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Zooming In: Historicizing the Religious Spaces of Women in Keralam

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From Workspace to Household: 1 Formation of Brahmanical Patriarchy in Early Medieval Keralam –Kavitha Sivadas

It is rather difficult to reconstruct a fully fledged, tangible history of Pre modern Kerala. The lack of concrete evidences has created a big gap in the historical scenario of the period. In the backdrop of existing sources what we have is a history focused on temple and the landed magnets which wretched power on the land including temple properties as the nerve centre. The history of the marginalised, especially the representation of women in pre modern times is more or less concealed. No solid research has been made till date which focused on women in the light of sources. Historical writings on Premodern Kerala did not provide a comprehensive insight into the gendered perspective of Kerala. Hitherto historians focusing on temple and temple centered social set up failed to look into a gender based relation in early medieval context. The paper tries to explore such marginalisation in the influx of patriarchal society in the light of land deeds in Kerala.¹

Genesis of Patriarchy in Kerala

Patriarchy is an implication that man hold power in all the important institutions of the society and women are deprived of access to such power.² According to R. Mahalakshmi, as far as South India is concerned, early medieval period marked the institutionalisation of patriarchy.³ This position has to be re-searched in the light of evidences provided by early Tamil songs. The genesis of patriarchy can be seen in ancient Tamilakam itself. Early Tamil songs postulate a hero-based socio-political structure where woman is mainly portrayed as lover or wife. Institutions like *karpu* associated with female chastity suggest that insistence on virtue and purity became

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THERAPEUTICAL POTENTIAL OF SYZYGIUM SPECIES – A REVIEW

Rohini Kanakan¹, Saudhya C²⁺, Valsa A.K.¹

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ABSTRACT

Modern natural product research focuses on isolation and characterization of phytochemicals and production of an analogue with increased bioactivity/bioavallability. Podophyllowxin analogues are antitumor drugs based on plants. The genus Syzygium belonging to the family Myrtaceae comprises about 1200 – 1800 species. Native range of distribution extends from Africa and Madagascar through Southern East Asia and the Pacific. The highest diversity occurs in Australia and South East Asia. Many of this species have a history of use in traditional system of medicine in India, Africa and Australia. The most documented species in India, used for the treatment in Ayurvedic system of medicine is Syzygium comini and Syzygium aromaticum. Most commonly used African species is Syzygium cordatum. Based on literature review 41 documented species of syzygium were selected for the present study. Among this 48% of the species exhibited good antimicrobial activity, 29% showed autioxidant activity, 9% possessed antiinflammatory and antidiabetic activity, 5% showed anticancer activity. The major phytochemicals responsible for the biological activities of syzygium species were Terpenoids, Ascorbic acid, Gallic acid, Chlorogenic acid, Catechin, Tannins, Flavanoids etc. Significant antioxidant activity reported in S. australe, S. leuhmannii, S.aromaticum and S.cumini. Highly documented species for antimicrobial, anticancer, antiinflammatory and autidiabetic activities were S.aromaticum and S.cumini. Only few of the Syzygium species explored for its therapeutical potential. Some species is endemic to India and critically endangered. More attention is required for the complete understanding of the biological activity and phytochemical constituents of other species in this genus with traditional background. Such studies will definitly lead to the development of neutraceuticals and phormaceuticals.

Key words: Syzygium species, Therapeutical potential, Phytochemicals



80th Anniversary Celebrations of School of Marine Sciences Cochin University of Science and Technology, Kerala

INTERNATIONAL CONFERENCE ON FRONTIERS IN MARINE SCIENCE CHALLENGES AND PROSPECTS

MARICON 2019

16 - 20, December 2019

ABSTRACTS VOLUME



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Preface

MARICON2019 is the realization of long cherished dream of the academic community of School of Marine Sciences (SMS), Cochin University of Science and Technology (CUSAT). Since its inception in 1938 as Oceanographic Laboratory of erstwhile Travancore University, the visionary directors at different stages of its development took it to one of its kinds of marine sciences school in the country with all branches of marine sciences such as marine biology, marine geology & geophysics, physical oceanography, chemical oceanography and atmospheric sciences under the same school. This has resulted in the overall growth of school of marine sciences which has carved a niche in the realm of marine sciences in the country. Many of the alumni are now decorating high offices in the marine science institutions in the country and abroad.

It is in this backdrop the academic community of SMS, CUSAT has decided to organize MARICON2019 with the primary objective of bringing the alumni spread across India and abroad to the Lakeside Campus and rejoices. The response was tremendous with special sessions being organized passionately by alumni located at far and wide destinations such as UK, UAE, Japan, Pune, Goa, Mangalore, and Cochin. The alumni had also developed a commendable network of international researchers and were able to bring many of them to SMS, CUSAT for the benefit of academic community in marine sciences.

The tremendous response to the call for participation in MARICON2019 is reflected in more than 600 registered participants, 450 plus abstracts spread across 24 different sessions. Marine sciences being highly interdisciplinary science, the sessions ranging from marine biodiversity and conservation to air-sea interactions and regional climate modeling; tropical marine ecosystems to polar oceans; offshore geo-marine resources to lithospheric studies and geodynamics, ocean observation systems to monsoon prediction and predictability; coastal processes and estuarine dynamics to submarine ground discharge and mapping; advancements in aquaculture to aquatic animal health and management; marine bioprospecting and drugs from the sea etc. to mention a few. It was a tedious task to categorize the large number of abstracts spreading across wide ranging subject areas. Thanks to the tireless effort of the organizing teams at remote destinations and the in-house researchers of SMS, CUSAT, a meticulous categorization and organization of the large number of abstracts has been carried out which has resulted in a highly organized compilation of this fairly big abstract volume. We hope this abstract compilation will be extremely useful to the academic community in marine science, especially to the upcoming researchers and students in this field.

The abstract volume also includes the collection of abstracts of plenary and keynote speakers, which we hope would be invaluable to all those in the field of marine sciences. It could also act as a source of reference for the upcoming and established researchers in marine sciences to identify prospective research institutions, leading research teams in various areas of marine sciences besides potential networking opportunities. We take this opportunity to thank the whole hearted support of everyone involved in this humble effort of bringing this Compendium of Abstract of MARICON2019 a reality.

(Editorial Board)



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STRUCTURAL ANNOTATIONS OF *BGALEL* GENE ENCODING COLD-ACTIVE **B**-GALACTOSIDASE FROM AN ARCTIC PSYCHROTROPHIC BACTERIUM *ENTEROBACTER LUDWIGII*

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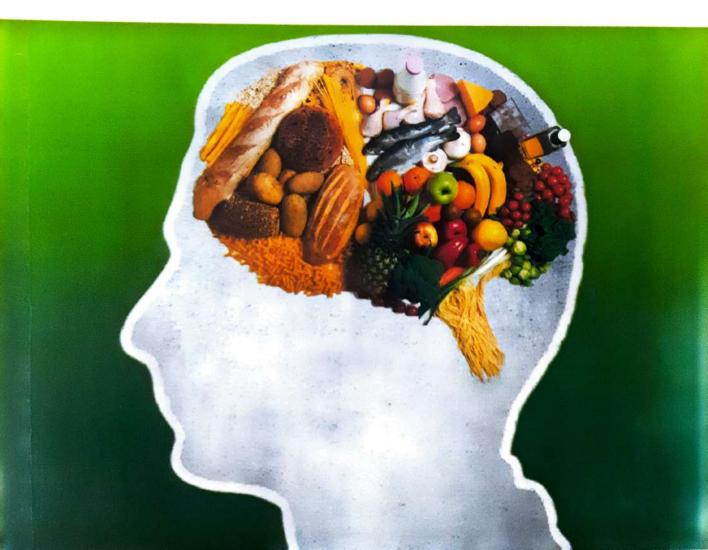
The genes are the discrete entities present along the genome, unfolding of which dictates its biological function. Knowledge of the complete sequence of a gene encoding a protein opens new possibilities in the scientific world for more effective research. In the present investigation, efficient computational strategies and bioinformatics tools were used to predict the structural and functional annotations of the gene encoding cold-active β-galactosidase (*bgalEL*) from a psychrotrophic bacterium *Enterobacter ludwigii* isolated from the sediments of Kongsfjorden, Arctic. bgalEL gene was 3078 bp in length and encoded a protein BgalEL of 1025 amino acids that belongs to glycosyl hydrolase family 2 (GH2). BgalEL had a predicted molecular mass of 116 kDa and theoretical isoelectric point (pl) of 5.31. The analysis of BgalEL in PROSITE confirmed the presence of two signature sequences of GH2 family. The secondary structural motifs in BgalEL were 13 β sheets, 5 β - α - β motifs, 21 β-hairpins, 26 β-bulges, 58 strands, 25 helices, 17 helix-helix interactions, 106 β-turns and 12 γ-turns. BgalEL consists of five distinct domains such as sugar-binding domain, TIM barrel domain, acid/base catalytic domain, DUF, and Bgal small N domain. A comparison of topographic presentation of Pfam domains demonstrated the similarity of BgalEL to the topology of β -galactosidase from *Pseudoalteromonas* sp. The 3D model of cold-active BgalEL created by SWISS MODELER using comparative modeling search has given best hit to the PDB entry 4ckd (*E. coli* β -galactosidase). Ramachandran plot statistics generated by PROCHECK revealed that 86.1% of the total residues were in the most favored regions, 11.9% residues in additional allowed region, 1.4% residues in the generously favored region and 0.5% in the disallowed regions. The current data may serve as a better platform for the prediction of the mechanistic basis of enzyme catalysis and protein engineering to improve the catalytic qualities of BgalEL through site-specific mutations or substitutions.

Keywords: Bioinformatic tools; Cold-active β -galactosidase; Psychrotrophic bacteria; Protein engineering; Structural annotations





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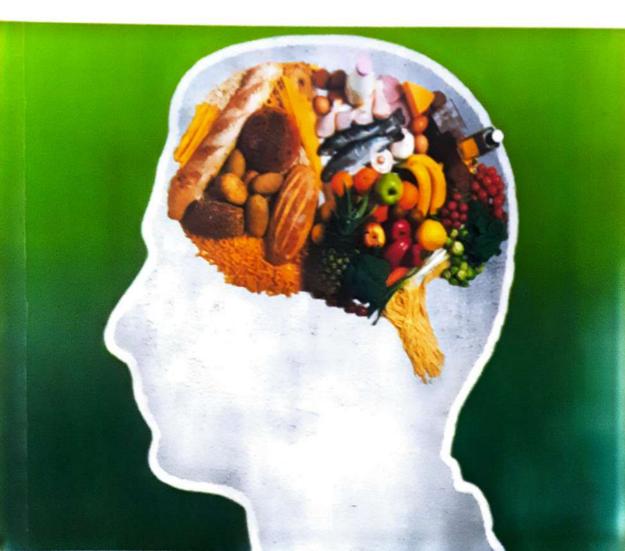
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ഉപഭോഗസംസ്കാരമാണ് ഭൂമിയിൽ ചൂട് ക്രമാതീതമായി വർദ്ധിക്കുവാനുള്ള പ്രധാന കാരണം. കോളനിവൽക്കരണത്തിലൂടെ ലോകത്തിന്റെ മിക്കഭാഗങ്ങളിലും നിലവിൽ വന്ന പാശ്ചാത്യവിദ്യാഭ്യാസ സമ്പ്രദായമാണ് ഉപഭോഗസംസ്കാരത്തെ ആഗോളവൽക്കരിച്ചത്.

ഭൂപ്രകൃതിക്കും കാലാവസ്ഥയ്ക്കും യോജിക്കുന്ന തരത്തിലുള്ള സ്വദേശീയ വിദ്യാഭ്യാസ സമ്പ്രദായങ്ങൾ, പാഠ്യപദ്ധതികൾ ലോകത്തെല്ലായിടത്തും ഉണ്ടായിട്ടുണ്ട്. അവ കണ്ടെത്തി തേച്ചുമിനുക്കി പുന:സ്ഥാപിക്കുകയാണ് കാലഘട്ടത്തിന്റെ ആവശ്യം. നിലവിലുള്ളതിനെ ഒറ്റയടിക്ക് പുറന്തള്ളുകയല്ല ഇതുകൊണ്ടുദ്ദേശിക്കുന്നത്. സ്വദേശിയും വിദേശിയും വേർതിരിച്ചറിഞ്ഞ് ആരോഗ്യകരമായ അനുപാതത്തിൽ രണ്ടും കൂടി ചേർന്നുള്ള ഒരു പാഠ്യപദ്ധതിയാണ് സ്വദേശി പാഠൃപദ്ധതി. കേരളത്തിൽ ഉന്നത വിദ്യാഭ്യാസരംഗത്തു ഏറ്റവും ഒടുവിലായി നടപ്പിലാക്കിയ പരിഷ്കാരം എന്നു വിശേഷിപ്പിക്കാവുന്ന കോഴ്സ് സമ്പ്രദായം ഇത്തരമൊരു മാറ്റത്തിനുള്ള അനുകൂല സാഹചര്യം സൃഷ്ടിച്ചിരിക്കുന്നു. ഇന്നാട്ടിലെ അക്കാദമിക സമൂഹത്തിന്റെ ശ്രദ്ധ ഈ വിഷയത്തിലേക്ക് ക്ഷണിക്കുക എന്നതാണ് ഈ പുസ്തക പ്രസാധനത്തിലൂടെ സുവോളജിക്കൽ സൊസൈറ്റി ലക്ഷ്യമിടുന്നത്.





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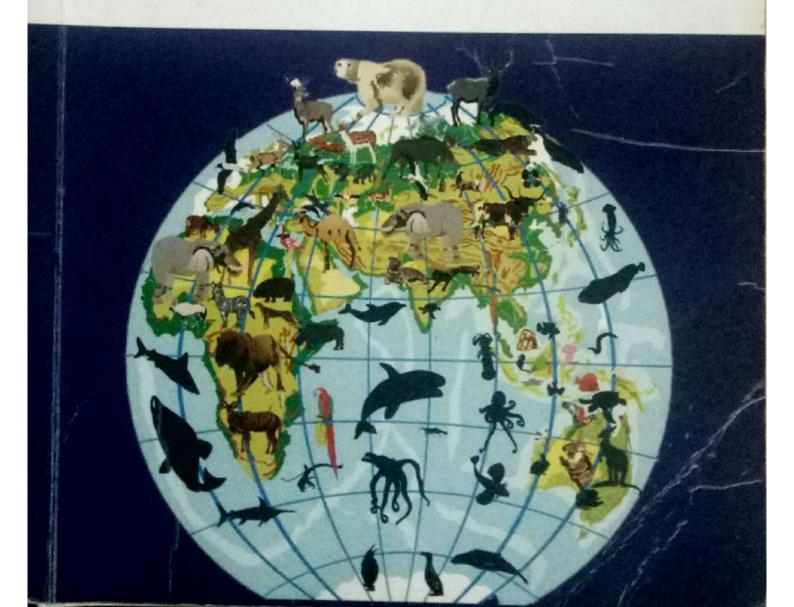
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Evolution

(Evolution, Ethology and Zoogeography) *Editor*

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Two Masterpieces of Kūțiyāțțam Mantrāṅkam and Aṅgulīyāṅkam

edited by Heike Oberlin & David Shulman

in cooperation with Elena Mucciarelli

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Distinct Conventions in the Staging of Angulīyānkam Kūttu

Ammannur Kuttan Chakyar and Aparna Nangiar

Among the Kūţiyāţtam performances staged, since ancient times, Angulīyānkam and Mantrānkam have always had a special status among the Cākyār-Nambyār families who ritually present this unique art form. Mantrānkam is considered the trial by fire of vācika-abhinaya (verbal skill) and Angulīyānkam that of āngika-abhinaya (body kinetics).

Angulīyānkam

Angulīvānkam Kūttu, 'The Act of the ring', narrates the story of Hanumān crossing the southern ocean to Lankā and showing the identifying ring to Sītā. Angulīvānkam is presented ritualistically with some 500 ślokas over twelve days.

In Kūțiyāțțam practice, Sanskrit dramas are performed as individual acts or even portions of acts rather than the entire play. A typical presentation follows a set format that consists of three parts:

- purappāțu (the entry of an important character)
- nirvahanam (the recapitulation of the story that precedes the act that is presented)

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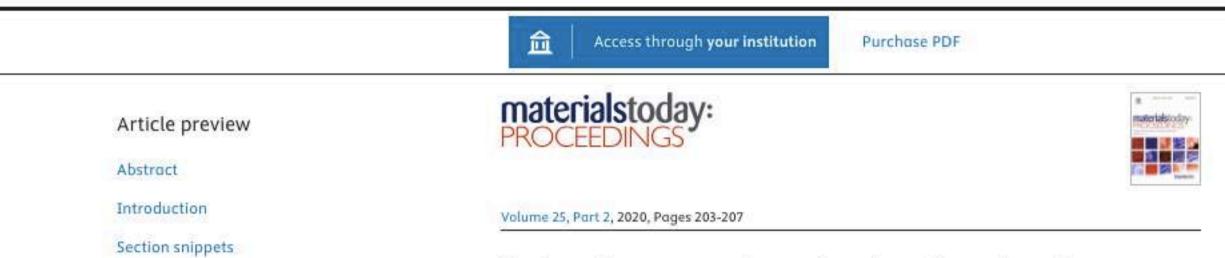
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7



Role of magnesium doping for ultrafast room temperature crystallization and improved photocatalytic behavior of TiO₂ nanotubes

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Abstract

In this work, a simple and cost effective two step anodization method is used to prepare Magnesium doped TiO₂ <u>nanotubes</u> (Mg-TONTs) which demonstrate superior



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Recent Advancements and Research in Biological Sciences

First Edition

Dr. R.B. Tripathi, Dr. P. Vijaya, Dr. Priya Senan V and Dr. Sona A



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Protective Effect of Montelukast – A Review and Updates

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Introduction

Montelukast is a leukotriene inhibitor. It is selective leukotriene (LT) D4 receptor antagonist, anti-asthmatic and anti-inflammatory drug that interferes directly with LT production (5-lipoxygenase inhibitors) (Grainger *et al.*, 2006). LTs are lipoxygenase pathway products of arachidonic acid metabolism. They can be classified according to their chemical structures and biological activities into two classes: the dihydroxy leukotriene (LTB4) and the cysteinyl LTs (CysLTs). LTB4 has been known as a potent chemo-attractant mediator of inflammation; it stimulates neutrophil chemotaxis, chemokinesis, and adherence to endothelial cells, and activates neutrophils, leading to release of enzymes and mediators and degranulation (Cardet *et al.*, 2013). The CysLTs are also involved in changes within the vasculature, and LTC4 and LTD4 cause vasoconstriction (Scott *et al.*, 2013).Leukotrienes are chemicals released when an allergen enters the body. These chemicals cause swelling in the lungs and tightening of the muscles around the airways, which can result in asthma symptoms.

