

3.4.3 Research Papers Published During Year 2018-19

Sr. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Is it listed in UGC Care list	Page No.
1.	<u>Acinetobacter sp. mediated synthesis of AgNPs, its optimization, characterization and synergistic antifungal activity against C. albicans</u>	Singh R	Biotechnology	<u>Journal of Applied Microbiology</u>	1365-2672	<u>YES</u>	1-3
2.	<u>The Genesis, Evolution and Success of the Uralungal Labour Contract Cooperative Society</u>	Sampath Sambasivan	Economics	<u>Review of Agrarian Studies</u>	2248-9002	<u>YES</u>	4-7
3.	<u>Versatility of thermoluminescence materials and radiation dosimetry – A review</u>	Aarti Muley	Physics	<u>Luminescence</u>	1522-7243	<u>YES</u>	8-10
4.	<u>Upphokta vyavhaar va social media</u>	Dinesh Pathak	Hindi	<u>AJANTA</u>	2277-5730	NO	11-13
5.	<u>Effective microorganisms based fermentation for antioxidant rich health drink from medicinal plants</u>	Manju Phadke	Microbiology	<u>IOSR Journal of Biotechnology & Biochemistry</u>	2455-264X	NO	14-15
6.	<u>Effective microorganisms based fermentation for antioxidant rich health drink from medicinal plants</u>	Deepika Tambe	Microbiology	<u>IOSR Journal of Biotechnology & Biochemistry</u>	2455-264X	NO	14-15
7.	<u>Preliminary antimicrobial study of kantakari solanum xanthocarpum schrad & wendl) by ditch plate technique</u>	Manju Phadke	Microbiology	<u>International journal of ayurveda and pharma research</u>	2322-0910	NO	16-18
8.	<u>Study of subchronic effects of Myristica fragrans Houtt. on LDH and SDH levels of Swiss Albino Mice</u>	Rupali Vaity	Zoology	<u>Journal of Emerging Technologies and Innovative Research</u>	2349-5162	NO	19-21
9.	<u>Study of subchronic effects of Myristica fragrans Houtt. on histopathology of testes of Swiss Albino Mice</u>	Rupali Vaity	Zoology	<u>International Journal of Science and Research</u>	2319-7064	NO	22-24

NAAC SSR -Cycle 4 : 2018-2023

Metric No.:3.4.3 Number of research papers published in the Journals as notified on UGC CARE list

2018-19

This is to certify that pages from number 1 to 24 of the attached documents/reports are verified and found to be true.


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ORIGINAL ARTICLE

Acinetobacter* sp. mediated synthesis of AgNPs, its optimization, characterization and synergistic antifungal activity against *C. albicansS.B. Nadhe¹ , R. Singh², S.A. Wadhvani¹ and B.A. Chopade^{1,3}

- 1 Department of Microbiology, Savitribai Phule Pune University, Pune, Maharashtra, India
 2 Department of Biotechnology, SIES College of Arts Science and Commerce, Mumbai, Maharashtra, India
 3 Dr. Babasaheb Ambedkar, Marathwada University, Aurangabad, Maharashtra, India

Keywords

Acinetobacter sp., AgNPs, antifungal, biofilm, *C. albicans*, disrupt morphology, reactive oxygen species.

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2019/0175: received 6 September 2018, revised 25 April 2019 and accepted 6 May 2019

doi:10.1111/jam.14305

Abstract

Aims: To synthesize silver nanoparticles (AgNPs) with cell free extract of *Acinetobacter* sp. and evaluate antifungal activity against planktonic and biofilm of *Candida*. Also, to study mechanism of antifungal action of AgNPs.
Methods and Result: *Acinetobacter* spp were screened for synthesis of AgNPs. Physio-chemical parameters were optimized to obtained monodispersed nanoparticles. Optimized nanoparticles were characterized using spectroscopic, microscopic and diffraction techniques. Antifungal and biofilm disruption activity of AgNPs (10 ± 5 nm) were investigated against *C. albicans*. Mechanism of antifungal activity of nanosilver was deduced by growth curve, reactive oxygen species generation, thiol interaction and microscopic analysis. *Acinetobacter* sp. GWRFH 45 gave maximum synthesis of AgNPs. At optimized condition monodispersed, spherical nanoparticles were obtained which were crystalline with negative surface charge. AgNPs exhibited antifungal activity against planktonic cells and biofilm of *Candida*. AgNPs showed synergistic effect with amphotericin B as well as fluconazole against biofilm disruption. AgNPs were found to affect growth of *Candida*, generate reactive oxygen species and disrupt cellular morphology.
Conclusions: Cell free extract of *A. calcoaceticus* GWRFH 45 has ability to synthesize AgNPs. AgNPs alone and in combination with drugs have potential to inhibit *C. albicans*.
Significance and Impact of the Study: This is the first report of bacteriogenic AgNPs used in combination with antifungal drugs against *Candida*.

