnoliopsida, Subclass Hamamelididae, Order Myricales, Family Myricaceae, Genus Myricaceae, Species *M. esculenta*.

28.1.3 Morphology

M. esculenta, popularly known as box myrtle or bayberry, is an evergreen tree having a large canopy (Fig. 28.1), a varying height reaching up to 12 to 15 m. The bark of the tree is rough and grayish-brown in color (Fig. 28.2 and Fig. 28.3). The leaves are dark green in color, simple, lanceolate, arranged spirally, borne on 0.2 to 0.6 inches long petiole, and are found

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