Montelukast is used to prevent asthma attacks in adults and children. It is also used to treat symptoms of year-round allergies. It works by blocking leukotrienes that may cause or worsen asthma and allergies. Montelukast is included in the leukotriene receptor antagonist family. It works by blocking the action of leukotriene D4 in the lungs resulting in decreased inflammation and relaxation of smooth muscle. Leukotrienes are signaling molecules that are



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Dr. Sona A and Dr. Priva Senan V













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A Comprehensive Review on Bioactive and Therapeutic Potential of Indian Nutmeg *Myristica fragrans* (Houtt)

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Abstract

Myristica fragrans also known as nutmeg, belong to the Myristicaceae family. *M. fragrans* has been used in traditional medicine as a carminative, stimulant, narcotic, and emmenagogue. The extract and derived essential oil from *M. fragrans* have importance in drug designing. The phytochemicals in nutmeg exhibit numerous pharmacological activities such as antioxidant, anti-inflammatory, antifungal, and antibacterial, anti-diabetic properties. Trimristin, myristic acid, myristin, and safrole are some of the lead molecules reported from nutmeg.*M. fragrans* are used for the treatment of many diseases such as rheumatism, muscle spasm,decreased appetite, and diarrhea.*M. fragrans* is also a good source of minerals such as copper, iron, potassium, magnesium, zinc, and manganese. The information collected and presented in this review could be useful for the survey of molecules with good therapeutical and pharmacological potential that is still unknown, evaluation, and study of the quality of drugs developed from nutmeg.

Keywords: Alkaloids; Antioxidants; Myristicafragrans; Phenolics; Secondary metabolites

1. Introduction

The medicinal plant is a rich source of bioactive potential. The secondary metabolites in medicinal plants are responsible for their bioactive potential. The secondary metabolites of the plant are chemically synthesized products and the potencies of secondary metabolites vary with their type and source. Natural products derived from plant materials are increasingly exploited in several fields, such as pharmaceuticals, cosmetics, foods.



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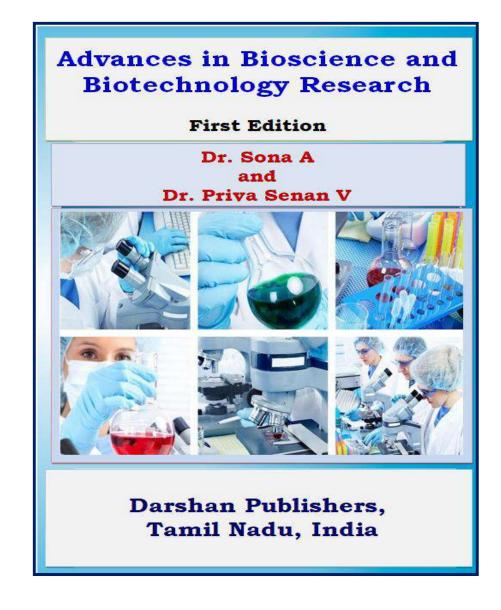


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Plant Mucilages and their Potential Applications – A Review

Aswathy Hari, Neethu Babu, Aneesa P A

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A Review

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Abstract

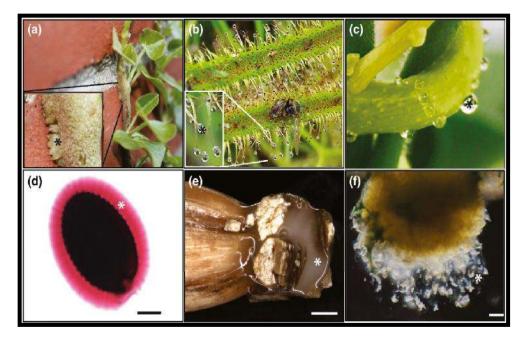
Many plants and plant parts produce various mucilage or gel-like secretions, called mucilages and gums, both above and below the ground. Thesehydrocolloidspossess a highly promising wide variety of applications because of their mucoadhesive properties. These substances have many advantages such as chemically inert, non-toxic, less expensive, biodegradable, and widely available. They can accomplish many functions including adhesion, protection, nutrient acquisition, cytoprotective function, etc, and hence offers many biotechnological and biomedical applications. Moreover, a tremendous increase in the interest of identifying, extracting, and purifying naturally derived polymers like mucilages and gums have noticed in recent years especially in pharmaceutical sciences for the development of a potential candidate for novel drug delivery systems. This review chapter discusses various aspects in the context of the bioactive potential of mucilage from plants and their applications in various industries such as pharmaceutical, food, cosmetics and other industries.

Keywords: Bioactive mucilages; Drug delivery; Excipient; Mucilages; Mucoadhesive

1. Introduction

Many land plants have the capabilities to adapt to a diverse range of conditions. Their survival depends upon their ability to sense the environmental conditions and creates favorable conditions. The plant adopts a wide variety of strategies to adapt to the unfavorable conditions which include morphological adaptations, synthesis of protective metabolites, many of the plants produce mucilages, and this helps the plants to adapt to unfavorable conditions. Mucilages are present in different plants and secreted through a variety of plant parts includes roots, stem, leaf, meristematic tissues, seeds, etc. Mucilage

producing plants includes Okara, Aloe vera, Cactus, Flax seeds, Kelp, Psyllium seed husk, Mallow, Marshmallow, Fenugreek, etc.



Examples of sticky mucilage secreted by plants (a) Tendrils of climbers (b) Hairy glands (c) Extrafloral nectar drops (d) Gelatinous seed coat (e) Gelatenousrhizal secretions (f) Parasitic plants secreting gelatinous matrix (Galloway *et al*, 2020)

Mucilages present in the plants not only have the function of helping the plants to adapt to the environmental conditions but also helps in the storage of water and food, seed germination, thickening of membrane, etc.

Mucilages present in the climbing plants help in climbing vertical surfaces using sticky tendrils or roots producing mucilages. If it is produced by leaves or stems it act as extrafloralnectars. Below the ground, the roots are also able to produce mucilages that help to adapt to the soil environmental conditions. Some molecules within mucilage have bioadhesive properties, making them sought after materials for biotechnological, biomedical, or agricultural applications. The microenvironment is also influenced by the production of mucilage. Following are the few important functions offered by plant mucilages

-) Facilitation of host cell attachment, host defense quenching and dispersion of digestive enzymes into host tissue
- Adhesion to new hosts; possibly water regulation
- Anchoring to vertical surfaces, improving light conditions by elevating the plant above the ground
- Immobilization of insects, supplementing the nutritional diet on a nitrogen-poor soil
- Prolonging moisturized state by storing water in the seed coat
- Providing an environment for beneficial microbiota, affecting soil hydraulics, increasing nutrient availability

2. Physicochemical Characteristics of Mucilages

Mucilages are the thicky, gluey substances produced by almost all plants and some microbes. The physical properties such as colour, taste, odour, shape, texture, touch, solubility, pH, swelling index, loss on drying, hygroscopic nature, angle of response, bulk, and true densities, porosity, and surface tension of these mucilages varies with plant and its environement. Mucilages can be defined as a matrix of high molecular weight compound, have the potential to form viscoelastic gel when bound to water molecules. Mucilages in its crude form include compounds of lower molecular weight and more soluble high-molecular-weight polysaccharide and protein components that may not contribute to gel-like structures. It is a complex sulphuric acid esters rich with polysaccharides. The hydrocolloid mucilages on hydrolysis products like hexose sugars like galactose and arabinose (starch and cellulose), pentosans (xylan) and uronic acids (heteropolysaccharides) on hydrolysis (Figure: 1).

COVID-19 PANDEMIC AND GLOBAL RESURGENCE

DR. SNEHA GOPEEKRISHNA

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Asian press Books (2021)

Optimistic Viewpoint of Covid-19 on **Indian** Economy

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ABSTRACT: The covid-19 epidemic is the first and foremost human tragedy in 2020. The study found that despite about half of the nation's businesses being adversely affected, and supply chains having fallen victim to the pandemic, there does appear certain positive effects in India as well. The present study elaborates the positive viewpoint of Covid 19 on environment and trade. The measures taken to control the spread of the virus and the slowdown of economic activities have significant effects on the environment. Therefore, this study aims to explore the positive environmental impacts of the COVID-19 pandemic. This study specifies that, the pandemic situation significantly improves air quality in different cities across the world, reduces GHGs emission, lessens water pollution and noise and lessens the pressure on the tourist destinations, which can assist with the renewal of the ecological system.

KEY WORDS: Greenhouse gases, Localism, Pollution, Swadeshi

Introduction

Coronavirus epidemic was first reported in Wuhan, China on 31 December, 2019. As nations bend down their streets with various forms of restrictions and lockdowns, the stall on the growth of global economy feels more noticeable than ever. With global spread reaching astounding numbers, losses both to human lives, economy are irrecoverable and keeping people sealed indoors due to the spiraling fear and mass confusion. For India, regardless of a slower curve of infection, the impact has been

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Effect of sulfur doping on the material characteristics of hematite nanostructures

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Julie Ann Joseph, Sinitha B. Nair, Sadasivan Shaji, and Rachel Reena Philip





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Effect of Sulfur Doping on the Material Characteristics of Hematite Nanostructures

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Abstract.In the present work, we have attempted to study the effect of anionic sulfur doping on the material characteristics of hematite nanostructures. Here, iron oxide nanoporous thin films are initially prepared by the simple electrochemical method of anodization in ethylene glycol based solution. In the second stage, anionic sulfur doping is performed on the anodized iron oxide nanostructures. Structural, morphological, electrical, optical and compositional characterization of the resultant material is performed with X-ray diffraction (XRD), field-emission scanning electron microscopy (FE-SEM), UV Visible Diffuse reflectance spectroscope (DRS) and X ray photo electron spectroscopy (XPS). The optical band gap measurements together with the VB edge measurements are used to obtain the Fermi level position in the doped and undoped samples. The study gives significant data to analyse the use of hematite nanostructures doped anionically with sulfur in photocatalytic and gas sensing applications.

Keywords: Nanostructures, electrochemical, anodization, hematite, doping, valence band edge

INTRODUCTION

Hematite is one of the most stable polymorph of iron oxide which is commonly used for applications in photocatalysis [1–3], gas sensing [4–6], electrochemical storage [7, 8] and bio medical applications [9]. To improve the efficiency of the above mentioned devices, it is imperative to enhance the adsorption sites, surface to volume ratio, visible photon absorption and electron-hole separation. In this perspective, nanostructured materials of highly oriented architectures such as nanotubes, nanowires and nanoporous films of iron oxide doped with metals or non-metals are being investigated. Both cationic and anionic doping can be performed on the materials [10–13]. There are quite a few studies on cationic doping performed on hematite nanostructures [14–16]. But the effect of anionic doping on the material characteristics of hematite nanostructures are few [17]. Sulfur is an element which can be anionically or cationically doped in iron oxide, since it can take S²⁻ valence state when substituted in the place of the anion oxygen or S⁴⁺ if substituted for the cation Fe. Since the effect of cationic substitution of S in Fe₂O₃ are widely studied, here we have attempted anionic substitution by anodization technique for doping, keeping the iron oxide nanoporous films as anode.

EXPERIMENTAL

Initially iron foils are cleaned using silicon carbide papers, ultrasonicated for 10 minutes in acetone and dried. Iron oxide nanoporous thin films are prepared by the electrochemical method of anodization by keeping iron foil as anode and titanium foil as cathode in an electrolyte containing 0.7 wt% NH₄F, 2 vol % deionized water in ethylene glycol solution. An external potential of 40 V is applied for a duration of 15 minutes. In the second step anodization, to ensure anionic doping, iron oxide nanoporous films are kept as the working electrode and Ti foil as the counter

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DHARMA

Dr.S.Suvarnnani Antherjanam Asst.professor, Dept.of Sanskrit, SSC Kalady

4.

Jaimini, the expounder of Purva Mimamsa, considers dharma as the most exhaustive requirement for the highest knowledge. So the Purva Mimamsa is also known as Dharma Mimamsa. Jaimini defines Dharma as an injunction or command and implement for action. चोदनालक्षणोर्थो धर्म: | Though Dharma, Artha, Kama and Moksha are the four Purusarthas. Jaimini consider only Dharma and Mokasha as of prime nececity they only deals with true spirituality. Artha and kama deal with morality in ordinary life.

Jaimini gives predomince to the subject of karma or action. He says that this action or karma of the Soul results in merit and demerit. Dharma is effected by the enjoyment of fruits of merit or piety. Adharma is effected by the performance of 'Obligatory' and 'Occasional' duties. In this view the term Dharma stands wider than Religion. Dharma stands for whole duty of man. The performance of Dharma is conducive to his welfare in this world and also after death.

According to Jaimini the Soul remains without a body. This condition is called Moksha or release. This Moksha will be acquired merely through the knowledge of the Self. So the people who desire emancipation should perform actions.

The Dharma is the 'Supreme Duty', 'the ought' and the 'categorical imperative'. It is suprasensible and consists in the commands of the Veda. Dharma and adharma are different qualities of the Soul. It deals with happiness and pain. This is suffered by the life beyond.

There are two types of actions काम्य (optional) and प्रतिषिद्ध (prohibited). The performance of the optional actions will lead to merit and heaven. But the performance of the prohibited actions will lead to demerit and hell.

Jaimini declares that the optional actions such as darśapūrņamāsa etc. will lead the person to heaven. So the sacrifices give the fruit. The performance of a sacrifice is an action. All actions will be destroyed soon. So the people who are performing actions wont get the result of at the time of performance. So an invisible potency is admitted. It is issued from the sacrifice and endures till the fruit is generated. This invisible potency resides in the Soul of the sacrificer. This is called ap£rva. It ceases on producing the result. It is also called as 'merit' or 'demarit'. It is a power into the sacrifice.

The apurva is the link between the act and its fruit. It is the causal potency in the action. It leads to the fructification.

In Jaimini's view obedience to the Veda is an end in itself. It is the ultimate value too (Purushartha). The Vedas directly or indirectly indicate Dharma or virtue and adharma or vice. He says that the Vedas do so because the persons may practice dharma and abstain from adharma.

श्रुतिस्मृति विहितो धर्मः इति वसिष्ठ : ।

- २. वेदो धर्ममुलं- तद्विदां च स्मृतिगिले इति गौतमः।
 धर्मा धर्मयोः परमं प्रमाणं धर्म एव।
- सुखार्थः सर्वभूतानां मताः सर्वाः प्रवृत्तयः । सुखं च
 न विना धर्मात्तस्माद्धर्मपरो भवेत् । ।
- ४. अतः वेद एव धर्मप्रमाणं इति भारतीयानां विश्वासः।

अद्ोहः, अलोभः, इन्द्रियजयः, भूतदया, तपः,

ब्रहमचर्लं, सत्यं, अनुकम्पा, क्ष्मा,

धैर्यं इत्यादि धर्मस्य मूलम।

Jaimini belives that the knowledge divorced from ritualistic work cannot enable a man to rise to the full stature of his being. Man is born in this world to do this kind of works. The nonperformance of ordained acts plunges him into the sea of troubles and sufferings here and hereafter.

Jaimini argues that to get happiness in this world and hereafter, the practice of self- denial is important. He clarifies that the activities which result in loss or pain are not Dharmas. He assumes human freedom because, otherwise human individuals will not be responsible in their acts.