Introduction

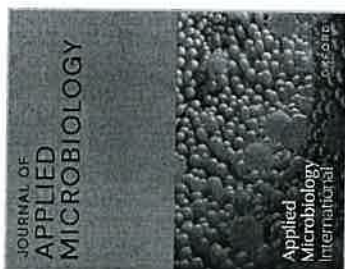
Acinetobacter sp. is ubiquitous in nature and commonly found in diverse niches, such as human and animal skin as well as their upper respiratory tract (Chopade and Towner 1987; Patil *et al.* 2001; Patil and Chopade 2001; Pardesi *et al.* 2007; Yavankar *et al.* 2007; Jagtap *et al.* 2009, 2010; Jagtap and Chopade 2015), rhizosphere soil (Sachdev *et al.* 2010; Maindad *et al.* 2014; Mujumdar *et al.* 2014), waste water and activated sewage sludge (Shakibaie *et al.* 1999; Wadhvani *et al.* 2014), and hospitals (Patwardhan *et al.* 2008). It possesses excellent

biofilm forming capacity and exhibiting high level of metal resistance and antibiotic resistance (Deshpande and Chopade 1994; Shakibaie *et al.* 1998; Sahu *et al.* 2012; Gaidhani *et al.* 2013; Singh *et al.* 2016). *Acinetobacter* sp. is also radiation resistance and releases nano vesicles in environment (Saha and Chopade 2009; Fulsundar *et al.* 2014, 2015). Hence, *Acinetobacter* is considered as a model microbial system for synthesis of metal and non-metal nanoparticles (Gaidhani *et al.* 2013; Singh *et al.* 2013; Wadhvani *et al.* 2014, 2017, 2018).

Silver metal has been used since ancient times to treat microbial infections (Alexander 2009). In last decade,



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 Publisher OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD, ENGLAND, OX2 6DP

General Information

Journal Website	<input checked="" type="checkbox"/> Visit Site	Publisher Website	<input checked="" type="checkbox"/> Visit Site
1st Year Published	1997	Frequency	Monthly
Issues Per Year	12	Country / Region	ENGLAND
Primary Language	English		

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B O O K R E V I E W

The Genesis, Evolution, and Success of the Uralungal Labour Contract Cooperative Society

Sampath V. Sambasivan*

Isaac, T. M. Thomas, and Williams, Michelle (2018), *Building Alternatives: The Story of India's Oldest Construction Workers' Cooperative*, LeftWord Books, New Delhi, 320 pages, Rs 450.

In recent times, following the declaration of 2012 as International Year of Cooperatives by the United Nations General Assembly, cooperatives have attracted renewed global attention. A Global Census on Cooperatives was undertaken by the United Nations Department of Economic and Social Affairs (UN DESA) in 2014 to assess the size and scope of the cooperative economy. According to the census, 12.6 million persons were employed by cooperatives across the world in a wide range of sectors. Thus, on average, one out of every six persons in the world was a member or client of a cooperative. Given the size and complexity of cooperative systems in India and China, the UN DESA decided to conduct additional field research on cooperatives in these two countries (Dave Grace and Associates 2014). In this context, the study conducted by T. M. Thomas Isaac and Michelle Williams in the book under review assumes special relevance.

The State of Kerala, situated in southern India, is known for its unique development experience (Ramachandran 1996). The widespread presence of cooperatives in the State, across different sectors of its economy, has played a significant role in fostering this development experience. Cooperatives have played a major role in the social and economic transformation of Kerala (Ramakumar 2005). The book under review, *Building Alternatives: The Story of India's Oldest Construction Workers' Cooperative*, describes the story of one such cooperative – the Uralungal Labour Contract Cooperative Society (ULCCS), located in Vadakara in Kozhikode district of northern Kerala.

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The *Review of Agrarian Studies* is the peer-reviewed journal of the Foundation for Agrarian Studies (www.agrarianstudies.org), a charitable trust based in India and established in 2003. The major objectives of the Foundation are to facilitate and sponsor multi-disciplinary theoretical and empirical enquiry in the field of agrarian studies in India and elsewhere in less-developed countries. The Foundation does so in association with a wide section of people interested in the agrarian question, including persons associated with academic institutions, social and political activists, members of mass organisations working in the countryside, and other professionals and scholars.

The *Review of Agrarian Studies* is on the list of journals recognised by the University Grants Commission and the National Academy of Agricultural Sciences (NAAS), India. It is indexed by CAB (Commonwealth Agriculture Bureau) Abstracts, and has been shortlisted for the Thomson Reuters' Emerging Sources Citation Index.

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Versatility of thermoluminescence materials and radiation dosimetry – A review

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Abstract

Thermoluminescence (TL) materials exhibit a wide range of applications in different areas such as personal dosimetry, environmental dosimetry, medical research etc. Doping of different rare earth impurities in different hosts is responsible for changing the properties of materials useful for various applications in different fields. These materials can be irradiated by different types of beams such as γ -rays, X-rays, electrons, neutrons etc. Various radiation regimes, as well as their dose-response range, play an important role in thermoluminescence dosimetry. Several TL materials, such as glass, microcrystalline, nanostructured inorganic materials and recently developed materials, are reviewed and described in this article.

KEYWORDS

dosimetry, glass, ionizing radiation, phosphors, thermoluminescence

1 | INTRODUCTION

Radiation comes from natural, as well as anthropogenic sources. The human response to radiation from different sources is subject to great scientific uncertainty and intense controversy. Radiation can be used in the treatment of diseases such as cancer, in which even small doses of radiation might do some harm. Many factors are involved in finding the effects of radiation exposure to health, such as the amount of energy deposited in the tissue and the ability of the radiation to generate harm. The regulated international value for the equivalent dose for a member of the general public is 1 mSv/year.^[1,2] Therefore, there is a need to measure even small doses in the environment and very high doses at times of accident such as radiation leakage in isotopic laboratories and moreover for the treatment of cancer.

Thermoluminescence dosimetry (TLD) is one of the most important techniques used to quantify the absorbed dose, in addition to other techniques based on solid-state dosimetry such as radiation-induced absorbance (RIA).^[3,4] In practice, TLD badges are used for different radiation monitoring applications.^[5,6] Therefore, there are many oxide, fluoride and sulphate-based phosphors in the form of TL badges available commercially. However, each of these dosimeters is not

suitable for all low or high radiation zones. Therefore, continuous efforts are being made by researchers worldwide to develop new materials and to improve the dosimetric properties of existing materials to be used as efficient TLD materials over a wide range of radiation doses.^[7-10]

2 | DEVELOPMENTS IN TLD MATERIALS

Thermoluminescence (TL) was first described by Farrington Daniels and colleagues^[11] when introducing LiF as a TL material and that was later patented as TLD-100 by the Harshaw Chemical Company.^[12,13] Many new dosimetric phosphors have been reported over the last few decades that have different efficiencies for different dose ranges of radiation. Nanophosphors have a potential role in many R&D areas such as medical,^[14,15] accidental,^[16] retrospective,^[17,18] personal,^[19] thermal neutron^[20] dosimetry, solid-state lighting^[21,22] and 2D optical stimulated luminescence (OSL) mapping.^[23] Many standard commercial dosimeters are now available, the most famous being LiF: Mg,Cu,P (TLD-700H), Al₂O₃ (TLD- 500), CaSO₄:Dy (TLD-900) and CaF₂:Dy (TLD-200).^[24-26] Each of these phosphors cannot be used



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LUMINESCENCE impact factor, indexing, ranking (2023)



Aim and Scope

LUMINESCENCE is a research journal that publishes research related to **Biochemistry, Genetics and Molecular Biology; Chemistry**. This journal is published by the John Wiley and Sons Ltd. The ISSN of this journal is 15227243, 15227235. Based on the Scopus data, the SCImago Journal Rank (SJR) of LUMINESCENCE is 0.426.

Also, check the other important details below like Publisher, ISSN, Ranking, Indexing, Impact Factor (if applicable), Publication fee (APC), Review Time, and Acceptance Rate of LUMINESCENCE

According to Clarivate's JCR, the journals indexed in SCIE/SSCI have an impact factor.

LUMINESCENCE Ranking

Impact Factor: 2.613 **Total Citations:** 3456 **SJR (SCImago Journal Rank):** 0.426 **Quartile:** Q2

The Impact Factor of LUMINESCENCE is 2.613.

The impact factor (IF) is a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times its articles are cited.

The impact factor was devised by Eugene Garfield, the founder of the Institute for Scientific Information (ISI) in Philadelphia. Impact factors began to be calculated yearly starting from 1975 for journals listed in the Journal Citation Reports (JCR). ISI was acquired by Thomson Scientific & Healthcare in 1992, and became known as Thomson ISI. In 2018, Thomson-Reuters spun off and sold ISI to Onex Corporation and Baring Private Equity Asia. They founded a new corporation, Clarivate, which is now the publisher of the JCR.

Important Metrics

Journal Title:	Luminescence
Publisher:	John Wiley and Sons Ltd
ISSN:	15227243, 15227235
Type:	journal
Journal Scope:	Biochemistry, Genetics and Molecular Biology, Chemistry
Country:	United Kingdom

Similar Journals

DNA AND CELL BIOLOGY

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 Publisher: ACADEMIC PRESS INC ELSEVIER SCIENCE

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ISSN: 0950-9232
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Source type: Journal

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६. उपभोक्ता व्यवहार व सोशल मीडिया

सह. प्रा. दिनेश पाठक

अध्यक्ष हिंदी विभाग, एस.आइ.ई.एस. कला विज्ञान एवं वाणिज्य महाविद्यालय, सायन (पश्चिम), मुंबई.

सोशल मीडिया के विकास के लगभग ढाई दशक बीत रहे हैं। इन ढाई दशकों में सोशल मीडिया की व्याप्ति एवं उसका प्रभाव जादू की तरह बढ़ा है। दुनिया के सभी विकसित व विकाशील मुल्क आज सोशल मीडिया के इस जादू की गिरफ्त में हैं। इसका प्रभाव इतना व्यापक व घना है कि इसे जीवन के हर क्षेत्र में महसूस किया जा सकता है। मनुष्य के व्यक्तित्व के तमाम पक्षों को सोशल मीडिया ने प्रभावित किया है किंतु इन सारे पक्षों में जो पक्ष सबसे अधिक प्रभावित हुआ है वह है उसके अंदर बैठा उपभोक्ता रूप। असल में यह प्रभाव अब पूरे मनुष्य व्यवहार को निर्धारित एवं नियंत्रित करने लगा है।