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लोपामुद्रागस्त्यसंवादः कौटुम्बिकादर्शस्य चित्रफलकः

डा. वि.वि.अनिल् कुमार् सहायकाचार्यः, संस्कृतविभागः, श्रीशङ्करमहाविद्यालयः, कालटी

धर्मव्यवस्थाश्रयभूता भारतीयसंस्कृतिः मानवानां मानवेतरप्राणिनां स्वीयजीवनस्य स्वाभाविकावश्यकतां आपूरयन्ति । अत एव तेषां साधनानि साध्यानि उपभोग्यानि च वेदेषु वर्णितानि भवन्ति । चतुराश्रमतया विभक्तानां ब्रह्मचर्यगार्हस्थ्यवानप्रस्थ- सन्यासिनां धर्मनिस्मणं यथायोग्यं समस्तव्यस्तविधिना स्मृतिपुराणे तिहासेषु वर्ण्यन्ते यत् वेदाध्ययनं सामान्यजनानां अप्राप्तवेद्यमासीत् । तद्वर्णने गार्हस्थ्याश्रमस्य श्रेष्ठरूपतया निरूपणं दरीदृश्यते । गृहस्थस्यैव लोकधर्माधारणमूलता विहिता दृश्यते । गार्हस्थ्यमाश्रित्यैव व्रह्मचारिवानप्रस्थानां व्यवस्था । अतः विवाहसंस्कारे बहुनिर्देशः विहितः येन लोकजीवनाय भागभाक्तवामाबहेयुः ।

सनातनसंस्कृतेः आधारः वेद एव । वेदे संस्कृतवोधकतया अनेकानि उपाख्यानानि सन्ति । यानि तत्त्वनिहितानि आचारबोधकानि च । ऋग्वेदस्य प्रथममण्डले विद्यमानः अगस्त्यलोपामुद्रासंवादः तादृशं किमपि महत्प्रकरणं भवति । परमतापसः अगस्त्यः तस्य पत्नी लोपामुद्रा च । उभयोः संवादः गार्हस्थ्यधर्मस्य धन्यं दीर्घदर्शनं सूचयति

सूक्तस्वरूपम्

पड्ऋचं भवति सूक्तमिदम् । अत्र लोपामुद्रा अगस्त्यः तच्छिप्याश्च ऋषयः त्रिष्टुब्वृहत्यौ छन्दसी तथा रतिः देवता च । आद्यद्वयं लोपामुद्रायाः ततः अगस्त्यस्य द्वयं ततः तच्छिष्याणां द्वयञ्चेति ऋक्समाहारः । मनसेन्द्रियनिगृहीनां ब्रह्मचर्यादिना को लाभः, मुनीनां ब्रह्मचर्याचरणं कथं, गृहस्थानां ब्रह्मचर्याचरणं कथं, गृहस्थानां मुनीनाञ्च ब्रह्मचर्याचरणं कथं, गृहस्थानां ब्रह्मचर्याचरणं कथं, गृहस्थानां मुनीनाञ्च ब्रह्मचर्याचरणं कथंमित्यादीनां संशयानां निवारणार्थं गार्हस्थ्यधर्माणां तथा दाम्पत्यधर्माणां बाचनाय प्रवृत्तोयं सुक्तः । यद्यपि कामदेवपत्नी रतीदेवी अस्य सूक्तस्य देवता, तद्देवतायाः प्रशान्तचित्तस्य मुनेः मनसि कथं कृतिः, तत्कृतेः स्वरूपं कथं, तादृशरैत्यप्रभावस्य गुणदोषौ चान्न विचार्यते । लोपामुब्रायाः परिदेवनेन प्रारम्भीकृतोयमृक् यथा पूर्वीरहं शरदश्रयमाणा देषावस्तोरु पसो जयन्तीः । मिनाति श्रियं जरिमातनूना-मप्यूनुपत्नी वृषाणोजगम्युः ।। इति

लोपामुद्रा अनेकसंवत्सरान् प्रत्यक्षदैवस्वरूपं भर्तारं रात्यहन्यपः कालान् अर्थात् सर्वदा पर्यचरत् । सा अतिदीर्घया कालपरिचर्यया शुश्रूषया च श्रान्ता, तथा खिन्ना चाभवत् । एवं प्रार्थयते कालतः मम शरीरस्य सौन्दर्यं विनष्टमभवत् । जरा सर्वत्रालस्यप्रदात्री तिष्ठति । भर्तृभावमधिगम्यापि मां त्वं न ईक्षसे । यदि ब्रह्मचर्यविषयविचारेणैव संभोगविषयवैरग्यश्चेत स दूरीकर्तव्यः । यतः सत्यवन्तः भारतीयर्षयः धर्मकामनावन्तः सन्तः देवैः सह संभाषणं कृतवन्तः स्वर्गाहंस्थ्यधर्मेषु संलग्नाः रेतः पातादिनापि ब्रह्मचर्यलङ्घनं न व्यदधात् । तेषां विधिविहितेन भोगविधानेन ब्रह्मचर्यविघ्नो न जातः । तपस्विन्यः ऋषिपल्यः निजभर्तारमूपेत्य भोगसुखसम्पन्नाः सौभाग्यवन्तः पुत्रपरम्परया धन्याः अभवन् । तादृशसुखसम्पत्तये अहमपि प्रार्थये इति । लोपामुब्रयाः वाचा निजधर्मविरुद्धतामवगम्य धर्मपरिपालनाय गृहीतदेहः अगस्त्यः तां रतिपरिचर्यया प्रीणयामास। तयोः भाषणं शुण्वन्तः शिष्याः प्रायश्चित्तञ्चाकुर्वन् । एतदेवाख्यायिकायाः सारः । तस्मिन् भारतीयसनातनधर्मविचारे गार्हस्थ्यविषये तथा पतिपत्नीविषये च यो निर्देशः दरीदृश्यते तत सभ्यहितपथ्योपेतमित्यवन्तुं शक्यते । तत्र गृहस्थाश्रमस्य उत्त दाम्पत्यस्य त्रीण्येव उद्देश्यानि सन्ति । उक्तञ्च मनुस्मृतौ अपत्यं धर्मकार्याणि शश्रूषा रतिरुत्तमा । दाराधीनस्तया स्वर्गः पितृणामात्मनश्च वा । अर्थात् धर्मसम्पत्तिः, सन्तानः, रतिश्च विवाहप्रयोजनानीति अभिव्यक्तमेव । गार्हस्थ्यं तु परमात्मीय विधानमित्यतः सर्वत्र पूज्यते । ब्रह्मचर्यस्य यथा त्यागेन पुष्टिः सम्भवति तथा गृहस्थस्य परिग्रहेण पुष्टिः संजायते । तत्र पत्नी एव





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डा. वि.वि.अनिल् कुमार् सहायकाचार्यः, संस्कृतविभागः, श्रीशङ्करमहाविद्यालयः, कालटी

धर्मव्यवस्थाश्रयभूता भारतीयसंस्कृतिः मानवानां मानवेतरप्राणिनां स्वीयजीवनस्य स्वाभाविकावश्यकतां आपूरयन्ति । अत एव तेषां साधनानि साध्यानि उपभोग्यानि च वेदेषु वर्णितानि भवन्ति । चतुराश्रमतया विभक्तानां ब्रह्मचर्यगार्हस्थ्यवानप्रस्थ- सन्यासिनां धर्मनिस्मणं यथायोग्यं समस्तव्यस्तविधिना स्मृतिपुराणे तिहासेषु वर्ण्यन्ते यत् वेदाध्ययनं सामान्यजनानां अप्राप्तवेद्यमासीत् । तद्वर्णने गार्हस्थ्याश्रमस्य श्रेष्ठरूपतया निरूपणं दरीदृश्यते । गृहस्थस्यैव लोकधर्माधारणमूलता विहिता दृश्यते । गार्हस्थ्यमाश्रित्यैव व्रह्मचारिवानप्रस्थानां व्यवस्था । अतः विवाहसंस्कारे बहुनिर्देशः विहितः येन लोकजीवनाय भागभाक्तवामाबहेयुः ।

सनातनसंस्कृतेः आधारः वेद एव । वेदे संस्कृतवोधकतया अनेकानि उपाख्यानानि सन्ति । यानि तत्त्वनिहितानि आचारबोधकानि च । ऋग्वेदस्य प्रथममण्डले विद्यमानः अगस्त्यलोपामुद्रासंवादः तादृशं किमपि महत्प्रकरणं भवति । परमतापसः अगस्त्यः तस्य पत्नी लोपामुद्रा च । उभयोः संवादः गार्हस्थ्यधर्मस्य धन्यं दीर्घदर्शनं सूचयति

सूक्तस्वरूपम्

पड्ऋचं भवति सूक्तमिदम् । अत्र लोपामुद्रा अगस्त्यः तच्छिप्याश्च ऋषयः त्रिष्टुब्वृहत्यौ छन्दसी तथा रतिः देवता च । आद्यद्वयं लोपामुद्रायाः ततः अगस्त्यस्य द्वयं ततः तच्छिष्याणां द्वयञ्चेति ऋक्समाहारः । मनसेन्द्रियनिगृहीनां ब्रह्मचर्यादिना को लाभः, मुनीनां ब्रह्मचर्याचरणं कथं, गृहस्थानां ब्रह्मचर्याचरणं कथं, गृहस्थानां मुनीनाञ्च ब्रह्मचर्याचरणं कथं, गृहस्थानां ब्रह्मचर्याचरणं कथं, गृहस्थानां मुनीनाञ्च ब्रह्मचर्याचरणं कथंमित्यादीनां संशयानां निवारणार्थं गार्हस्थ्यधर्माणां तथा दाम्पत्यधर्माणां बाचनाय प्रवृत्तोयं सुक्तः । यद्यपि कामदेवपत्नी रतीदेवी अस्य सूक्तस्य देवता, तद्देवतायाः प्रशान्तचित्तस्य मुनेः मनसि कथं कृतिः, तत्कृतेः स्वरूपं कथं, तादृशरैत्यप्रभावस्य गुणदोषौ चान्न विचार्यते । लोपामुब्रायाः परिदेवनेन प्रारम्भीकृतोयमृक् यथा पूर्वीरहं शरदश्रयमाणा देषावस्तोरु पसो जयन्तीः । मिनाति श्रियं जरिमातनूना-मप्यूनुपत्नी वृषाणोजगम्युः ।। इति

लोपामुद्रा अनेकसंवत्सरान् प्रत्यक्षदैवस्वरूपं भर्तारं रात्यहन्यपः कालान् अर्थात् सर्वदा पर्यचरत् । सा अतिदीर्घया कालपरिचर्यया शुश्रूषया च श्रान्ता, तथा खिन्ना चाभवत् । एवं प्रार्थयते कालतः मम शरीरस्य सौन्दर्यं विनष्टमभवत् । जरा सर्वत्रालस्यप्रदात्री तिष्ठति । भर्तृभावमधिगम्यापि मां त्वं न ईक्षसे । यदि ब्रह्मचर्यविषयविचारेणैव संभोगविषयवैरग्यश्चेत स दूरीकर्तव्यः । यतः सत्यवन्तः भारतीयर्षयः धर्मकामनावन्तः सन्तः देवैः सह संभाषणं कृतवन्तः स्वर्गाहंस्थ्यधर्मेषु संलग्नाः रेतः पातादिनापि ब्रह्मचर्यलङ्घनं न व्यदधात् । तेषां विधिविहितेन भोगविधानेन ब्रह्मचर्यविघ्नो न जातः । तपस्विन्यः ऋषिपल्यः निजभर्तारमूपेत्य भोगसुखसम्पन्नाः सौभाग्यवन्तः पुत्रपरम्परया धन्याः अभवन् । तादृशसुखसम्पत्तये अहमपि प्रार्थये इति । लोपामुब्रयाः वाचा निजधर्मविरुद्धतामवगम्य धर्मपरिपालनाय गृहीतदेहः अगस्त्यः तां रतिपरिचर्यया प्रीणयामास। तयोः भाषणं शुण्वन्तः शिष्याः प्रायश्चित्तञ्चाकुर्वन् । एतदेवाख्यायिकायाः सारः । तस्मिन् भारतीयसनातनधर्मविचारे गार्हस्थ्यविषये तथा पतिपत्नीविषये च यो निर्देशः दरीदृश्यते तत सभ्यहितपथ्योपेतमित्यवन्तुं शक्यते । तत्र गृहस्थाश्रमस्य उत्त दाम्पत्यस्य त्रीण्येव उद्देश्यानि सन्ति । उक्तञ्च मनुस्मृतौ अपत्यं धर्मकार्याणि शश्रूषा रतिरुत्तमा । दाराधीनस्तया स्वर्गः पितृणामात्मनश्च वा । अर्थात् धर्मसम्पत्तिः, सन्तानः, रतिश्च विवाहप्रयोजनानीति अभिव्यक्तमेव । गार्हस्थ्यं तु परमात्मीय विधानमित्यतः सर्वत्र पूज्यते । ब्रह्मचर्यस्य यथा त्यागेन पुष्टिः सम्भवति तथा गृहस्थस्य परिग्रहेण पुष्टिः संजायते । तत्र पत्नी एव





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9

CHARACTERISTICS OF A DEVOTEE IN SANDILYABHAKTISUTRAS

Smt.Manju.V.Kumar

Asst.professor, Dept.of Sanskrit, SSC Kalady

Sandilyabhaktisutra describes the actual position of a devotee and the primary characteristics of devotional service. Sandilya points that the perfect purity of devotion is to be known from the external marks of a devotee1. The approaches of devotee are pure and they do things for others. Sandilya points out that a single minded devotee had certain qualities. He described the special characteristics of a sincere devotee. He enumerates the marks of devotion to God can be known from remembering the words and acts of great devotees such as honour, great reverence, delight, grief in separation, aversion to everything else, constant singing of the glory of the Lord, preservation of life for His sake only, the feeling that everything belongs to him alone, the idea that He is all in all, entire absence of opposition to Him and his will. and the like. सम्मानबहुमानप्रीतिविरहेतरविचिकित्सामहिमख्यातितदर्थप्राणस्था नतदीयतासर्वतद्भावाप्रातिकूल्यादीनि च स्मरणेभ्यो बाहल्यात् In explaining this, Svapneswara quotes various instances of bhakti from Smrti, Itihasa and purana, which show that our devotional literature is replete with the modes of bhakti by various categories of Bhaktas.

3 सम्मान

According to Sandilya, sammana or honour is the first feature of a devotee. To honour someone means to respect and esteem them. To honour God means to give Him the regard, respect, admiration, adoration, awe, praise, submission and obedience which are due to Him. This means to worship Him in all our attitudes, affections and actions. Arjuna's bhakti has been depicted as respectfulness for his Lord. Though an intimate friend to Krishna, he never transgressed the limits of etiquette, and always used to get up from the seat to receive Him whenever He came to him.

बहुमान

A devotee offers respect or great reverence to others without expecting anything in return. He respects everyone as part of Krishna and treats them accordingly. True reverence can be attained only by those who may be blessed by God. King Iksvaku was an example of excessive bhakti, because he showed respect even to the deeer, the lotus or the cloud, as they bore semblance to the name or colour of his Lord. Bhagavad Gita says that this reverence is acquired through purification of the mind. सत्त्वानुरूपा सर्वस्य श्रद्धा भवति भारत।

श्रद्धामयो अयं पुरुषो यो यद्श्रद्धः स एव सः । ।४

प्रीति

Even without depending upon sensual pleasures, the state of mind should be brought into a calm and undisturbed existence. As a consequence of this, the mind gets immersed in its natural tendency of happiness beyond all sensual fluctuations. This is the intention of Preehy. Svapneswara illustrates this with the example from Mahabharata. In the Udyogaparva, Vidura could not describe his intense love at his Lord's arrival, because he is the very soul of all humanbeings.

विरह-

The feelings of a devotee who suffers from viraha can hardly be described in words. Viraha, though it is very painful experience indeed for the devotee, intensifies his love towards the Lord. For example, viraha exhibited by the milkmaids of vrindavana. These gopi's were wonderful devotees of the God and they were feeling the pangs of separation from their beloved so acutely that they were not afraid even of their elders.

गुरूणामग्रतो वक्तुं किं व्वीमि न नः क्षमम् । गरवः किं करिष्यन्ति दग्धानां विरहाग्निना ।।

इतरविचिकित्सा

A devotee dislikes other activities and they concentrate their mind only on God. They believe that He is the Supreme and only the love of God is the eternal. In the heart and mind of a true devotee, there is no place for anything other than God. Pure





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Nishkalabrahmopasana in NARAYANEEYA

The contribution of Kerala to Sanskrit literature is rich and varied. It includes all branches of learning like Kavya, Nataka, Champu and other technical literature like Vyakarana, Thantra, Ganitha, Silpa, and Vaidya. Contribution of the Royal families in Kerala and the personalities like Sree Sankara, Melpathur Narayana Bhatta, Kulasekhara Varma, Bilvamangala, Ramapanivada etc. gave more nourishment to Sanskrit literature and culture through their literary works.

Melpathur Narayana Bhatta

Melpathur Narayana Bhatta is one of the greatest scholar poets that Kerala has produced. Narayana studied Bhatta Mimamsa and Tantras from his father Mathridatta, the Vedas from Madhavacharyaand, and Logic from Damodaraya. Grammar was taught to him by Thrikkandiyur Achyuta Pisharadi, who was a celebrate grammarian of those times. By about sixteen, he had mastered all learning. A few years after, his teacher Thrikkandiyur Achyuta Pisharadi felt a victim to paralysis. Narayana attended on his great teacher and he took upon himself the ailment his teacher and became a paralytic himself. He asked himself to be carried to the temple of Guruvayur, where he could take shelter at the feet of Lord Krishna and get his divine intervention. Sitting in the precincts of the temple of Guruvayur, he started the composing of Narayaneeya, a marvelous epitome of the Bhagavatha Purana in 1036 verses, dealing with Lord's principal incamations and portraying His manifold excellences and creative activity. As stated in the hymn itself, he completed it on 27th November 1587 (Vrischikam 28th of the year 763 of Kollam era), the hundredth day after he began composing. By the grace of God he was cured of his rheumatism at the end of it. He completed the Narayaneeyam in his 27th year and according to certain traditions, he lived up to the age of 106. But date of his demise is disputed.

SMT. SREELEKSHMI. R Asst.professor, Dept.of Sanskrit SSC Kalady

He is the author of many other works. They can be classified into four groups.

- 1. Sastric or Technical works
- 2. Prabandhas or Narratives
- 3. Prasasties or Panegyrics
- 4. Stotras or Devotional hymns

His Sastric works are – Prakriyasarvasva, Apanineeyapramana, Dhatukavya and the Mimamsa text Manameyodaya

His Prabandhas or Narrative writings are the compositions in Champu style (A style, in which prose and poetry are mingled) on episodes from Ramayana, Mahabharatha and Bhagavatha. The text (Sahithya) of this writings provided for temple artists like Chakiars to give their discourses and expositions.

Another class of his writings is called the Prasasties or Panegyrics. There are four main Prasasties which he produced at different times in praise of his Royal patrons - Veerakeralavarma of Cochin, Godavarma of Vatakkamkur, Zamorin Manavikrama of Kozhikode and Devanarayana of Ampalapuzha. His most noteworthy contribution, which has gained him immortality, is to Sanskrit hymnology. He has three such writings – 1. Sreepadasaptati on Divine Mother, 2. Guruvayurappa Stotram, a short poem on Krishna, 3. Narayaneeyam. Thus Bhattatiri lived a long life, rich in devotion, rich in literary creation, rich in honors and rich in admirers and disciples. Narayaneeyam

Narayaneeyam is a popular text that takes a high place in Sanskrit literature both as a poem and as a devotional hymn. The work is known by this particular name for two reasons.

1. That it deals with the glories of Narayana, the Supreme Being who is the resting place all Jivas.

2. It is the composition by the great poet Melpathur Narayana Bhatta.

It is a brilliant summery in 1036 verses, divided into 100 sections called Dasakas, of the leading incidents narrated in Bhagavatapurana. It is in the form of an





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WOMEN IN KOODIYATTAM

Dr APARNA NANGIAR Assistant Professor, Sri Sankara college, Kalady

INTRODUCTION

Koodiyattam is the sanskrit dance theatre of Kerala with an antiquity of about 2000 years. It is traditionally performed in special temple theatres called 'Koothambalam' that exist within the temple complex in select temples in Kerala. Koodiyattam was proclaimed as an Oral intangible Heritage of Mankind by UNICEF in 2001. Since the 20th century it is also being taught and performed on modern stages outside the temple. The historical and contemporary role of women in this art form is unlike any that are seen in other dance or theatre arts in India.

Koodiyattam : Literature

Among the ten forms of drama categorized by Bharata, the forms that have been adopted by Koodiyattam and still alive in some form are,

1. Nataka

Abhisheka, Pratima, Ascharyachoodamani, Naganandam, Subhadra Dhanjayam, Tanati

Tapati

Samvaranam, Pratijna Yougandharayanam

2. Dima

Dootha Ghatotkacham

3. Vyayoga

Kalyana Sougandhikam, Madhyamavyayogam

4. Prahasana

Mattavilasam, Bhavadjukkam

The literature involved includes the 'mula-grantham', 'attaprakaram' and 'krama-deepika' or stage manual.

Performers

Koodiyattam is entwined with the temple centric social fabric of Kerala with different community members performing different roles on the stage prescribed as part of their religious duties.

Chakyar

Male performer of Koodiyattam and Chakyarkoothu

Nambiar

Stage manager and drummer

Nangiar

The female performer, cymbalist and reciter of verse

In the modern day Koodiyattam is freely taught and practised by many who may or may not belong to one of these communities.

Performing methodology

In a traditional koodiyattam performance, a play is never presented in full. An 'anka' or a single act of a play is chosen for staging and may take somewhere between 3 to 41 days.

Purappadu

Entry of a character in the drama on stage. This is usually marked by a solo act of the character that expresses his/her dominant emotion in the context of the act that is to follow. This is followed by several ritual dance set pieces and verse recitations.

Nirvahana

This is a unique stage technique where a character in an act of the play comes on stage and recounts the past (often his/her story or flashback) and thereby sets the context of his/her appearance on stage, present mood and emotional state. This may span several days including stories from the puranas that are outside the text of the drama. In a typical koodiyattam performance, following the entry and nirvahana of some or all of the characters in an act, the actual text of the play is enacted. Nangiarkoothu (discussed below) stretches the technique of nirvahana to a new level where a single character uses theatricals to visually recite a story in great detail, bringing it closer to being a story-telling art than theatre.



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Effect of Replacement of Nanocellulose by Nanochitin in Natural Rubber by Latex Stage Processing

Seena K. Thomas^{1,2} and P.M. Sabura Begum^{1*}

² Department of Applied Chemistry, CUSAT, Kerala ² Sree Sankara College, Kalady, Kerala

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ABSTRACT

In the present study Nano cellulose - Nano chitin hybrid filler is used for the reinforcement of natural rubber latex by latex stage mixing method. FTIR studies indicate the successful incorporation of Nano cellulose and Nano chitin in natural rubber latex. Addition of very small amount of Nano fillers showed remarkable improvement in thermal property. The sorption studies illustrates that the barrier property increases as the chitin content increases indicates the resistance in diffusion of solvent.

KEYWORDS: Nano cellulose; Nano chitin; Hybrid filler.

1. INTRODUCTION

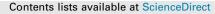
The importance of this study is the formation of biodegradable products and the identification of materials and processes compactible with the environment¹. As the available amount of fossil fuels are limiting, eco-friendly biopolymers are the latest trend in research. So the main concentration of research point out the natural resources for the preparation of biopolymers as they are nontoxic, biodegradable, economic and industrially accepted². Natural rubber latex is one of such biopolymer which is a macroscopic dispersion of rubber particles in water medium³. However it is a very good matrix with exceptional properties, reinforcing fillers can improve and tailor its properties for wide applications according to the filler characteristics⁴. As carbon black, silica, graphene and carbon nanotube are the conventional fillers of natural rubber that are not of bio origin and have health hazards, so it is better to use fillers like polysaccharides with bio origin without any health hazards for the reinforcement of natural rubber⁵.

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Green polymer nanocomposites based on natural rubber and nanocellulose whiskers from Acacia caesia: Mechanical, thermal, and diffusion properties

Seena K. Thomas^{a,b}, P. Dileep^{c,*}, P.M. Sabura Begum^{a,*}

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ABSTRACT

Elastomer composites with biomaterial for high performance have been the recent focus on rubber technology. In the present work, nanocellulose whiskers (NCW) are dispersion in water mixed with natural rubber (NR) latex to fabricate NR-NCW composites. The renewable source of NCW is Acacia Caesia, a medicinal plant with high cellulose content. The morphological analysis shows a homogeneous distribution of NCW in the NR matrix with an average size of 30 nm when the NCW content is 2phr. The addition of 2phr NCW in NR dramatically enhanced tensile strength by 21.5% and modulus by 223% relative to NR gum. The maximum degradation temperature of NR-gum and NR-NCW-2phr is 368 °C and 372 °C, respectively, confirming the composite's thermal stability. The higher crosslink density of NR-NCW-2phr confirmed the superior rubber filler interactions in the NR matrix. © 2022 Elsevier Ltd. All rights reserved.

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1. Introduction

Environmental concerns associated with depletion of petroleum sources and nondegradability of furnished products shifted the attention towards biodegradable and renewable polymeric materials. Elastomer is a versatile class of polymer material endowed with superior flexibility and extendibility. Among the elastomers, NR meets about one-third of world demand. Natural rubber is the widely used biopolymer for industrial and medical products [1,2]. They are finding a plethora of applications of NR in industries extending from agriculture to aerospace. Hevea brasiliensis is the source of natural rubber latex (NRL). The characteristic properties of NRL can be enhanced and tailored by crosslinking with vulcanizing agents and by adding reinforcing fillers of varying chemistry and size [3].

* Corresponding authors.

Biopolymers like cellulose, starch, lignin, chitosan, keratin, gelatin, and polylactic acid were tried with several elastomers [4,5-11]. Cellulose is considered an abundant biopolymer in the Indian context as cellulose is the core component of plants [12]. The significant sources of cellulose are jute, coir, sisal, pineapple leaves, cotton, and banana fibers [13,14]. Acacia Caesia, which is a medicinal plant, is an underutilized source of cellulose for commercial applications. Cellulose extraction from this agro-waste after application as a scrubber or after ayurvedic treatment makes it ecofriendly [15,16]. As cellulose is a readily available, less expensive filler, it has much attention nowadays to substitute carbon black and silica. The influence of cellulose nanofibers (CNF) loading on the static and dynamic properties of NR/CNF nanocomposite was investigated by Abraham et al. [17]. An increase in Young's modulus, tensile strength and storage modulus by the addition of CNF is proved here. Abraham et al. discussed the membrane transport and thermal degradation properties of NR cellulose composites with theoretical explanations [18]. The reinforcement of filler in the matrix is illustrated by the higher value of cross-link density, lower value of diffusion coefficient, and a reduction in solvent uptake at higher filler loading Zhang et al. observed the changes in

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NCW, Nanocellulose Whiskers; NR, Natural Rubber; NRL, Natural Rubber Latex; CNF, Cellulose nano fibers: ZDC, Zinc Diethyl carbamate.

E-mail addresses: dr@rubberparkindia.org (P. Dileep), pmsabura@cusat.ac.in (P.M.S. Begum).

Abid A. Ansari · Sarvajeet Singh Gill Ritu Gill · Guy R. Lanza · Lee Newman *Editors*

Phytoremediation

Management of Environmental Contaminants, Volume 6



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Chapter 18 Application of Nano-phytoremediation Technology for Soil Polluted with Pesticide Residues and Heavy Metals



K. Jesitha and P. S. Harikumar

18.1 Introduction

Nano-phytoremediation is a combined technology between nanotechnology and phytotechnology for remediation of contaminated environments. The steps involved in this technology should be chosen with utmost care before on-site application for remediation. Phytoremediation – a cost-effective "green" technique – has been used to remediate environmental media contaminated with crude oil, explosives, metals, pesticides, solvents, and other pollutants. Here, we focus on environmental cleanup and provide a background and overview of current practice, research findings, and future directions for nano-phytoremediation. This cost-effective technology can reduce the cleanup time, eliminate the need for treatment and disposal of contaminated soil, and degrade the toxic pollutants [1–3].

Nanomaterials can either react directly with a pollutant or support the transformation of the pollutant into less toxic forms and thus protect the environment through pollution prevention, treatment, and cleanup. Nanotechnology is a broad, interdisciplinary field dealing with structures and particles at the nanoscale. Nanotechnology involves the creation and use of structures, devices, and systems that have novel properties and functions because of their small size and the ability to control or manipulate matter on an atomic scale [4]. Nanoremediation studies have shown that Ag, Au, Mg, and Fe nanoparticles can dehalogenate halocarbon pesticides. Nanomaterials can either react directly with a pollutant or support the transformation of the pollutant into less toxic forms [5–7]. Nanoscale zero valent iron (nZVIs) are very reactive because of their small sizes, and they can be used in

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NANOMATERIALS FOR SOIL REMEDIATION

Edited by Abdeltif Amrane Dinesh Mohan Tuan Anh Nguyen Aymen Amine Assadi Ghulam Yasin



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Nanotechnology enhanced phytoremediation and photocatalytic degradation techniques for remediation of soil pollutants

K. Jesitha¹, C. Jaseela² and P.S. Harikumar²

¹Sree Sankara College, Kalady, India, ²Water Quality Division, Centre for Water Resources Development and Management, Calicut, India

22.1 Introduction

Nanotechnology is an emerging field with tremendous application for the remediation of pollutants in soil. The natural degradation of heavy metals and pesticides is a time-consuming process and hence the chemical processes that accelerate decontamination of the affected environment are significant. The application of nanotechnology to remove the hazardous pollutants from soil is discussed in this chapter. The nanotechnological remediations of pollutants are made more environment-friendly by combining them with phytoremediation techniques.

Nanoscale materials can directly react with a pollutant or support the transformation of the pollutant into less toxic forms. The toxic pollutants in the soil were decontaminated by the application of zerovalent iron nanoparticles (nZVIs). They are very reactive because of their small size and mobility, and they can be used for in situ treatment (Alidokht et al., 2011; Li and Zhang, 2006; Kanel et al., 2006; Kanel et al., 2005).

Phytore mediation is a cost-effective, eco-friendly, and in situ method that has been used to remediate the soil environment contaminated with organic and inorganic contaminants. Plants possess the potential to remove pollutants or convert pollutants into hamless products by degrading, bioaccumulating, immobilizing, or extracting the pollutants. Nanophytoremediation is a combined technology between nanotechnology and phytotechnology for the remediation of contaminated environments (*liamjitrpanich et al., 2012*). Nanophytotechnology is a novel technology which decreases the retention time of phytotechnology and the cost of nanotechnology. Phytoextraction is the use of plants to

67.3%



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Dynamic mechanical analysis, electrical properties and water sorption behaviour, of phenol formaldehyde nanocomposite reinforced with multiwalled carbon nanotubes

Lakshmipriya Ravindran ^{a b}, <u>M.S Sreekala ^b </u>, <u>S. Anilkumar</u>^a, <u>Sabu Thomas</u>^c

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Abstract

The goal of this research is to synthesise Phenol-formaldehyde nanocomposites containing pure multiwalled carbon nanotubes using an in-situ polymerisation process. The impact of filler loadings (MWCNT) with various weight percentages in the composite was explored in this research. The visco-elastic, electrical, morphological, and water sorption behaviour of the nanocomposites were investigated. The influence of MWCNT loading on the <u>dynamic mechanical analysis</u>, water uptake, electrical behaviour was examined. Using in-situ polymerisation, an effort was made to generate non agglomerated and homogenius dispersion of multiwalled carbon nanotubes (MWCNT) in the PF composite. The influence of MWCNT dispersion on the viscoelastic characteristics, electrical, morphological, and water sorption behaviour of PF-MWCNT nanocomposites has been thoroughly investigated. When compared to neat PF, lower filler loading (0.05 wt%, 0.08 wt percent) resulted in greater AC conductivity. According to DMA investigation of PF-MWCNT, 0.15 wt% has a greater storage modulus and 0.05 has a higher glass transition temperature. The addition of MWCNT has effectively reduced the water uptake of the entire nanocomposite.

Graphical abstract

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ऋग्वेदस्य यमयमीसंवादस्य कुमारमनोविज्ञानपरं साङ्गत्यम्

डाँ० हरिकृश्णशर्मा के० एन्०

असि०प्रोफसर्- संस्कृतविभागः श्रीशङ्करमहाविद्यालयः, कालटी एरणाकुलम्, केरलम्

सारांशिका

प्राचीनतमे ऋग्वेदे वार्तमानिकसामाजिकसमस्याभिः बह्वीभिः समानतां भजन्तः परामर्शविशेषाः दृश्यन्ते। तेषु सप्तमेऽष्टके षष्ठेऽध्याये षष्ठ-सप्तमाष्टमवर्गेषूपलभ्यमानं सूक्तं चतुर्दशमन्त्रात्मकं वैवस्वतापत्ययोर्थमयम्योस्संवादरूपम्। यम्या संभोगाय संप्रार्थ्यमानो भ्राता यमः दान्तेन्द्रियः यतमनस्कश्च सन् स्वसारमधर्माद्रुणद्धीति सूक्तसङ्ग्रहः। इह सूक्ते कौमारमनोविज्ञानपरं साङ्गत्यमावहद्वैशिष्ट्यं वर्तते। कौमारन्त्वधर्मे व्यवहर्तुं प्रेरकत्वं वहदस्तीति सुविदितम्। सेयं प्रेरणा चापल्ययुतेऽस्मिन् वयसि कैर्हेतुभिरुत्पद्यत इति मनोविज्ञाने विशिलष्टम्। कौतुकन्त्वेतद्यद्वैदिकेऽस्मिन् संवादे ते हेतवः सुतरां दृश्यन्त इति। मनोविज्ञाने स्वत्वसङ्घर्ष इति पदेन व्यवह्रियमाणेयमवस्था यमीवचनेषु प्रतिबिम्बिता। अपि च कथमस्मात्संघर्षादात्मानं पराञ्च मोचयेयुरिति यमयुक्तिप्रतिपादनेन श्रुतिरुपदिशतीति विशेषः। सोऽयमुपदेशः काल्ठेऽस्मिन् कथं सङ्गतं भवतीति विचारणीयः।

1. भूमिका

वैदिकसाहितिः न केवलमाध्यात्मिकविषयेषु मग्ना; किन्तु मानवजीवनस्य समस्तेषु स्तरेष्वपि संस्मृशन्ती वर्तते। यद्यपि मानवजीवितस्य प्रकृतिः चाक्रिकी तथा परिवर्तनशीला च वर्तते तथापि तस्मिन्नविकारित्वेन वर्तन्तः केचन विशेषाः भवन्ति। त एव तज्जीविते परिणामानाकलयन्ति च। वैज्ञानिकदृष्ट्या तु ते जनितकपराः मानसिकाः वंशपराश्चेति प्रतिपाद्यन्ते। धर्माधर्मादीनां निर्णयेऽपि एते विशेषाः स्वप्रभावं प्रकटयन्ति। मानवमनसः प्राकृतिकविशेषानेतानवगम्यैव प्राचीनभारतीयसंस्कृतौ विज्ञानशाखानामुत्पत्तिविकासादयः समजायन्त इति स्पष्टमवगम्यते। तस्य दृष्टान्तभूतः कश्चन वैदिकभागः इह विचारविषयीक्रियते।

संस्कृतिरेव प्राणिनः जन्तुत्वान्मनुष्यत्वं नयन्ती वर्तते। संस्कृतौ कर्तव्याकर्तव्यधर्माधर्मपुण्यापुण्यादिकं यद्विशकलनं क्रियते तत् उत्तमोत्तमस्य स्थानस्य प्राप्तये प्राणिनः प्रेरयति। 'विद्याविहीनः पशुभिस्समानः' इत्युक्तिः प्रसिद्धा। विद्या च कर्माकर्मविकर्मादिविवेचनपरा। यत् कर्तव्यं यदकर्तव्यमिति विवेकः यद्यपि

4



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Precision nutrition; a review on factors and applications

Sinoy Johnson¹, Liji Thomas²

¹ SNGIST Arts and Science College, North Paravur, Kerala, India, ²Sree Sankara College, Kalady, Kerala, India.

Introduction

Man and diseases have been found to be inseparable since time immemorial. While our ancestors reported ailments like Malaria, Cholera, Polio to be deadly and life-threatening, modern man boasts of methods in eradicating or managing them with ease. However, we too were struck with deadly and contagious ailments of modern times, extending from numerous cancer types to the present day COVID-19 pandemic. Though the causative organisms vary, dietary factors have been found to directly impact the prognosis of such conditions.