सोशल मीडिया के प्रारंभिक विकास के दिनों में इसके रूप व प्रभाव को लेकर अनेक तरह के कयास लगाये गये थे। इसे परंपरागत मीडिया की तुलना में लचर व कम प्रभावी बताया गया था। पर सोशल मीडिया की तीव्र व्याप्ति व आक्रमक प्रभाव ने इस कयास को पूरी तरह से खारिज कर दिया। परंपरागत मीडिया के बरक्स सोशल मीडिया की तीव्रता, उपभोग की सरलता, प्रतिक्रिया की तीव्रता, सेंसर का अभाव व सार्वकालिकता तथा सार्वभौमिकता ने इसे अत्यंत लोकप्रिय व व्यापक बना दिया है। इसके इन गुणों के कारण एक समय ऐसा भी आया जब इसे जनसंचार व संवाद का सबसे अच्छा, तीव्र, सुलभ तथा प्रभावी साधन माना जाने लगा। जनता की आवाज को रखने व एक जनमत अर्थात् 'पब्लिक ओपिनियन' तैयार करने का एक बेहतरीन प्लेटफॉर्म माना जाने लगा बहुत हद तक यह सही भी है किंतु फिर अचानक इसका रूप बदलने लगा और बीसवीं सदी के मध्य तक आते - आते सोशल मीडिया के लोकधर्मी चरित्र व जनपक्षधरता को बाजार की ताकतों द्वारा हाइजैक कर लिया गया और जनता की खुली आवाज को व्यक्त करनेवाले प्लेटफॉर्म के बदले सोशल मीडिया माल व सेवाओं को प्रदर्शित व उनकी तरफ जनता को आकर्षित करनेवाली दीर्घा बन कर रह गया है। इस पर आनेवाले विज्ञापनों सूचनाओं व अनेक तरह की सामग्रियों ने नागरिकों को उपभोक्ताओं में बदलना शुरु कर दिया है। सोशल मीडिया के लगभग सभी रूपों में इस तरह की चीजें हमें आज भारी मात्रा में मिल रही हैं। फेसबुक, ट्विटर, यू ट्यूब, इंस्टाग्राम, व्हाट्सएप, तथा अलग अलग अनेक तरह की साइट्स और हाइपर टेक्स्ट लिंक आज विज्ञापनों व इस तरह की सामग्रियों से भरे पड़े हैं जो हमारा अनुकूलन कर हमें नागरिक से उपभोक्ता बनाने की होड़ में लगे हैं।

अनुकूलन करने की यह प्रक्रिया धीरे-धीरे हमारे व्यवहार में बदलाव लाती है और हम स्वतंत्रचेता नागरिक से अनुकूलित उपभोक्ता बनने लगते हैं। सोशल मीडिया हमारे उपभोक्ता - व्यवहार में निम्नवत बदलाव ला रहा है।

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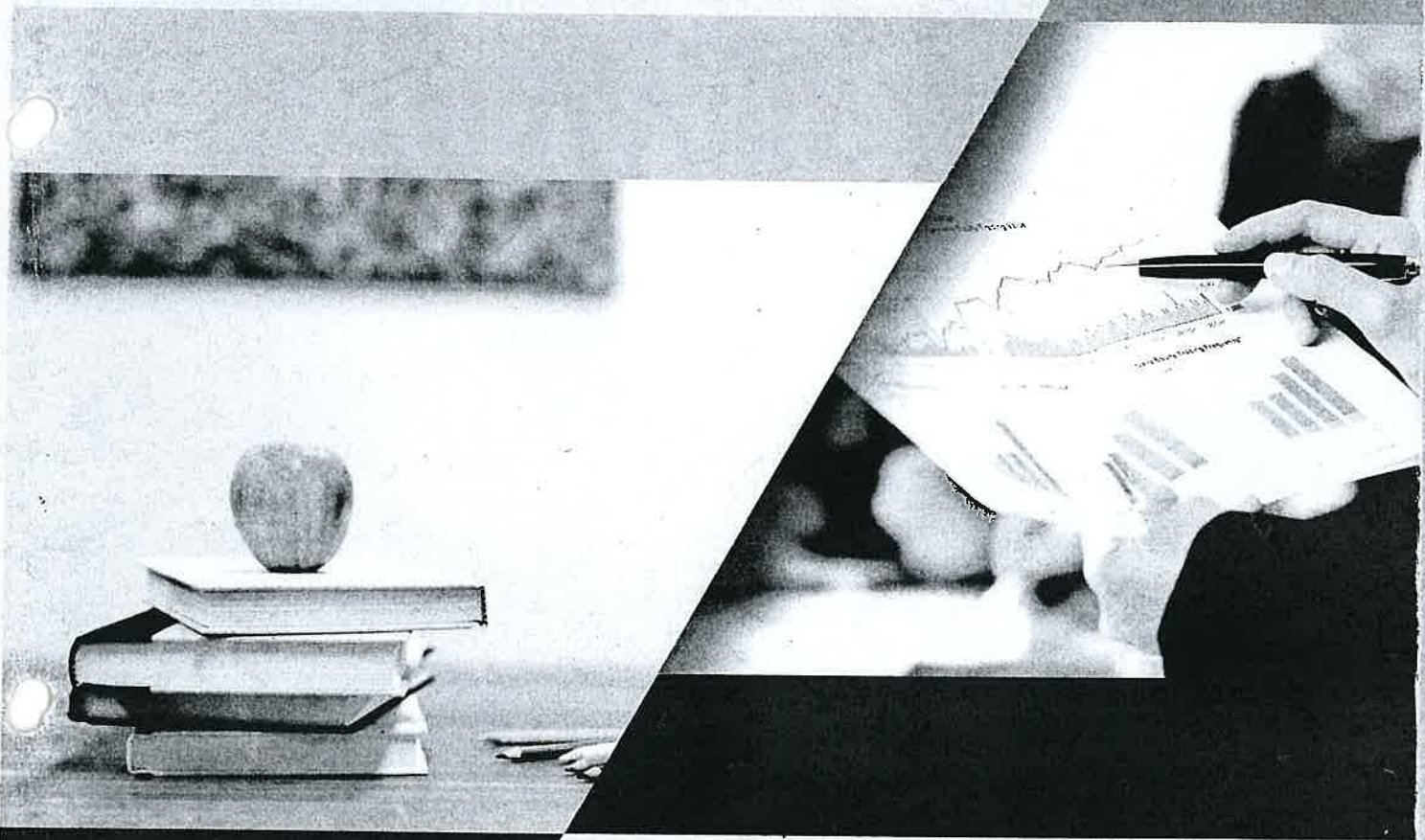