Dietary factors contribute to several diseases in humans, including cardiac problems, stroke, diabetes and cancer. Though little is known about the association between dietary habits and disease incidence, numerous studies have revealed the impact of alterations in dietary habits in managing diseases (Micha et al., 2017). This suggests the significance of personalizing nutrition requisite to the individual, called the Precision Nutrition (PN). Necessary alterations in the dietary needs of a person may be determined, contingent on his/her health conditions (O'Sullivan et al., 2017). Earlier studies have established that interventions in dietary habits may be effective in altering the behaviour of individuals, thereby promoting better health outcomes (Woolf & Purnell, 2016). This chapter aims to elucidate the concepts behind precision nutrition and its applications in human health.

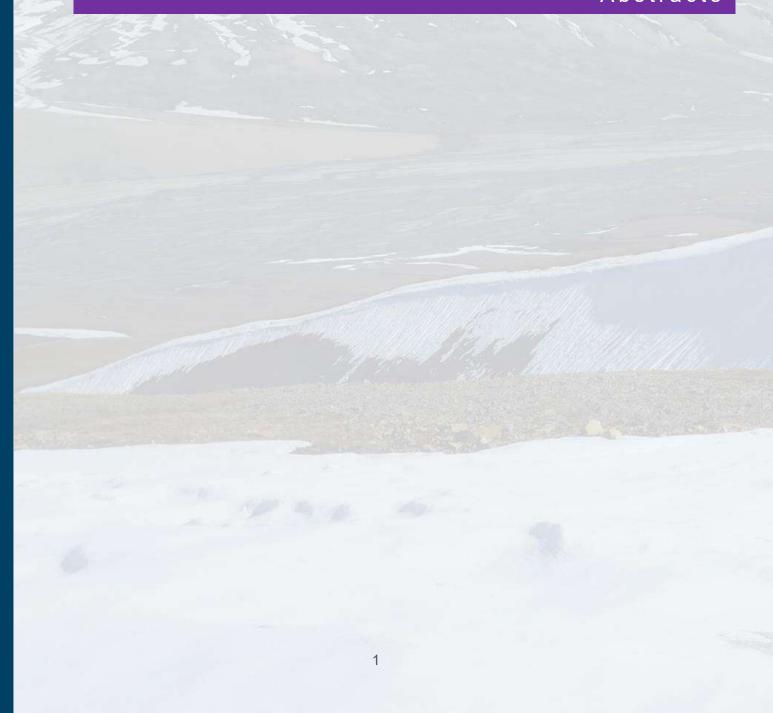
Traditional dietary assessment methods

Earlier studies on nutritional research primarily focussed to unveil the diet-health relationships at individual and community levels. Nevertheless, uniformity, validity and reproducibility of dietary assessment values posed a great challenge (Trepanowski& Ioannidis, 2018). The key techniques used

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Theme E: Unravelling Arctic Ecosystem Dynamics Abstracts





ID: 12 - Microbiomes and biogeochemical processes along geographic and environmental gradients in the circumpolar North

Conveners

Anne D. Jungblut | Natural History Musuem, London, United Kingdom
Jérôme Comte | Institut national de la recherche scientifique, Quebec city, Canada
Klemens Weisleitner | University of Innsbruck, Innsbruck, Austria



In-silico analysis of functional annotations in cold active BgaIEL from an Arctic psychrotrophic bacterium Enterobacter Iudwigii

Aneesa P A, Department of Marine Biology, Microbiology and Biochemistry, CUSAT, Cochin-682016, Department of Biochemistry, SSC, Kalady-683574 Jesmi Yousuf, Department of Marine Biology, Microbiology and Biochemistry, CUSAT, Cochin-682016. K P Krishnan, National Centre for Polar and Ocean Research, MoES, Vasco-da-Gama, Goa A A M Hatha, CUSAT-NCPOR Centre for Polar Sciences, School of Marine Sciences, CUSAT, Cochin – 682016

Keywords: Active Site, Cold Active B-Galactosidase, Functional Annotations, Glycosyl Hydrolases

Reliable prediction of the structure of a protein from its sequence using functional annotation systems could add well-grounded information to protein function. In-silico analysis of BgalEL sequence, a cold active hydrolase from GH 2 family, in Pfam database revealed the presence of five distinct functional domains, GH family 2 N sugar binding domain, GH family 2 C domain, TIM barrel domain, DUF domain and Bgal_small_N domain. A comparison of topology of Pfam domains demonstrated similarity to the topology of ß-galactosidase from Pseudoalteromonas sp.BgalEL shared sequence homology with the acid/base catalytic sites in the vicinity of catalytic glutamic acid residues and also with the consensus nucleophilic regions of all other known cold active ß-galactosidases. I-Tasser analysis predicted Glu462 and Glu538 in the active cluster as the catalytic residues of cold active BgalEL.

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INDIAN ENERGY SCENARIO- RENEWABLE ENERGY RESOURCES

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ABSTRACT

In the current day context demand for energy is ever increasing, which in turn has accelerated global warming and greenhouse gas emissions. As the need for energy is only going to increase, it is time to switch to sustainable ways of power generation. India having a huge population, it is imperative that adoption of renewable energy is done in a systematic way. These aspects along with the current status of various renewable energy technologies, the policies and initiatives and major programmes and schemes by which India is trying to implement this to attain its goals have been looked upon.

Keywords: Renewable energy, Solar power, Off grid, MNRE

INTRODUCTION

We are currently living in a world which is almost fully encompassed by technology in all aspects of life. This enormous growth in technology is partly due to the availability of electricity. Hence along with technology there is an exponential increase in demand for energy as well. Global demand for energy is expected to rise by 37% from 2013 to 2035, or by an average of 1.4% per year [1]. Currently the three main fossil fuels, Coal, Natural gas and Oil account for almost 80% of the energy produced and the rest 20% is made of Nuclear, Hydro and Renewable sources [2]. Coming to the Indian energy scenario, India is the world's third largest producer and third largest consumer of electricity. The national electric grid in India has an installed capacity of 379.130 GW as of 31 March 2021. Renewable power plants, which also include large hydroelectric plants, constitute 36.8% of India's total installed capacity. If we were to look at the sector wise total installed capacity of electrical energy in India, the private sector accounts for 47.3%, state sector accounts for 27.5% and central sector accounts for 25.4%. The actual capacity is depicted in figure 1 [3].



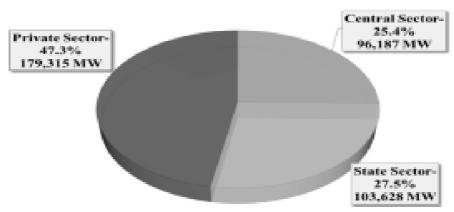


Figure 1: Total Installed Capacity - Sector Wise

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OPPO AS

Debt Management Practices of Wilful Defaulters: An analysis with special reference to Public Sector Banks

Sharanya Prathapan, Research Scholar, postgraduate and Research Department of Commerce, Nirmala College, Muvattupuzha and Sree Sankara College, Kalady

Dr. Sony Kuriakose (Corresponding Author), Assistant Professor postgraduate and Research Department of Commerce, Nirmala College, Muvattupuzha

Abstract

Wilful defaults are one of the causes of alarming surge in NPAs of banks. The increase in number of non-performing accounts and wilful defaults has harmful effects on deployment of credit. The non-recovery of loans has twin outcomes viz., poor credit availability in the market and financial shock on the balance sheets of banks. As it is a matter of great concern, this paper tries to analyse how the major 50 companies that have borrowed from public sector banks and subsequently declared as wilful defaulters managed their debt in the last two decades. The study considers data for the period 2002-2019. The selected companies have been grouped into 14 sectors. The study also looks into the legal framework of wilful defaulters in India.

Keywords: Wilful Defaulters, Debt Management, Public Sector Banks, Legal Framework

Introduction

The number of wilful defaulters of public sector banks has increased from 2,208 to 2,494 at the end of March 31, 2021. The number of unique wilful defaulters reported by PSB was 2,017 as on March 31, 2019, 2,208 as on March 31, 2020 and 2,494 as on March 31, 2021. According to the data reported by banks to Central Repository of Information on Large Credits, the total funded amount of outstanding borrowers whose accounts are classified as NPA in public sector banks as on March 31, 2021 is Rs. 4,02,015 crore. It is also to be noted that the public sector banks have done a write-off of Rs. 1,31,894 during 2020-21. Thus, the issue of NPA in general and wilful defaulters in particular has become a big menace for the survival of public sector banks.

153

Review of operational issues and prospects of commercial banks in the current scenario



Economics of Happiness and Welfare

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Proceedings of the International Conference: Economics of Happiness and Welfare

COMPARISON BETWEEN THE HAPPINESS OF WORKING WOMAN AND NON-WORKING WOMAN

Anjana Joseph

Guest Lecturer Nirmal Jyothi College, Angamaly, Kerala

Rajy Ramakrishnan

Assistant Professor

Sree Sankara College, Kalady, Kerala

Abstract

The happiness is a psychological aspect of how happy a person is about his life. This study aimed to compare the happiness of working and non-working woman by analysing their lifestyle and factors affecting their happiness. A sample of 70 women (35working+35 nonworking) in the age group 18 to 50 & above was taken for study. Data were collected through a questionnaire. The study reveals that there is no significant difference in the happiness of working women and non-working women. Each individual is different; the, bundle of items determines the happiness among working and non-working women which is entirely different from one another, but the level of utility derived from it, is equal. Individuals try to maximise their utility with the choices available to them. It is difficult to compare the happiness of one person with others. The working woman enjoys more quality life than non-working woman, and also working women are economically independent than a non-working woman.

Keywords: Working, non-working, happiness, unhappiness, lifestyle, well being

Objective

The objective of the study is to compare the happiness and lifestyle of working and nonworking women by analysing the factors affecting satisfaction such as Employment, Relationship, Leisure time, Freedom and social security.

Introduction

The happiness of individuals mainly depends upon the level of satisfaction of a person. Quality of life or wellbeing is often used terms to measure happiness. Wellbeing of a person mainly focuses on the factors such as health care, life expectancy, literacy levels, political freedom, GDP, cost of living, social support and pollution. The happiness or well-being; with

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Editors

Dr. R.B. Tripathi, Dr. P. Vijaya, Dr. Priya Senan V, Dr. Sona A

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Polyherbal formulations for Hepatoprotection -A Review

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*Corresponding author: Dr Valsa A K, E mail: valsaak@yahoo.com

Introduction

Liver is one of the most important tissues of the human body and is the primary site of metabolism, detoxification and secretion. Liver plays a major role in physiological homeostasis. It is also the site of the biochemical pathways involved in growth, immunity, supply of nutrients and energy production (Wolf, 1999).

Liver diseases have become a worldwide health problem which accounts for a very high death rate. The term liver disease is applied to any condition that causes the improper functioning of the liver showing abnormal results of liver function tests. One of the earliest stages of liver disorders is inflammation characterized by enlargement or swelling which may progress to fibrosis during which tissue damage occurs. Fibrosis advances to cirrhosis. The hepatic architecture is destroyed and the functions of the liver becomes abnormal during cirrhosis. In some cases cirrhosis of the liver may lead to hepatocellular carcinoma when some of the damaged cells of the liver multiply uncontrollably. Cirrhosis may also lead to immune dysfunction leading to increased risk of infection (Osna *et al.*, 2017).

Hepatic damage is caused by excess alcohol consumption, use of high doses of paracetamol, antibiotics, environmental pollutants and microbial infection (Vermeulen *et al.*, 1992, Daniyal *et al.*, 2019). Inherited diseases like hemochromatosis and Wilsons disease, Alpha 1 antitrypsin deficiency and Alagille are some of the less common disorders.



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Abstract

Agriculture is intricately connected with the environment. Agricultural pollutants are numerous; and they originate from different sources. This chapter discusses the different studies conducted by Centre for Water Resources Development and Management (CWRDM), Kozhikode, Kerala, related to environmental pollution. Water and soil quality of different selected areas of Kerala was monitored. Pesticide residue analysis of samples collected from various parts of Kerala, with special reference to toxic pesticide endosulphan, is reported in the study. Pesticides may additionally leave a serious negative impact on nature, though are of advantage for the crops. This chapter concludes with the different measures that can be adopted to protect, manage, and restore environment.

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Because of the excellent qualities of polymeric foams, such as less thermal conductivity, being light weight, waterproof, and chemical resistant, they found applications in the field of thermal insulation materials. Due to high thermal stability, phenolic foams show outstanding fire-resistance properties. In comparison with other polymeric foams, PF foams have fairly poor thermal conductivity and good chemical resistance. Some of the methods explored to overcome this

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Ally C. Antony^{1, 2*}, Reshma Silvester², Aneesa P. A.³, Mini K. Paul¹, Mohamed Hatha A. A.² ¹MES College, Marampally, Aluva ²Cochin University of Science and Technology, Cochin ³Sree Sankara College, Kalady **allyioemon@gmail.com*

Antibiotic resistance among microorganisms is one of the most serious problems encountered during disease management. The prevalence of antibiotic resistance and antibiotic resistance genes in two important faecal indicator bacteria - E. coli and enterococci isolated from shellfish harvested from Cochin estuary was assessed. Antibiotic sensitivity of 50 E. coli strains towards colistin as well as carbapenem antibiotics, imipenem and meropenem was tested by agar disc diffusion method. PCR based detection of plasmid encoded colistin resistance gene, mcr-1 as well as extended spectrum beta lactamase genes (blaTEM and blaCTX-M) were undertaken. Antibiotic sensitivity of 30 enterococci strains towards vancomycin and teicoplanin were tested. The enterococci were also screened for presence of vancomycin resistance genes vanA, vanB and vanC by multiplex PCR. Approximately 90%, 92% and 22% E. coli strains exhibited resistance against colistin, imipenem and meropenem respectively. Mcr-1 gene could be detected in 4 strains (6%). Plasmid curing experiment revealed that the mcr-1 gene detected was plasmid encoded. Coresistance to the carbapenem antibiotics was exhibited by the mcr-1 positive strains. Blactx-M gene and Blottm genes were detected in 26.4% and 21.6% of the E. coli strains respectively. Co-occurrence of Blacton gene and Blattm genes were exhibited by 21.6% strains. Approximately 73.9% and 56.5% enterococci strains showed resistance towards vancomycin and teicoplanin respectively. VanB gene was detected in one E. faecium strain isolated from shellfish. Contamination of foods with antibiotic resistant bacteria could be a significant threat to public health, as it may result in its entry into food chain. E. coli as well as enterococci are ideal candidate vehicles for horizontal transmission of antibiotic resistance to other commensal bacteria or potential human pathogens as they constitute common flora of the gastrointestinal tracts and survives well in other environments also. Present study reveals the probable health hazards associated with consumption of shellfish harvested from this estuary.

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സംസ്ക്തസാഹിത്യചരിത്രത്തിൽ 14 വിദ്യാസ്ഥാനങ്ങൾ നിർ ദ്ദേശിച്ചിരിക്കുന്നു. നാലുവേദങ്ങൾ, ആറുവേദാംഗങ്ങൾ, പുരാണം, ന്യായശാസ്ത്രം, മീംമാസാശാസ്ത്രം, ധർമശാസ്ത്രം എന്നിവയാണ ത്. അറിവിന്റെ ഇരിപ്പിടങ്ങളായ ഈ വിദ്യാസ്ഥാനങ്ങളെ മന സ്സിലാക്കേണ്ടതുണ്ട്. അറിവിന് 4 ഘടകങ്ങളുണ്ട്. അധ്യയനം, വിജ്ഞാനം, അഭ്യാസം, പ്രചാരം എന്നിവയാണത്. ഈ നാലു പ്രക്രിയകളിലൂടെയാണ് അറിവ് സംശുദ്ധവും പൂർണ്ണവുമാകുന്നത് എന്ന സംസ്കൃതാഭിജ്ഞർ അഭിപ്രായപ്പെടുന്നു.

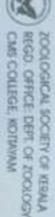
അറിവിന്റെ ഖനികളായ വേദത്തിന്റെ താത്പര്യം വേ ദാംഗങ്ങളിലൂടെ നേടിയെടുക്കണം. വേദാംഗങ്ങൾ ആറെണ്ണം ആണ്. അവ ശിക്ഷ, കല്പം, നിരുക്തം, വ്യാകരണം, ജ്യോതിഷം, ഛന്ദസ്സ് എന്നിവയാണ്. വേദപുരുഷന്റെ ശരീരത്തിലെ അംഗ ങ്ങളായി ഇവ സങ്കല്പിച്ചിരിക്കുന്നം. അതിനാൽ ശിക്ഷ മൂക്കം, ജ്യോതിഷം കണ്ണുകളം, മുഖം വ്യാകരണവും, കല്പം കൈകളം, നിരുക്തം ചെവികളം, പാദങ്ങൾ ഛന്ദസ്സമാകന്നം. ഒരു മനഷ്യ ന്റെ ശരീരത്തിൽ പാദങ്ങൾ എപ്രകാരം പ്രധാനമായിരിക്കുന്ന വോ അഇപോലെ വേദങ്ങളുടെ യഥാർത്ഥ ജ്ഞാനാർജ്ജനത്തി ന് ഛന്ദഃശ്ശാസ്തം സുപ്രധാനമാണ്. പാദരഹിതനായ ഒരുവന് ഗതി (സഞ്ചാരം) സാധിക്കാത്തഇ പോലെ ഛന്ദോവിജ്ഞാനമി ല്ലാത്തവന് വേദമന്ത്രങ്ങൾ തിരിച്ചറിയാനാവുകയില്ല. വേദമന്ത്ര ങ്ങൾ ഛന്ദോനിബദ്ധമാണ്. അതിനാൽ വൈദികമായ ആശയ ങ്ങളെ ഗ്രഹിക്കുന്നതിന് ഛന്ദശ്ശാസ്ത്രവിജ്ഞാനം അവശ്യമാകന്നം.