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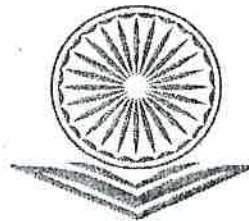
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Effective Microorganisms Based Fermentation for Antioxidant-Rich Health Drink from Medicinal Plants

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Corresponding Author: Phadke M

Abstract: In the present work, production of a health drink through fermentation of medicinal plants- *Asparagus racemosus* (Shatavari) and *Phyllanthus emblica* (Amla) and along with *Citrus sinensis* (Orange) juice was carried out by using Effective Microorganisms (EM). EM is a combination of useful regenerative microorganisms predominantly containing lactic acid bacteria and yeasts. The fermentation of the health drink was carried out for 7 days under static conditions in two batches for each plant. Antioxidant and alcohol levels were measured during the fermentation period. The drink was then filtered using a commercial filter. The produced health drink showed high antioxidant levels and low alcohol content which can be useful for preventing chronic diseases and cancer by maintaining healthy gut biome and good overall health.

Key Words: Fermentation, Ayurveda, Effective Microorganisms, Antioxidants, Phytochemicals

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I. Introduction

The ancient science of Ayurveda involves various plants, their extracts and decoctions. One of the most effective ways of making an Ayurvedic herbal preparation is fermentation. Fermentation is a metabolic process in which an organism converts a carbohydrate, such as starch or a sugar, into an alcohol or an acid. The present study employs the use of effective microorganisms (EM) for fermentation of medicinal plants. EM contains selected species of microorganisms including predominant populations of lactic acid bacteria and yeasts, and smaller numbers of photosynthetic bacteria, Actinomycetes and other types of organisms. All of these are mutually compatible with one another and can coexist in liquid culture. EM has found application in the many areas especially agriculture, production of health drink, waste water treatment, preparation waste biomass material for bioconversion into fuels such as bio-diesel and other etc. (Córdor-Golec A, et al, 2006)

Fermentation of the plants brings out desirable changes in their properties (Caplice E. et al 1999). One of these is changes is the production of antioxidants. Studies have shown that antioxidants help slow ageing and prevents several diseases like cardiovascular diseases, cataract, brain dysfunction, oxidative stress, birth defects and also help enhance the immune system (Ames B. et al, 1993, Devasagayam T. et al, 2004). Alcohol is the other product of fermentation which in moderate or low concentration can be beneficial to the body.

Increasing pollution and stress subjects our body to various oxidative damages which are brought about by free radicals. These free radicals adversely alter lipids, proteins, and DNA and trigger a number of human diseases. Hence, the inclusion of an external source of antioxidants can assist to cope with this oxidative stress (Lobo V. et al 2010). Consumption of fermented health drink helps regain the antioxidant balance in our body which will in turn help to counteract the effects of free radicals, thereby preventing ailments like cardiovascular diseases, carcinogenesis and ageing. (Chui C.H. et al, 2006).

II. Materials And Methods

2.1 Preparation of effective microorganisms (EM stock): 125gm of banana, papaya and pumpkin were collected and chopped into small pieces and transferred into air tight container and mixed with 500ml boiled water, subsequently 125gm of jaggery and one egg were added. The container was closed tightly and kept for fermentation for a week till a white layer appears on top. The fermented solution was then collected and used as the EM stock solution.

2.2 Isolation of effective microorganisms: The EM stock was isolated onto Nutrient agar and Tomato Juice Agar plates to study the morphological characteristics.



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Research Article

PRELIMINARY ANTIMICROBIAL STUDY OF *KANTAKARI (SOLANUM XANTHOCARPUM SCHRAD & WENDL)* BY DITCH PLATE TECHNIQUE

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ABSTRACT

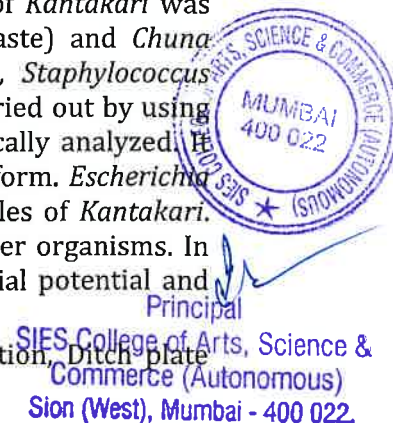
Lower Urinary tract Infection (Lower UTI) is the second most common infection in human population. *Escherichia coli* is one of the microbial strain responsible for lower UTI in most of the cases. Standard antibiotics can control the infection but there is recurrence of episodes in many cases. Constant research is carried out in this field to discover new antimicrobial agents. It is difficult for the microorganisms to acquire resistance to herbs and the polycompounds in them. They may make potential and promising antimicrobial agents references from classical text of Ayurveda suggest *Kantakari (Solanum xanthocarpum* Schrad & Wendl) to be effective in urinary disorders. The antimicrobial activity of *Kantakari* was studied *invitro* in its traditional forms that is *Swaras* (juice), *Kalka* (paste) and *Chuna* (powder) against the strains of *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Candida albicans*. The study was carried out by using ditch plate technique and zones of inhibition were measured and statistically analyzed. It was observed that juice form and paste were more effective than powder form. *Escherichia coli* strain was found to be sensitive to the juice, paste and powder samples of *Kantakari*. *Klebsiella pneumoniae* showed intermediate resistance as compared to other organisms. In conclusion of this study it was found that *Kantakari* has good antimicrobial potential and must be studied further.