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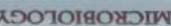


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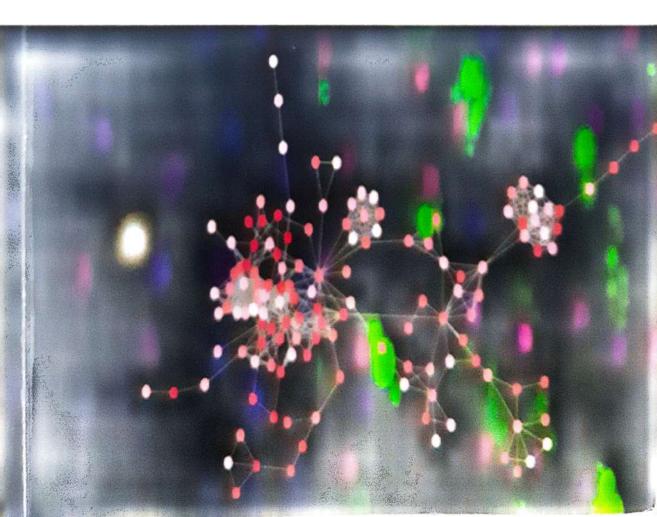
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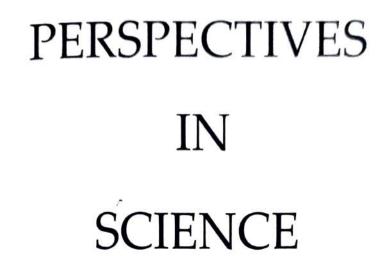
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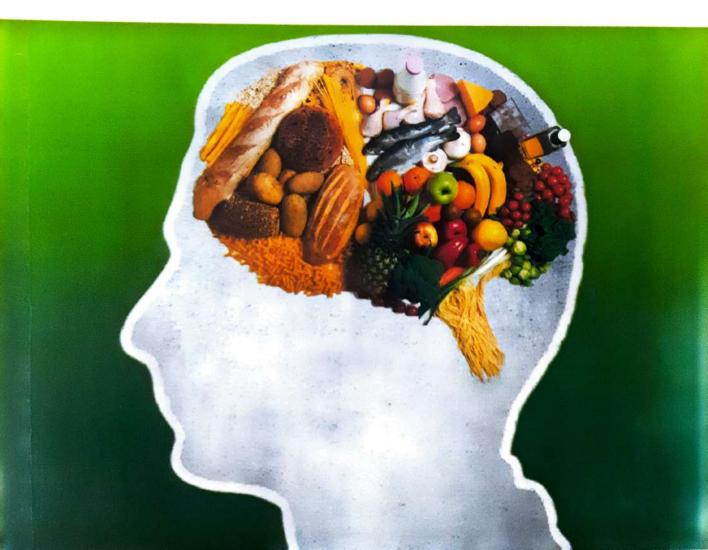
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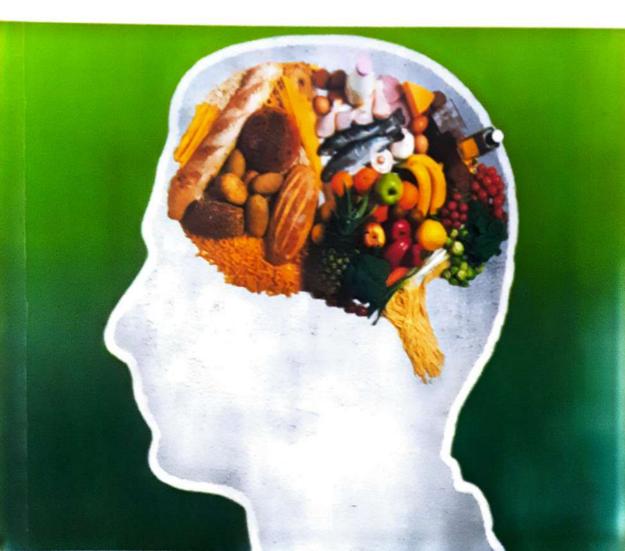
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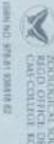
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യമുനാഷ്ട്രകം -1

മുരാരികായകാളിമാലലാമവാരിധാരിണീ തൃണീകൃതത്രിവിഷ്ടപാ ത്രിലോകശോകഹാരിണീ മനോനുകൂലകൂലകുഞ്ജപുഞ്ജധൂതദുർമദാ ധുനോതു മേ മനോമലം കളിന്ദനന്ദിനീ സദാ.

മുരാരികായകാളിമാലലാമവാരിധാരിണീ തൃണീകൃതത്രിവിഷ്ടപാ ത്രിലോകശോകഹാരിണീ മനോനുകൂലകൂലകുഞ്ജപുഞ്ജധൂത-ദൂർമദാ കളിന്ദനന്ദിനീ സദാ മേ മനോമലം ധുനോതു.

മുരാരിയായ ശ്രീകൃഷ്ണഭഗവാന്റെ ശരീരം കറുപ്പാണ്. ആ കറുപ്പുനിറത്തെ കലരുന്ന ജലമാണ് യമുനാനദിയ്ക്കുള്ളത്. (മുരാസു രനെ കൊല്ലുന്നതിന് യോഗമായയെ മഹാവിഷ്ണു ആശ്രയിച്ച കഥ പദ്മപൂരാണത്തിൽ പറയുന്നു). ഭഗവത്പാദാരവിന്ദത്തെ ആശ്രയിച്ച വർക്ക് സ്വർഗ്ഗീയസൂഖങ്ങൾ തൃണസമാനമാണ്. അപ്രകാരം ഭഗവാ നുമായി അഭേദ്യസംബന്ധമുള്ള യമുനാനദി സ്വർഗ്ഗസുഖങ്ങളെ നി സ്സാരമാക്കി തീർക്കുന്നു. ആദ്ധ്യാത്മികാധിഭൗതികാധിദൈവികങ്ങ ളായ മൂന്നൂവിധം ദൂഖങ്ങൾ, ആ ദുഖങ്ങളെ തീർത്തു കൊടുക്കുന്ന മഹത്വം യമുനാനദിയ്ക്കുണ്ട്. ഭഗവാനിലേയ്ക്ക് ഒഴുകുന്ന മനസ്സാ കുന്ന നദിയുടെ തീരത്ത് ഭഗവദ്സ്മരണയെ ഊട്ടിയുറപ്പിക്കുന്ന നികുഞ്ജപുഞ്ജങ്ങൾ സ്ഥിതിചെയ്യുന്നു. ആ നികുഞ്ജകൂട്ടങ്ങൾ ജനങ്ങളുടെ ദുർമദത്തെ കളയുന്നതിന് പര്യാപ്തമായവയാണ്. ഇപ്ര കാരം കറുപ്പുകലർന്ന ജലത്തെ വഹിയ്ക്കുന്നവളും, സ്വർഗ്ഗീയ സുഖ ത്തെ തൃണസമാനമാക്കുന്നവളും, ത്രിലോകങ്ങളിലേയും ത്രിവിധ ദുഃഖത്തെ ഹരിയ്ക്കുന്നവളും, ജനങ്ങളുടെ മദത്തെ കളയുവാൻ പര്യാപ്തമായ ഭഗവദ്സ്മരണയെ സൃഷ്ടിയ്ക്കുന്നവളുമായ അല്ല യോ കാളിന്ദീ (യമുനാ) എപ്പോഴും നമ്മുടെ ആന്തരികമായ മാലിന്യ ങ്ങളെ (കാമക്രോധലോഭമോഹമദമാത്സര്യാദികൾ) കളഞ്ഞു എന്നെ പവിത്രീകരിച്ചാലും.

(കളിന്ദപർവതത്തിൽ നിന്നുദ്ഭവിക്കുന്നതിനാൽ കാളിന്ദിയെന്ന് യമുനയ്ക്ക് പേര്. അത് പ്രയാഗിൽ വച്ച് ഗംഗാനദിയുമായി ചേരുന്നു.) മലാപഹാരിവാരിപൂരിഭൂരിമണ്ഡിതാമൃതാ ഭൃശാ പ്രവാതകപ്രപഞ്ചനാതിപണ്ഡിതാനിശാ

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യമുനാഷ്ട്രകം –2 കൃപാപാരാവാരാം തപനതനയാം താപശമനീം മുരാരിപ്രേയസ്യാം ഭവഭയദവാം ഭക്തിവരദാം വിയജ്ജ്വാലോന്മുക്താം ശ്രിയമപി സുഖാപ്തേഃ പരിദിനം

സദാ ധീരോ നൂനം ഭജതി യമുനാം നിതൃഫലദാം. 1 കൃപാപാരാവാരാം തപനതനയാം താപശമനീം മുരാരിപ്രേയസ്യാം ഭവഭയദവാം ഭക്തിവരദാം വിയജ്ജ്വാലോന്മുക്താം ശ്രിയമപി സുഖാ പ്തേഃ പരിദിനം സദാ ധീരോ നൂനം ഭജതി യമുനാം നിത്യഫലദാം.

യാതൊരുവളാണോ കരുണാസമുദ്രമായിട്ടുള്ളത്, സൂര്യന്റെ പൂത്രിയായിരിക്കുന്നത്, സംസാരതാപത്തെ ശമിപ്പിയ്ക്കുന്നത്, ശ്രീ കൃഷ്ണചന്ദ്രന്റെ പ്രേമഭാജനമായിരിയ്ക്കുന്നത്, സംസാരഭീതിയു ണ്ടാക്കുന്ന ദാവാനലന്ധരൂപമായിരിക്കുന്നത്, ഭക്തർക്കിഷ്ടവരപ്രദാ യിനിയായിരിയ്ക്കുന്നത്, ആകാശജാലത്തിൽ നിന്ന് വിമുക്തയായ ലക്ഷ്മീസ്വരൂപത്തോടുകൂടിയത്, ആ നിത്യഫലദായിനിയായ യമുന യെ ധീരനായ പുരുഷൻ സുഖപ്രോപ്തിയ്ക്കായി നിശ്ചയമായും നിരന്തരം പ്രതിദിനം ഭജനം ചെയ്യുന്നു.

മധുവനചാരിണി ഭാസ്കരവാഹിനി ജാഹ്നവിസംഗിനി സിന്ധുസുതേ മധുരിപുഭൂഷണി മാധവതോഷിണി ഗോകുലഭീതിവിനാശകൃതേ ജഗദധമോചിനി മാനസദായിനി കേശവകേളിനിദാനഗതേ ജയ യമുനേ ജയ ഭീതിനിവാരിണി സങ്കടനാശിനി പാവയ മാം. 2 മധുവനചാരിണി ഭാസ്കരവാഹിനി ജാഹ്നവിസംഗിനി സിന്ധുസുതേ മധുരിപുഭൂഷണി മാധവതോഷിണി ഗോകുലഭീതിവിനാശകൃതേ ജഗദധമോചിനി മാനസദായിനി കേശവകേളിനിദാനഗതേ ജയ യമുനേ ജയ ഭീതിനിവാരിണി സങ്കടനാശിനി പാവയ മാം.

മധുവനത്തിൽ സഞ്ചരിയ്ക്കുന്നവളേ, ഭാസ്കരവാഹിനീ, ഗംഗ യുമായി സംഗമം ചെയ്യുന്നവളേ സിന്ധുപർവതപുത്രി, മധുരിപു വായ ശ്രീകൃഷ്ണന്റെ ലീലകളിലൂടെ അലങ്കരിക്കപ്പെടുന്നവളേ, മാധ വനെ സന്തോഷിപ്പിക്കുന്നവളേ, ഗോകുലത്തിന്റെ ഭീതിയെ നശിപ്പി കുന്നവള, ജഗത്തിലെ പാപജാലങ്ങളെ മുഴുവനും അകറ്റുന്നവളേ, വാഞ്ഛിതഫലദായിനി കേശവന്റെ കേളികൾക്ക് ആശ്രയമായി നി

(ശീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



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ഗംഗാഷ്കം

ഭഗവതി തവ തീരേ നീരമാത്രാശാനോഽഹം വിഗത വിഷയതൃഷ്ണാ കൃഷ്ണമാരാധയാമി സകലകലുഷഭംഗേ സ്വർഗസോപാനസംഗേ തരളതരതരംഗേ ദേവി ഗംഗേ പ്രസീദ. 1 ഹേ ഭഗവതി ഗംഗേ, തവ തീരേ നീരമാത്രാശാനോ അഹം വിഗത-വിഷയതൃഷ്ണാഃ കൃഷ്ണം ആരാധയാമി. സകലകലുഷഭംഗേ സ്വർഗസോപാനസംഗേ തരളതരതരംഗേ ദേവി ഗംഗേ പ്രസീദ.

അല്ലയോ ഗംഗാദേവി, ഞാനവിടുത്തെ തീരത്ത്, ആ ജലപാ നം ചെയ്ത് കഴിച്ചുകൂടിക്കൊള്ളാമീ ജീവിതം. വിഷയകാമനകളെ ഒഴിവാക്കി, ശ്രീകൃഷ്ണപരമാത്മാവിനെ ഞാൻ ആരാധിയ്ക്കും. അല്ലയോ സകലപാപങ്ങളേയും കളയുന്ന സ്വർഗ്ഗസോപാനത്തിൽ നിന്നിറങ്ങിവന്നവളേ, തരളമായ തരംഗങ്ങളോടു കൂടിയവളേ ഹേ ഗംഗാമാതാവേ നീ എന്നിൽ പ്രസന്നയായാലും.

ഭഗവതി ഭവലീലാമൗലിമാലേ തവാംഭഃ കണമണുപരിമാണം പ്രാണിനോ യേ സ്പൃശന്തി അമരനഗരനാരീചാമരഗ്രാഹിണീനാം വിഗതകലികളങ്കാതങ്കമങ്കേ ലുഠന്തി. 2

ഭഗവതി ഭവലീലാമൗലിമാലേ തവാംഭഃ യേ പ്രാണിനഃ കണമണു-പരിമാണം സ്പൃശന്തി (തേ) വിഗതകലികളങ്കാതങ്കം അമരനഗര-നാരീചാമരഗ്രാഹിണീനാം അങ്കേ ലുഠന്തി.

അല്ലയോ ഭഗവതി ശ്രീമഹാദേവന്റെ തിരുജടയിലെ ലീലാമയി ആയ പുണ്യമാലയാണവിടുന്ന്. യാതൊരു പ്രാണിയാണോ അവിടു ത്തെ അണുമാത്രയായ ജലകണത്തെ സ്പർശിയ്ക്കുന്നത് അവർ കലികാലത്തെ മാലിന്യത്താലുണ്ടാകുന്ന ഭയത്തെ ഒഴിവാക്കുന്നു. സ്വർഗ്ഗീയ ചാമരധാരിണികളായ അപ്സരസ്സുകളുടെ കൂടെ കഴിയാൻ തന്മൂലമവർക്ക് ഭാഗ്യം സിദ്ധിയ്ക്കുന്നു.

ബ്രഹ്മാണ്ഡം ഖണ്ഡയന്തീ ഹരശിരസി ജടാവല്ലിമുല്ലാസയന്തീ സ്വർലോകാദാപതന്തീ കനകഗിരിഗുഹാഗണ്ഡശൈലാത്സഖലന്തീ ക്ഷോണീപൃഷ്ടേ ലുഠന്തീ ദുരിതചയചമൂനിർഭരം ഭർത്സയന്തീ പാഥോധിം പൂരയന്തി സുരനഗരസരിത്പാവനീ നഃ പുനാതു. 3

(ശീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



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ച്ചെങ്രിബ്യുന്നെട്ടानम् അത്രർഷവിദ്യാപ്രതിഷ്ഠാനം തിരുവനന്തപുരം – 695122

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ലേഖകരുടെ കുടുതൽ വിവരങ്ങൾക്ക് അവസാനപേജ് (1653) കാണുക

ഗംഗാസ്തോത്രം

ദേവീ സുരേശ്വരി ഭഗവതി ഗംഗേ ത്രിഭുവനതാരിണി തരളതരംഗേ ശങ്കരമൗലിവിഹാരിണി വിമലേ മമ മതിരാസ്താം തവ പദകമലേ.

ഹേ ദേവി ഭഗവതി ഗംഗേ ത്രിഭുവനതാരിണി തരളതരംഗേ ശങ്കര– മൗലിവിഹാരിണി വിമലേ തവ പദകമലേ മമ മതി ആസ്താം.

അല്ലയോ ഗംഗാദേവി! അവിടുന്ന് സുരേശ്വരിയാണ്. ദേവന്മാ ർപോലും ഹരിപദത്തിൽ നിന്നുദയം ചെയ്ത അവിടുത്തെ മാഹാ ത്വൃം പാടിപുകഴ്ത്തുന്നു. ത്രിഭുവനങ്ങളിലും ഉള്ള സർവ്വരുടെയും ഉള്ളിലും അകത്തുമുള്ള പാപക്കറകളെ ഉന്മൂലനം ചെയ്യുന്നു. തന്മൂ ലവും ഈശ്വരത്വം അവിടുത്തേക്ക് സിദ്ധംതന്നെ. തരളതരംഗത്തോ ടെ സ്വച്ഛമായൊഴുകുന്ന ഗംഗാപ്രവാഹം ഒരു ചാരുതയാർന്ന ദർശനം തന്നെ. ശങ്കരഭഗവാന്റെ കപർദ്ദമെന്ന മുടിക്കെട്ടിൽ വിഹരിക്കുന്ന അവിടുന്ന് ലോകത്തിന് മംഗളം പകരുന്നു. വിമലചരിതയായ അവി ടുഞ്ഞ പദകമലത്തിൽ അടിയന്റെ ബുദ്ധി ഉറയ്ക്കണേ.

ഭാഗീരഥി സുഖദായിനി മാത– സ്തവ ജലമഹിമാ നിഗമേ ഖ്യാതഃ നാƒഹം ജാനേ തവ മഹിമാനം പാഹി കൃപാമയി മാമജ്ഞാനം.