KEYWORDS: *Kantakari*, Antimicrobial activity, Lower urinary tract infection, Ditch plate technique.

INTRODUCTION

Infectious diseases still possess a threat to mankind. Many drugs that were effective few years ago are becoming useless due to resistance developed to them from microbial world. Urinary tract infection is the second most common infection affecting human beings. It is a distressing condition in acute stages and could be resolved with antibiotic therapy. But it may become fatal in chronic conditions as the infection spreads to the renal parenchyma. It is the fact that 40% to 50% of population will suffer at least one clinical episode during their lifetime. Ayurveda is the treasure of herbal drugs. It offers great opportunity for research. Various herbal extracts have been studied in-vitro for their antimicrobial activities. However there is a need of ethno medical approach while dealing with herbs. Thus, herb *Kantakari (Solanum xanthocarpum* S & W

was studied for its antimicrobial activity in its traditional form. It is a prostrate herb covered with sharp yellowish spines and belongs to Solanaceae family. It is a prostrate, diffuse, highly prickly perennial undershrub, woody at base with zigzag branches that spread close to the ground. Stem is profusely branched, highly prickly, covered with strong, broad sharp, compressed, straight yellowish white prickles. Leaves are alternate, ex-stipulate, petiolate, petiole almost 2 to 2.5 cm long, prickly stellately pubescent. Lamina is simple about 8-10cm x 5-6cm, base rounded, unequal sided, armed on midrib and the nerves with long yellow sharp prickles, stellately hairy when young. Inflorescence-Flowers are in extra-axillary cymes. Flowers-Complete, regular, actinomorphic, hypogynous, shortly pedicillate, attractive about 2.3 cm in





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STUDY OF SUBCHRONIC EFFECTS OF *Myristica fragrans* Houtt. on LDH and SDH levels of SWISS ALBINO MICE.

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Abstract: Plants and plant materials are consumed as condiments and spices, which not only enhance the flavors of food but also show preservative and medicinal properties. The spice Nutmeg- *Myristica fragrans* Houtt. has several medicinal properties. However it may prove to be toxic if consumed in larger quantities over a longer time period. Hence present paper aims at studying the sub-chronic effect of aqueous and methanolic extracts of Nutmeg on LDH and SDH levels of Swiss Albino Mice. When animals were treated for 28 days with aqueous and methanolic extracts of nutmeg, there is increase in serum LDH levels and decrease in serum SDH levels at $p < 0.05$. The increase in the Serum LDH activity and decrease in the SDH activity might be attributed to hyperglycemia. Increase in LDH levels might also be due to cellular damage or change in the membrane integrity caused due to the phytochemicals present in the nutmeg extracts.

Keywords: *Myristica fragrans* Houtt., Subchronic effect, LDH, SDH, Swiss Albino Mice

I. INTRODUCTION:

Nature has gifted human population with wide range of plant resources. Most of these plant resources have medicinal values and hence play key role in human health care. A world health organization (WHO) survey indicated that about 70-80% of the world's population rely on non-conventional medicine, mainly of herbal source in their primary health care (1).

Some of these plants and plant materials are consumed as condiments and spices, which not only enhance the flavors of food but also show preservative and medicinal properties. Traditionally, there is a myth that herbs have been considered to be nontoxic and even harmless, mainly because of their natural origin. Though medicinal plant are nontoxic, it may prove to be toxic if consumed in large quantities or in an inappropriate portion. Nutmeg seeds - *Myristica fragrans* Houtt is used for various medicinal properties. The fruit, leaves and seed extract show various activities like hepatoprotective activity (2), antioxidant activity (3), memory enhancing activity (4), anticancer activity (5), antidiabetic activity, hypolipidaemic activity (6), antibacterial activity (7), and anti-inflammatory activity (8). Even though *Myristica fragrans* is an excellent source of medicinally active compounds and has diverse pharmacological effects, its consumption as a house hold remedy is not regulated. Since it is a potent aphrodisiac (9) it is consumed by males in larger doses and that too for a longer time span. The amount of nutmeg given to children to induce sleep or as an anti diarrhoeal agent (10) is never fixed or standardized.

Toxicant of any nature can cause ultrastructural change in mitochondria, endoplasmic reticulum and other cell organelles and change the enzyme levels depending upon the extent of cell injury or degradation. Long term consumption of nutmeg may cause toxic effect on the body and hence the present paper aims at studying the subchronic toxic effect of aqueous and methanolic extracts of nutmeg on the LDH and SDH levels of Swiss Albino Mice.

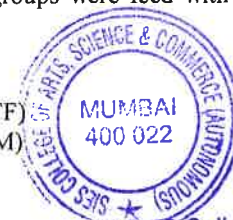
Materials and Methods:

Preparation of plant extracts: Nutmeg seeds were procured from local market in Mumbai. Both Aqueous and Methanolic extracts of nutmeg were prepared by maceration technique (11, 12).