ഹേ മാതാ ഭാഗീരഥി സുഖദായിനി, തവ ജലമഹിമാ നിഗമേ ഖ്യാതഃ തവ മഹിമാനം അഹം ന ജാനേ. ഹേ കൃപാമയി മാം അജ്ഞാനം പാഹി. ഹേ മാത! ഭാഗീരഥിയാണവിടുന്ന്. ഭഗീരഥന്റെ കഠിനപ്രയത് നത്തിന്റെ ആഴം തിരിച്ചറിഞ്ഞ് ഭൂമിയിലേയ്ക്കെത്താൻ കാരുണ്യം കാണിച്ച അവിടുത്തെ മഹിമ അലൗകികമാണ്. അമ്മേ! സന്താനങ്ങ ളുടെ സൗഖ്യമാണ് മാതാവ് കാംക്ഷിക്കുന്നത്. സ്വസന്താനങ്ങളായ ഞങ്ങർക്കല്ലാം സാമീപ്യംകൊണ്ടും സംസ്പർശംകൊണ്ടും അവി ടുന്ന് സുഖം പകരുന്നു. അവിടുത്തെ മാഹാത്മ്യത്തെ നിഗമങ്ങൾ വേറേ പാടിപ്പുകഴ്ത്തുന്നു. അവിടുത്തെ മഹിമാവിനെ വേണ്ടുംവണ്ണം അറിയാൻ അടിയനു സാധിച്ചിട്ടില്ല. അജ്ഞാനകലുഷിതമായ മന സ്സിൽ അവിടുത്തെ ഗുണഗണങ്ങൾ തെളിയുന്നില്ല. എന്റെ അജ്ഞാ

(ശീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



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ച്ചെങ്രിബ്യുന്നെട്ടानम् അത്രർഷവിദ്യാപ്രതിഷ്ഠാനം തിരുവനന്തപുരം – 695122

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ത്രിവേണീസ്തോത്രം

മുക്താമയാലങ്കൃതമുദ്രവേണീ ഭക്താഭയത്രാണസുബദ്ധവേണീ മത്താലിഗുഞ്ജന്മകരന്ദവേണീ ശ്രീമത്പ്രയാഗേ ജയതി ത്രിവേണീ.

മുക്താമയാലങ്കൃതമുദ്രവേണീ, ഭക്താഭയത്രാണസുബദ്ധവേണീ മത്താളിഗുഞ്ജന്മകരന്ദവേണീ ത്രിവേണീ ശ്രീമത്പ്രയാഗേ ജയതി.

ഭാരതതീർത്ഥവർണ്ണനയിൽ 14 പ്രയാഗങ്ങളെക്കുറിച്ച് പരാ മർശിക്കുന്നുണ്ട്. ഗംഗായമുനാസരസ്വതീനദിമാരുടെ സംഗമസ്ഥാ നമായ പ്രയാഗ് (പ്രയാഗ്രാജ്) പ്രയാഗരാജൻ എന്ന പേരിൽ പ്രസി ദ്ധം. മറ്റു പ്രയാഗങ്ങൾ– ദേവപ്രയാഗ്, രുദ്രപ്രയാഗ്, കർണ്ണപ്രയാഗ്, നന്ദപ്രയാഗ്, വിഷ്ണുപ്രയാഗ്, സൂര്യപ്രയാഗ്, ഇന്ദ്രപ്രയാഗ്, സോമ പ്രയാഗ്, ഭാസ്കരപ്രയാഗ്, ഹരിപ്രയാഗ്, ഗുപ്തപ്രയാഗ്, ശ്യാമപ്രയാ ഗ്, കേശവപ്രയാഗ് എന്നിവയാണ്. അലഹബാദിനടുത്തുള്ള പ്രയാ ഗത്തിൽ ഗംഗായമുനാനദിമാരുടെ സംഗമം പ്രത്യക്ഷമായിയനുഭ വപ്പെടുന്നു. അന്തർധാരയായി സരസ്വതിനദിയുമവിടെ സംഗമിക്കു ന്നു. ഈ മൂന്ന് പുണ്യനദികളുടെ സംഗമസ്ഥാനമാണ് ത്രിവേണി. ത്രിവേണിയിൽ സമന്വയിച്ച ഈ ജലപ്രവാഹത്തെ വളരെ മനോ ഹരമായി ആചാര്യസ്വാമികൾ വന്ദിക്കുന്നു.

ത്രിവേണിസംഗമസ്നാനം സർവപാപദോഷരോഗഹരം ആണ്. എല്ലാ വിധത്തിലുമുള്ള ആമയങ്ങ(രോഗങ്ങൾ)ളിൽനിന്നും മുക്തി നല്കുന്നു എന്നത് ത്രിവേണിയുടെ അലങ്കാരമായി പുരാണാ ദികൾ വർണ്ണിക്കുന്നു. ഇപ്രകാരം ഭക്തന്മാരുടെ രോഗമുക്തി എന്ന അലങ്കാരചിഹ്നത്തോടുകൂടി നിരന്തരം നദീസംഗമം പ്രവഹിക്കുന്നു. ഭക്തന്മാരുടെ ഭയത്തെ ഉന്മൂലനം ചെയ്ത് അവരെ സംരക്ഷിക്കുന്ന തിൽ അതൃന്തമുന്മുഖയാണ് ഈ പ്രയാഗനദീപ്രവാഹം. മധുപാന ത്താൽ മത്തരായ വണ്ടുകളുടെ മൂളലിനാലും പുഷ്പങ്ങളുടെ സുഗ ന്ധത്താലും പരിപൂരിതമായ പ്രയാഗത്തിലെ ഈ ത്രിവേണീസം ഗമം ജയിക്കട്ടെ.

ലോകത്രയൈശ്വര്യനിദാനവേണീ താപത്രയോച്ചാടനബദ്ധവേണീ

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(ശ്രീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



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സ്തോത്രകൃതികൾ

(വേദാന്ത-ഗുരു-ഗണേശ-വൈഷ്ണവ-ശിവസ്തോത്രങ്ങൾ)

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ഭഗവന്മാനസപൂജാസ്തോത്രം

ഹൃദംഭോജേ കൃഷ്ണഃ സജലജലദശ്യാമളതനുഃ സരോജാക്ഷഃ സ്രഗ്വീ മകുടകടകാദ്യാഭരണവാൻ ശരദ്രാകാനാഥപ്രതിമവദനഃ ശ്രീമുരളികാം

വഹസ്യേയോ ഗോപീഗണപരിവൃതഃ കുങ്കുമചിതഃ. 1 സജലജലദശ്യാമളതനുഃ = ജലത്തോടുകൂടിയ മേഘത്തെപ്പോലെ ഇരുണ്ട ശരീരത്തോടുകൂടിയവനും; സരോജാക്ഷഃ = താമരപ്പൂ കണ കുള്ള കണ്ണുള്ളവനും; സ്രഗ്വീ = മാലയണിഞ്ഞവനും; മകുടകടകാ-ദൃാഭരണവാൻ = കിരീടം, തോൾവള മുതലായ ആഭരണങ്ങളണിഞ്ഞ വനും; ശരദ്രാകാനാഥപ്രതിമവദനഃ = ശരത്കാലചന്ദ്രബിംബം പോ ലുള്ള മുഖത്തോടുകൂടിയവനും; ശ്രീമുരളികാം വഹൻ = ഒാടക്കുഴ ലേന്തിയവനും; ഗോപീഗണപരിവൃതഃ = ഗോപികമാരുടെ കൂട്ടത്താൽ ചുറ്റപ്പെട്ടവനും; കുങ്കുമചിതഃ = കുങ്കുമപ്പൂവുകൊണ്ടർച്ചിക്കപ്പെട്ടവനും ആയ; കൃഷ്ണഃ = കൃഷ്ണൻ; ഹൃദംഭോജേ = ഹൃദയമാകുന്ന താമര പ്പൂവിൽ; ധ്യേയഃ = ധ്യാനിക്കപ്പെടേണ്ടവനാകുന്നു.

ശ്രീകൃഷ്ണഭഗവാനെ ധ്യാനിച്ച് ബാഹ്യങ്ങളായ ഭൗതികദ്രവ്യ ങ്ങളില്ലാതെ സങ്കല്പമയങ്ങളായ പൂജാദ്രവ്യങ്ങളാൽ ഷോഡശോപ ചാരത്തോടെ മാനസപൂജ ചെയ്യുന്നതിനുള്ള പ്രാരംഭം കുറിയ്ക്കുക യാണിവിടെ. പൂജകൻ ഇദം പ്രഥമമായി ഉറപ്പിക്കേണ്ടത് പൂജ്യനായ ഭഗവാന്റെ പൂജാർഹമായ സ്വരൂപത്തെയാണ്. അത്തരത്തിൽ മാനസ പൂജ ചെയ്യുന്നതിനർഹമായ ഒരു തേജോമയബിംബത്തെ സങ്കല്പി യ്ക്കുന്നു. പെയ്തൊഴിയുവാനുള്ള ജലത്തെ വഹിക്കുന്ന മേഘത്തെ പ്പോലെ ഇരുളിമയുടെ ഭംഗിയാർന്ന ശരീരവും താമരപ്പൂകണക്കെ മനോഹരങ്ങളായ നയനങ്ങളും വർണ്ണവൈവിധ്യംപൂണ്ട് മാറിൽ ചാർത്തിയ വനമാലയും പൊന്നിൻ കിരീടവും തോൾവളയുമടക്ക മുള്ള ആഭരണങ്ങളും, ചെഞ്ചുണ്ടിൽ ചേർത്തിരിക്കുന്ന ഓടക്കുഴലും, ശരത്കാല രാത്രിയുടെ പ്രഭാപൂരമായിരിക്കുന്ന ചന്ദ്രബിംബം കണ ക്കെ ശോഭിക്കുന്ന തിരുമുഖവും ഏത് ഭഗവത്സ്വരൂപത്തെയാണോ സുന്ദരതരമാക്കുന്നത്, ഗോപികമാരാൽ ചുറ്റപ്പെട്ട കുങ്കുമാർച്ചിതമായ ആ ശ്രീകൃഷ്ണഭഗവാനെ എന്റെ ചിത്തമാകുന്ന താമരപ്പൂവിൽ കുടി കൊള്ളുന്നവനായി ഞാൻ ധ്യാനിക്കുന്നു.

(ശീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



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സ്തോത്രകൃതികൾ (ദേവീ-പുണ്യനദീ-തീർത്ഥമാഹാത്ത്വസ്തോത്രങ്ങൾ)

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നർമദാഷ്ട്രകം

സബിന്ദുസിന്ധുസുസ്ഖലത്തരംഗഭംഗരഞ്ജിതം ദ്വിഷത്സു പാപജാതജാതകാദിവാരിസംയുതം കൃതാന്തദൂതകാലഭൂതഭീതിഹാരിവർമദേ ത്വദീയപാദപങ്കജം നമാമി ദേവി നർമദേ. 1

കൃതാന്തദൂതകാലഭൂതഭീതിഹാരിവർമ്മദേ = കാലന്റെ ദൂതനാൽ ഉണ്ടാക്കപ്പെടുന്ന ഭീതിയെ ഇല്ലാതാക്കുന്ന കവചത്തെ നൽകുന്നവ ളായ; ഹേ ദേവി നർമ്മദേ = അല്ലയോ നർമ്മദാദേവി!; സബിന്ദുസി-ന്ധുസുസ്ഖലത്തരംഗഭംഗരഞ്ജിതം = ജലകണങ്ങളോട് കൂടിയിള കിക്കൊണ്ടിരിക്കുന്നതായ കടൽത്തിരമാലയടിപോലെ മനോഹരമാ യിരിക്കുന്നതും; ദിഷത്സു പാപജാതജാതകാദിവാരിസംയുതം = ദേഷിക്കുന്നവരിലെ പാപത്തിന്റെയും പാപജങ്ങളായവയുടെയും ശത്രുവായിരിക്കുന്ന ജലത്തോടുചേർന്നതുമായ; ത്വദീയപാദപങ്കജം നമാമി = നിന്റെ പാദപങ്കജത്തെ ഞാൻ നമസ്കരിക്കുന്നു.

പ്രാണികൾക്കേവർക്കും കാലത്തിന്റെ ദൂതനാൽ ഉണ്ടാക്കപ്പെ ടുന്നതായ മരണഭീതിയെ ജയിക്കുന്നതിനായി അഭയമാകുന്ന കവ ചം നൽകുന്നവളായ അല്ലയോ നർമ്മദാ ദേവി! മരണത്തിനു കാരണ മായിരിക്കുന്ന പാപകർമ്മങ്ങളെയും ആ പാപജന്യങ്ങളായ ഫലങ്ങ ളെയും മറ്റും നിവാരണം ചെയ്യുന്നതും ജലകണങ്ങളോട് കൂടിയല യടിച്ചുകൊണ്ടിരിക്കുന്ന സമുദ്രത്തിലെ തിരമാലകളെപോലെ മനോ ഹരങ്ങളായിരിക്കുന്നതുമായ നിന്റെ പാദപങ്കജത്തെ ഞാൻ നമസ്ക രിക്കുന്നു.

ത്വദാബുലീനദീനമീനദിവ്യസമ്പ്രദായകം കലൗ മലൗഘഭാരഹാരിസർവതീർഥനായകം സുമച്ഛകച്ഛനക്രചക്രവാകചക്രശർമദേ ത്വദീയപാദപങ്കജം നമാമി ദേവി നർമദേ. 2

സുമച്ഛകച്ഛനക്രചക്രവാകചക്രശർമദേ = മത്സ്യം, ആമ, മുതല, വാത്ത കൾ, ചക്രവാകങ്ങൾ മുതലായവയ്ക്ക് സുഖത്തെ നൽകുന്നവളായ; ഹേ ദേവി നർമ്മദേ = അല്ലയോ നർമ്മദാ ദേവി!; ത്വദംബുലീനദീന– മീനദിവ്യസംപ്രദായകം = നിന്റെ ജലത്തിൽ ലീനങ്ങളായിരിക്കുന്ന ദീനരായ മീനുകൾക്ക് ദിവ്യത്വത്തെ നൽകുന്നതും; കലൗ മലൗഘ

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Sri Sankaracharya

Commentary By

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Swami Haribrahmendrananda Thirtha

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നം പ്രത്യം നിർഗുണമാനസപൂജാ ിമാരനത്തം പ

നിർഗുണോപാസനയെന്നും സഗുണോപാസനയെന്നും രണ്ടു വിധത്തിലുള്ള ഉപാസനാസമ്പ്രദായങ്ങൾ നിലവിലുണ്ട്. ശബ്ദസ്പർ ശരൂപഗന്ധങ്ങളില്ലാത്തതും അചിന്ത്യവുമായ ആത്മതത്തത്തെ യാതൊരുവിധ ക്രിയകളുമില്ലാതെ നിർഗുണമായുപാസിക്കുവാൻ അസാമാന്യമായ ജ്ഞാനനിഷ്ഠയും ചിത്തൈകാഗ്രതയും ശമാദിഷ ട്കസമ്പത്തിയും (ശമം, ദമം, ഉപരതി, സമാധാനം, തിതിക്ഷ, ശ്രദ്ധ) ആവശ്യമാണ്. അത്തരം ഉയർന്ന ഭൂമികയിലേക്ക് എത്തിച്ചേരാത്ത വർക്കുവേണ്ടിയുള്ള ഉപാസനാസമ്പ്രദായമാണ് സഗുണമായത്. സഗുണോപാസനയിൽക്കൂടിയും ഉപാസകൻ ക്രമേണ നിർഗുണോ പാസനയിലേക്ക് തന്നെയാണ് എത്തിച്ചേരുന്നത്. പാതാക്ക

സഗുണോപാസനയുടെ ഭാഗമായി രൂപംകൊണ്ട താന്ത്രികോ പാസനാവിധികളിലൊന്നായ ദേവതാ പൂജയെയാണ് 'നിർഗുണമാ നസപൂജ' എന്ന കൃതിയിൽ വിഷയമാക്കിയിരിക്കുന്നത്. നിർഗുണ മായ ആ ആത്മതത്ത്വത്തെ സഗുണമായ പൂജാവിധാനത്തിൽ കൂടി ഉപാസിക്കുവാനൊരുമ്പെടുമ്പോഴുണ്ടാകുന്ന ആശയക്കുഴപ്പത്തെ ശി ഷ്യന്റെ വാക്കുകളിൽ കൂടിയവതരിപ്പിച്ചുകൊണ്ടാണ് ആചാര്യസ്വാമി കൾ നിർഗുണമായ ആത്മതത്ത്വത്തെ പൂജാവിധാനങ്ങളിൽ സങ്ക ല്പിക്കേണ്ടതെങ്ങനെയെന്ന് ഉപദേശിക്കുന്നത്.

പൂജാവിധാനങ്ങളുടെ ആരംഭം സാധകന്റെ ദേഹശുദ്ധിയോട് കൂടിയാണ്. 'സമന്മാർ തമ്മിലേ പൂജ സാധ്യമാകൂ' എന്ന തത്ത്വമനു സരിച്ച് പൂജകൾ സ്വയം ദേവതാസ്ഥാനത്തേക്ക് അഥവാ പൂജ്യസ്ഥാ നത്തേക്ക് ഉയരേണ്ടതുണ്ട്. അതിനായി മാംസളമായ ഈ ദേഹത്തെ മന്ത്രമയമായ ദേവതാശരീരമാക്കി സങ്കല്പിക്കുന്നു. അനന്തരം പീഠ പൂജ, ആവാഹനം, മൂർത്തിപൂജ, നിവേദ്യം, പ്രസന്നപൂജ, പുഷ്പാ ഞ്ജലി, ബ്രഹ്മാർപ്പണം, പ്രായശ്ചിത്തം, ഉദ്വാസനം എന്നിങ്ങനെ യാണ് സാമാന്യമായ ക്രമം.

പൂജകനും പൂജ്യനും തമ്മിൽ ഭേദബുദ്ധി നിലവിലുള്ളപ്പോൾ മാത്രമേ ഇത്തരം പൂജാവിധാനം സാദ്ധ്യമാകൂ. അദൈതത്തിൽ ആര് ആരെ പൂജിക്കാനാണെന്നാണ് സന്ദേഹം. ആര് ആരെ ആവാ ഹിക്കുവാനാണ്? അർഘ്യം (കറുക, അക്ഷതം, ചന്ദനം, പുഷ്പം എന്നിവ ചേർത്ത് പാനം ചെയ്യുവാനായി നൽകുന്ന ജലം), പാദ്യം

(ശ്രീ ശങ്കര സാരസ്വത സർവസ്വം പ്യാഖ്യാനസഹിതം



വാല്വം - 17

സ്തോത്രകൃതികൾ

(വേദാന്ത-ഗുരു-ഗണേശ-വൈഷ്ണവ-ശിവസ്തോത്രങ്ങൾ)

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StotraKritikal

stotram, Kalabhairavashtakam, Srikasivisvanathastotram, Dvadasalingastotram Sivanandalahari, Sivaparadhakshamapanam. stotram, Dasaslokistuti, Suvarnamalastuti, Umamahesvarastotram, Ardhanarisvara atramala, Sivanamavalyashtakam, Sivashtakam, Sivamangalashtakam, VedasaraSiva Harisankarastuti, Sivapratasmaranam, Sivamanasapuja, Sri Mrutyunjayamanasikapuja, Sivapadadikesantavarnanam, Sivakesadipadantavarnanam, Sivabhujangam, Dakshina-murtivarnamala, Dakshinamurtistotram, Sivapanchaksharam, Sivapanchaksharanaksh-Sriramabhujangam, Hanumatpancharatnam, Dharmasastrukesadipadavarnanam, SriVishnupratasmaranam, Bhagavanmanasapuja, SriVishnubhujangam, Vishnupadadi-kesantam, SriNarayanaashtadasakam, Haristuti, Shatpadi, LakshmiNrisimhapancha-Krishnashtakam1 &2, Govindashtakam, Pandurangashtakam, Jagannathashtakam ratnam, LakshmiNrisimhakarunarasam, Achutashtakam, Srimadachutashtakam, bhujangam, Subrahmanyabhujangam, Suryapratasmaranam, Sriramapratasmaranam Pratasmarana, Nirgunamanasapuja, SriDakshinamurtyashtakam, Matrupanchakam Mohamudgaram, Gurvashtakam, Ganesapratasmarana, Ganesapancharatnam, Ganesa

Philosophy

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625	597	592		580		580		575	569		554		548	543	538		533	dimental la	521		517		512		474		452		316		298

ലക്ഷ്മീനുസിംഹപഞ്ചരത്നം

ത്വത്പ്രഭുജീവപ്രിയമിച്ഛസി ചേന്നരഹരിപൂജാം കുരു സതതം പ്രതിബിംബാലംകൃതി ധൃതികുശലോ ബിംബാലംകൃതിമാതനുതേ ചേതോഭൃംഗ ഭ്രമസി വൃഥാഭവമരുഭൂമൗ വിരസായാം ഭജ ഭജ ലക്ഷ്മീനരസിംഹാനഘപദസരസിജമകരന്ദം. ത്വത്പ്രഭുജീവപ്രിയമിച്ഛസി ചേത് = നിന്റെ പ്രഭുവായിരിക്കുന്ന ജീവ ന്റെ പ്രിയത്തെ ഇച്ഛിക്കുന്നുവെങ്കിൽ; സതതം = എപ്പോഴും; നരഹരി പൂജാം = നരസിംഹപൂജയെ; കുരു = ചെയ്യു; പ്രതിബിംബാലംകൃതി ധൃതികുശലഃ = പ്രതിബിംബത്തെ അലങ്കരിക്കുന്നതിലുത്സാഹിയാ യവൻ; ബിംബാലംകൃതി = ബിംബത്തിന്റെ അലങ്കാരത്തെയും; ആത നുതേ = വർധിപ്പിയ്ക്കുന്നു; ചേതോഭ്യംഗ = അല്ലയോ മനസ്സാകുന്ന വണ്ടേ!; വിരസായാം = ജലമില്ലാത്ത/തേനില്ലാത്ത; ഭവമരുഭൂമൗ = സംസാരമാകുന്ന മരുഭൂമിയിൽ; വൃഥാ = വെറുതേ; ഭ്രമസി = നീ ചുറ്റിക്കറങ്ങുകയാണ്; ലക്ഷ്മീനരസിംഹാനഘപദസരസിജമകരന്ദം = ലക്ഷ്മീസമേതനായിരിക്കുന്ന നരസിംഹമൂർത്തിയുടെ പാപനാ ശകമായ പദപത്മത്തിലെ അമൃതരസത്തെ; ഭജ ഭജ = ഭജിച്ചുകൊള്ളൂ, അനുഭവിച്ചുകൊള്ളൂ.

സൗഖ്യമാകുന്ന തേൻ തേടിയലയുന്ന മനസ്സാകുന്ന വണ്ടിനോട് സാധകന്റെ ഉപദേശമാണിത്. യാതൊരു ശരീരത്തിന്റെ പ്രിയത്തിനായി ക്കൊണ്ടാണോ നീ തേടിനടക്കുന്നത് ആ ശരീരത്തിന്റെയും പ്രഭുവായി രിക്കുന്ന ജീവസ്വരൂപത്തിലിരിക്കുന്ന ആത്മാവിന്റെ പ്രിയമാകുന്ന മോ ക്ഷത്തെ നീ ഇച്ഛിക്കുന്നുവെങ്കിൽ സദാസമയവും ആ നരസിംഹമൂർത്തി യെത്തന്നെ ഭജിച്ചുകൊള്ളുക. എന്തുകൊണ്ടെന്നാൽ ലോകത്തിൽ പ്രതി ബിംബത്തെ അലങ്കരിക്കുവാൻ തത്പരനായ ഒരുവൻ ആദ്യം ബിംബത്തെ യാണ് അലങ്കരിക്കുന്നത്. ബിംബാലങ്കാരമാണ് പ്രതിബിംബാലങ്കാരത്തെ യുണ്ടാക്കുന്നത്. അവ്വണ്ണം പ്രതിബിംബത്തെപ്പോലെ ആഭാസമാത്രമായ ഈ ശരീരത്തിന്റെയും പ്രപതിബിംബത്തെപ്പോലെ ആഭാസമാത്രമായ ഈ ശരീരത്തിന്റെയും പ്രപഞ്ചത്തിന്റെയും സൗഖ്യത്തെ ആഗ്രഹിക്കുന്ന വൻ ആദ്യം ഇതിനെല്ലാം തത്ത്വമായിരിക്കുന്ന പരബ്രഹ്മസ്വരൂപമായ നര സിംഹമൂർത്തിയെ ഭജിക്കുകയാണ് വേണ്ടത്. അന്യത്ര സുഖം അമ്പേഷി ക്കുന്നത് ജലമില്ലാത്തതും തേൻ നൽകുന്ന പുഷ്പങ്ങൾ ഇല്ലാത്തതു മായ മരുഭൂമിയിൽ തേനിനായലയുന്നതുപോലെ വ്യർത്ഥമാണ്. അല്ലയോ മനോഭ്യംഗമേ ലക്ഷ്മീദേവിയോടൊത്തിരിക്കുന്ന നരസിംഹമൂർത്തിയുടെ



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രാമായണസംസ്കാരം ഉമാ മഹേശ്വരസംവാദം ബ്രഹ്മഗതവിഷ്ണുസ്തുതി പുത്രകാമേഷ്ടിയാഗം കൗസല്വാസ്തുതി താടകാവധം പരശുരാമസ്തുതി ലക്ഷ്മണോപദേശം ംപറം തുരവങ്കെ രാമസിതാതത്ത്വം അഗസ്ത്രസ്തുതി ലക്ഷ്മണോപദേശം അഗസ്ത്രസ്തുതി ജടായുസ്തുതി ശബരിയുടെ ഭക്തി ശബര്വുപദേശം സുഗ്രീവസഖ്യം സുഗ്രീവസ്തുതി താരോപദേശം സ്വയംപ്രഭാസ്തുതി സ്വയംപ്രഭ എന്ന ക്ഷണപ്രഭ നിശാകരോപദേശം ജടായു സമ്പാതിമാർ ഹനുമാൻസ്വാമിയുടെ സമുദ്രതരണം ഹനുമാണ്റെ ഹിതോപദേശം

EIB-DIAN MID



ജടായു സമ്പാതിമാർ ഡോ. ഹരികൃഷ്ണ ശർമ്മ

വാൽമീകി രാമായണത്തിലെ ജടായു സമ്പാതിമാർ എന്ന സഹോദരങ്ങളെ പരിചയപ്പെടുത്തുക എന്നതാണ് എന്റെ ദൗതൃം. അരുണന്റെയും ശ്യേനിയുടെയും മക്കളായ ഇവർ രണ്ടുപേരും, സഹോദരങ്ങൾക്കിടയിൽ ലീലാപരമായി കണ്ടുവരുന്ന മത്സര ബുദ്ധിയോടെ സൂര്യനെ പിന്തുടർന്ന കഥ പ്രസിദ്ധമാണ്. രാവിലെ മുതൽ പറന്നു തുടങ്ങി സൂര്യന്റെ അടുത്തെത്താനായി മൽസരിച്ച ഇവർ സൂര്യന്റെ തീക്ഷ്ണകിരണങ്ങളേറ്റു തളർന്നു താഴോട്ടു പതിക്കാൻ തുടങ്ങിയ സന്ദർഭത്തിൽ, സഹോദരന്റെ ചിറകുകൾ സൂരൃരശ്മികളേറ്റു കരിഞ്ഞുതുടങ്ങിയത് ശ്രദ്ധിച്ച സമ്പാതി, തന്റെ ചിറകുകൾ കൂടുതൽ വിസ്തൃതമാക്കി, അനുജന് സംരക്ഷണ മേകിക്കൊണ്ട് താഴേക്കു പതിക്കുന്നു. തളർന്നു പോയ ഇരുവരും <mark>ഒടുവിൽ ബോധരഹിതരായി</mark>, ഭൂമിയിൽ രണ്ടിടത്തായി - സമ്പാതി വിന്ധ്യാചലശിഖരങ്ങളിലും ജടായു ജനസ്ഥാനത്തുമായി, വന്നു വീഴുന്നു. പിന്നീടൊരിക്കലും പരസ്പരം കാണുവാനോ സാഹോദ രൃത്തിന്റെ അനുഭവങ്ങൾ തുടരാനോ ഇവർക്ക് സാധിക്കുന്നില്ല എന്ന് കഥാ സന്ദർഭങ്ങളിൽനിന്നു നമുക്കു മനസിലാക്കാം.

രാവണൻ സീതയെ അപഹരിച്ചുകൊണ്ടുപോകുംവഴി, നിരാശ്രയയായ സീത താഴെ കണ്ട കാടിനോടും മരങ്ങളോടും ജന്തുജാലങ്ങളോടും തന്നെ രക്ഷിക്കാൻ അപേക്ഷിക്കുന്നു. ഈ വേളയിൽ ഒരു വൃക്ഷശിഖരത്തിൽ ഇരുന്ന ജടായു ഈ കരച്ചിൽ കേട്ട് നോക്കുമ്പോൾ കാണുന്നത് വിമാനത്തിൽ രാവണനാൽ അപഹരിക്കപ്പെട്ട സീതയെയാണ്. വാർദ്ധകൃത്തിന്റെ അവശതകൾ മറന്നുകൊണ്ട് പക്ഷിരാജൻ രാവണനെ ഈ അധമപ്രവൃത്തിയിൽ നിന്നും പിന്തിരിപ്പിക്കാൻ ശ്രമിക്കുന്നു. രാമായണത്തിൽ കാണുന്ന മഹത്തായ പല ഉപദേശങ്ങളെയും പോലെ, ജടായു രാവണന് നേർഡ്വി കാണിക്കാനായി നൽകുന്ന ഉപദേശങ്ങളും വളരെ പ്രധാനപ്പെട്ടതാണ്. അദ്ദേഹത്തിന്റെ വാക്കുകൾ എക്കാലവും പ്രസക്തവും ആചരണയോഗൃവുമാണെന്നു നമുക്ക് കാണാം. മാമായണകഥ നടന്നത് ത്രേതായുഗത്തിലും നാമിപ്പോൾ Intercollegiate Paper Presentation Competition (IPPC-2023)

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CHARACTERIZATION OF FUNCTIONAL PROPERTIES OF AMYLASE PRODUCED BY AN ARCTIC SEDIMENT BACTERIUM *Bacillus albus*

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ABSTRACT

Starch is one of the essential components of the human diet that supply energy. Because of this reason, it has been chemically and enzymatically processed into a variety of different products such as starch hydrolysates, glucose syrups, fructose, maltodextrin derivatives or cyclodextrins, in food industries. In addition to that, the sugars produced can be fermented to produce ethanol. Amylases are starch-degrading enzymes that catalyze the hydrolysis of internal α -1-4 glycosidic bonds in polysaccharides to form simpler sugar constitutes and limit dextrins. Amylase has been reported to be useful in many important industrial processes including sugar, bread, brewing, detergent, paper, biofuel, and textile, for the treatment of starch processing wastewater, and in pharmaceutical industries. Amylases can be obtained from plants, animals, and microorganisms. However, the production of this The key findings which we are observed are: 1. Nano emulsions showed spontaneous self-emulsification to form O/W emulsions with good stability in polymeric solution as well as in the film 2. Modified Cellulose such as CMC blended with hydrophilic polymers such as PVP & PVA showed good film forming ability with rapid dissolution properties with increasing CMC concentration 3. CMC blends with PVA resulted in the better film formation with good flexibility, elasticity, folding endurance, moderate swelling properties and high drug loading compared to PVP. 4. While CMC blend in combination with increasing the concentration of hydrophobic Ethyl cellulose demonstrated an increase in mechanical stability, and thickness. EC/CMC swelling ratios increased with increasing EC concentration. However, at EC concentrations above 2% w/v drug loading was significantly affected due to matrix incompatibility.

The present study provides a consolidated reliable information on the film forming ability of cellulose derived polymers in combination with other compatible polymers. It was observed that, fine tuning of polymeric ratios could result in desirable material properties for development of nanodrug delivery system along high drug loading and combinatorial drug combination. With increasing demand for alternate modes of administrations to address the current limitations pertaining to oral drug delivery, the current work hold great significance to evolve as a low cost, easily translatable technology for formulation of polymeric patches suitable for transdermal, sublingual or oral mucosal delivery systems.

Keywords: Nano emulsion (NE); Transdermal route (TDDS); Sublingual route; Response Surface Methodology (RSM)

EVALUATION OF NATURAL BIOMOLECULES INCORPORATED ELECTROSPUN SHEETS IN CHRONIC EXUDATIVE BURN WOUNDS VIA JAK-STAT PATHWAY

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ABSTRACT

The aim of the present study is the fabrication and evaluation of natural biomolecules incorporated electrospun sheets for the management of burn wounds in skin tissue engineering applications via the JAK-STAT pathway.

The specific objectives of the current study includes 1. Selection, isolation and characterization of the natural bioactive molecules (*Mirabilis jalapa* plant & native collagen from fish skin) 2. Fabrication and characterization of bioactive molecules incorporated collagen sheets by electrospinning method 3. Evaluation of bioactive molecules incorporated electrospun sheets *in vitro* and *in vivo* experimental burn wound in rat animal model 4.Evaluation of wound healing activity of electrospun sheets via JAK-STAT gene expression.

Phytochemical evaluation of plant was analyzed using qualitative methods such as UV-visible spectral analysis, Gas





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Coastal Vulnerability Assessment and Shoreline Change Analysis along Goa Coastal Region Using Geospatial Techniques

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Abstract:

tourist resorts, beaches, fishing villages built-ups are already threatened by significant importance to tourism. In Goa most of the coastal areas, including recurring storm flood events, unplanned developments, increased human activities Goa is a state in western India with coastlines stretching along the Arabian Sea. from the Google earth for the years of 2003,2012 and 2021 were examined along For analysing the shoreline change along the coast of Goa the digitized shoreline changes rate in the Goa coast was calculated for a period of 19 years (2003-2021). and severe coastal erosion. In this study mainly two aims, one is the shoreline The total coastline of Goa is 160.5 Km. There are 17 sandy beaches in Goa of variables, the parameters used are dynamic in nature and the variations in each affects the state on coastal regions uniquely. The physical parameters include vulnerability index (CVI) for the maritime state of Goa using eight relative risk area has high risk of vulnerability. Second aim is attempted to develop a coastal Cavelossim Calangute. Benaulim. have high risk of vulnerability. Almost 41% of 36. extension of Arc GIS 10.5. Around 25.9704 km2area show high erosion rate and with the social parameter includes the population density. The coastal vulnerability index change. The geological parameters are geomorphology, slope and elevation. The wind speed, significant wave height, shoreline change and land use and land cover hazards. The study revealed that about 11.69 sq.km area of the coastline has low provides insight into the relative potential of coastal damage due to coasta to highly vulnerable area. Around 7.8% of area has high risk of vulnerability and vulnerability: 9.86 sq.km has moderate vulnerability and 1.84 sq.km area belongs 49.9 % of area has low risk of vulnerability. 3105 baseline through the DSAS (Digital Shoreline Analysis km2area has accretion. Panaji, Semabatim, Sancole, Dabolim, System)

Keywords:

Coastal Vulnerability Index, DSAS, Google earth, Arc GIS 10.5

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