Animals: The animals used in the study, Swiss Albino mice *Mus musculus albinus* (20-30g), were purchased from the Haffkins Institute, and maintained in the Animal house of Ramnaraian Ruia College, Matunga, Mumbai. The animals were housed in groups of 5 in stainless steel cages (34×47×18 cm) with soft wood shavings as bedding, fed with normal commercial pellet diet (Lipton), given water *ad libitum*. All the experimental procedures and protocols used in this study were reviewed and approved by the Institutional Animal Care and Use Committee of Ramnaraian Ruia College, Matunga, India.

Experimental design: The study was conducted on 40 animals as per the Guidelines No. 407 of OECD (13). The animals were divided into 8 groups. The animals were fed by oral gavage. The aqueous control groups were feed with 1mL of distilled water, whereas aqueous treated groups were feed with 1000mg/kg body weight of Aqueous extract of nutmeg. The methanol control groups were feed with 1 mL of olive oil whereas the methanol experimental groups were feed with 200 mg/kg body weight of Methanolic extract of nutmeg. The animals were grouped as follows:

- Group I -Aqueous Control Female (ACF), Group II- Aqueous Treated Female (ATF)
- Group III- Aqueous Control Male (ACM), Group IV-Aqueous Treated Male (ATM)
- Group V- Methanol Control Female (MCF), Group VI- Methanol Treated Female (MTF)
- Group VII- Methanol Control Male (MCF), Group VIII- Methanol Treated Male (MTM)



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STUDY OF SUBCHRONIC EFFECTS OF Myristica fragrans Hoult. on LDH and SDH levels of SWISS ALBINO MICE.

Authors

Rupali Vaity

Abstract

Plants and plant materials are consumed as condiments and spices, which not only enhance the flavors of food but also show preservative and medicinal properties. The spice Nutmeg-Myristica fragrans Hoult. has several medicinal properties. However it may prove to be toxic if consumed in larger quantities over a longer time period. Hence present paper aims at studying the sub-chronic effect of aqueous and methanolic extracts of Nutmeg on LDH and SDH levels of Swiss Albino Mice. When animals were treated for 28 days with aqueous and methanolic extracts of nutmeg, there is increase in serum LDH levels and decrease in serum SDH levels at p< 0.05. The increase in the Serum LDH activity and decrease in the SDH activity might be attributed to hyperglycemia. Increase in LDH levels might also be due to cellular damage or change in the membrane integrity caused due to the phytochemicals present in the nutmeg extracts.

Key Words

Keywords: Myristica fragrans Hoult., Subchronic effect, LDH, SDH, Swiss Albino Mice

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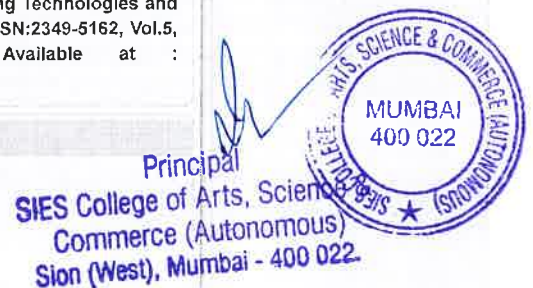
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Study of Subchronic Effect of *Myristicafragrans* Houtt. On Histopathology of Testes of Swiss Albino Mice

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Abstract: Plants and plant materials are consumed as condiments and spices, which not only enhance the flavors of food but also show preservative and medicinal properties. The spice Nutmeg- *Myristicafragrans*Houtt.has several medicinal properties. However it may prove to be toxic if consumed in larger quantities over a longer time period. Hence present paper aims at studying the sub-chronic effect of aqueous and methanolic extracts of Nutmeg on histopathology of testes of Swiss Albino Mice. Marked degenerative changes in the seminiferous tubules were observed in the sections of testis treated with both aqueous and methanolic extracts of Nutmeg

Keywords: *Myristicafragrans*Houtt., Subchronic effect, Histopathology, Swiss Albino Mice

1. Introduction

Nature has gifted human population with wide range of plant resources. Most of these plant resources have medicinal values and hence play key role in human health care. World Health Organization (WHO) survey indicated that about 70-80% of the world's population rely on non-conventional medicine, mainly of herbal source in their primary health care (1).

Some of these plants and plant materials are consumed as condiments and spices, which not only enhance the flavors of food but also show preservative and medicinal properties. Traditionally, there is a myth that herbs have been considered to be nontoxic and even harmless, mainly because of their natural origin. Though medicinal plant are nontoxic, it may prove to be toxic if consumed in large quantities or in an inappropriate portion. Nutmeg seeds - *Myristicafragrans*Houttis used for various medicinal properties. The fruit, leaves and seed extract show various activities like hepatoprotective activity (2), antioxidant activity (3), memory enhancing activity (4), anticancer activity (5), antidiabetic activity, hypolipidaemic activity (6), antibacterial activity (7), and anti-inflammatory activity (8). Even though *Myristicafragrans* is an excellent source of medicinally active compounds and has diverse pharmacological effects, its consumption as a house hold remedy is not regulated. Since it is a potent aphrodisiac (9) it is consumed by males in larger doses and that too for a longer time span. The amount of nutmeg given to children to induce sleep or as an anti diarrhoeal agent (10) is never fixed or standardized. Hence present study aims at investigating the subchronic effect of aqueous and methanolic extracts of nutmeg on histopathology of testis of Swiss Albino Mice.

2. Materials and Methods

Preparation of plant extracts: Nutmeg seeds were procured from local market in Mumbai. Both Aqueous and Methanolic extracts of nutmeg were prepared by maceration technique (11, 12).

Animals: The animals used in the study, Swiss Albino mice *Mus musculus albinus*(20-30g), were purchased from the Haffkins Institute, and maintained in the Animal house of RamnaraianRuia College, Matunga, Mumbai. The animals were housed in groups of 5 in stainless steel cages (34×47×18 cm) with soft wood shavings as bedding, fed with normal commercial pellet diet (Lipton), given water *ad libitum*. All the experimental procedures and protocols used in this study were reviewed and approved by the Institutional Animal Care and Use Committee of RamnaraianRuia College, Matunga, India.

Experimental design

The study was conducted on 20 animals as per the Guidelines No. 407 of OECD (13). The animals were divided into 4 groups. The animals were fed by oral gavage. The aqueous control groups were feed with 1mL of distilled water, whereas aqueous treated groups were feed with 1000mg/kg body weight of Aqueous extract of nutmeg. The methanol control groups were feed with 1 mL of olive oil whereas the methanol experimental groups were feed with 200 mg/kg body weight of Methanolic extract of nutmeg. The animals were grouped as follows:

Group I- Aqueous Control Male (ACM),
 Group II-Aqueous Treated Male (ATM)
 Group III- Methanol Control Male (MCF),
 Group VI- Methanol Treated Male (MTM)

The animals were feed with the respective extracts for 28th days. On 29th day of the study, the animals were sacrificed by using high dose of ether anaesthesia, they were dissected open and the testes were harvested for histopathology study.

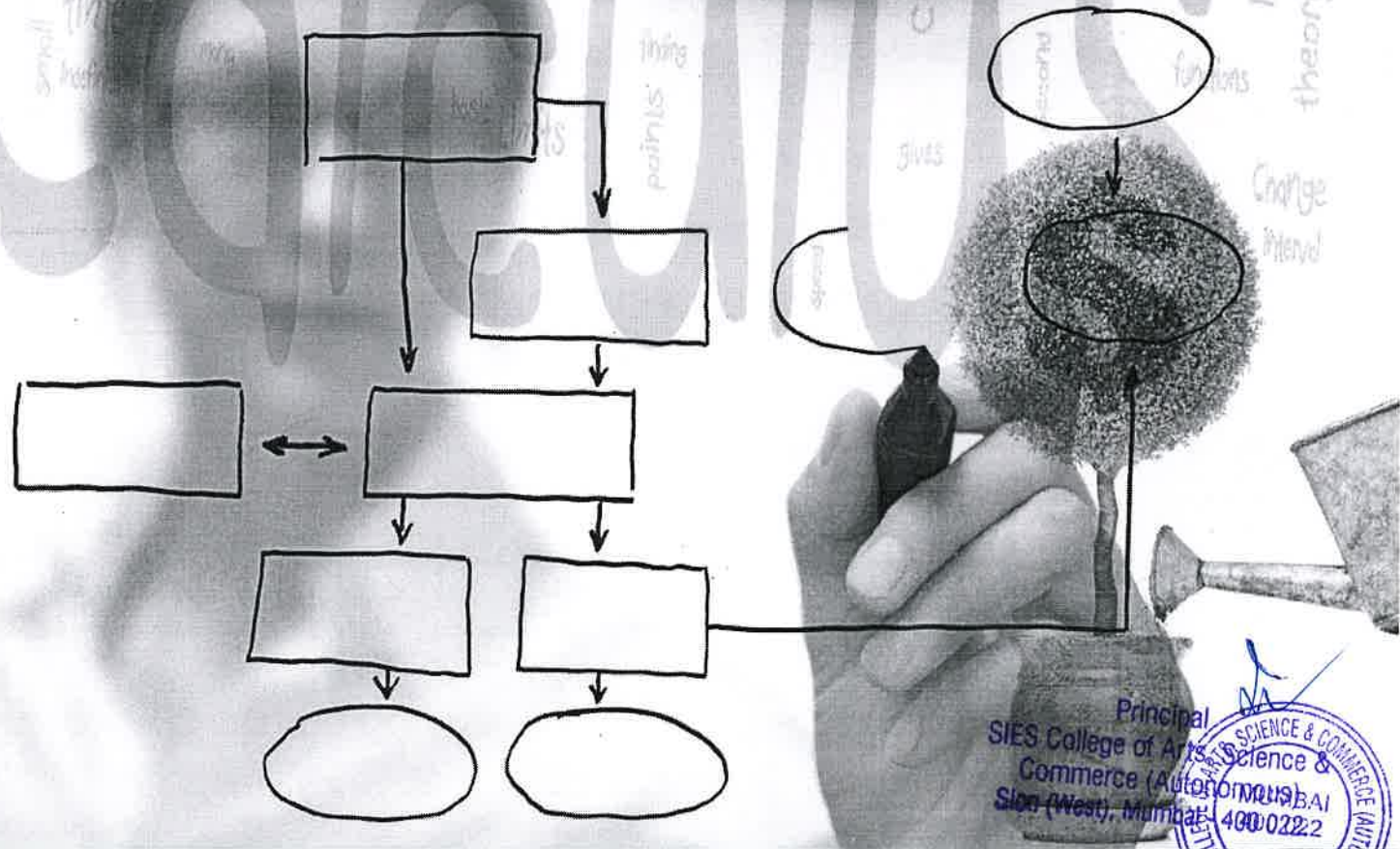
3. Results

Histological examination of testis of control group, both aqueous control and methanolic control revealed normal cyto-architecture. Seminiferous tubules were closely arranged with filled lumen. The epithelial layers in seminiferous tubules were highly organized including

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