



Preliminary Phytochemical Screening of Aqueous Extract of Betel Nut and Betel Leaves

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Abstract: Plant kingdom represents a massive reservoir of biologically active compounds. Around 60% of the drugs used in medicine are of obtained from plant origin. It is important to use phytochemical methods to screen and analyse biological active components and their therapeutic mechanisms. *Areca catechu* Linn also known as areca nut is one of the stimulant masticatory crude materials of Indian system of medicine. *Piper betel* L. also known as betel leaves contains large number of biomolecules which are used for treating cough and foul smelling in mouth. In this present work demonstrated on phytochemical screening of the aqueous extracts of betel nut and betel leaf were screened by using standard methods. The aqueous extract were prepared at 15 min by simple technique. Preliminary phytochemical screening of betel nut and betel leaves showed the presence of active compound in the aqueous extract. The positive result for the presence of alkaloids, saponins, phenol, reducing sugar, triterpenoids and glycosides substance observed in aqueous extract of betel nut. The aqueous extract of betel leaves showed the presence of preliminary phytochemical such as alkaloids, saponins, coumarin and glycosides substance.

Keywords: phytochemical analysis, betel nut, betel leaf, medicinal plant.

1. INTRODUCTION

Plant materials are used throughout the world as home remedies, over the counter drug products and raw substances for the pharmaceutical industry, cosmetics industry and represent a substantial proportion of the world drug market. It is therefore significant to establish their quality. In this study we selected a widely available plant material such as betel nut and betel leaf. India is one of the largest populated countries in the world and it has eight different geographical zones. Recent study revealed that the *Areca catechu* extract increases learning and memory (Madhusudan et al., 2012). In rural India, the consumption of betel nut (*Areca nut*) with betel leaf is common practice. *Areca nut* (*Areca catechu*) popularly known as "betel nut", is one of the oldest known masticatories amongst Asia (Trease and Evan, 2009). Betel nut contains numerous medicinally active compounds it was cited

for the medicinal properties, specially antibacterial and antiviral activity (Reena et al., 2009; Sastry, 2005).

Over 100 varieties of *Piper betel* has been distributed in both of the hemispheres of world of these 40 species have been recorded in India. The parts of *Piper betel* utilized, are leaves, roots, stems, stalks and fruits. The deep green heart shaped leaves of betel vine are popularly known as *Pann*, in India and *vetrilai* in Tamilnadu. The leaf juice is used for fever, cough, fatigue, asthma, to disinfect wounds externally (Rai et al., 2011). A preliminary study has reported *Piper betel* leaves extracts contains large numbers of bioactive molecules like polyphenols, alkaloids, steroids, saponins and tannins (Koff et al., 1971). Shun et al. (2007) study indicated the leaves extract of *Piper betel* exhibit biological capabilities of detoxication, anti-oxidation and anti-

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Phytochemical Screening and Pharmacological Investigations on Hedychium coronarium Pritesh Ranjan Dash, 2016-04-19 The present study was carried out for phytochemical screening and pharmacological investigations on methanolic extract of rhizomes of Hedychium coronarium Local name Dolan Champa Family Zingiberaceae In this study the possible analgesic and CNS Central Nervous System depressant activities of the methanolic rhizome extract of Hedychium coronarium were investigated at the doses of 100 mg Kg 200 mg kg and 400 mg Kg body weight on mice by oral administration The analgesic activities were investigated for their central and peripheral pharmacological actions using tail immersion testing and acetic acid induced writhing testing respectively Its CNS depressant activity was evaluated by using hole cross and open field tests and the cytotoxic activity was observed using brine shrimp lethality bioassay **Proceedings of the 4th International Conference Current Breakthrough in Pharmacy (ICB-Pharma 2022)** Arifah Sri Wahyuni, Lilla Prapdhani Agni Hajma, Refsya Azanti Putri, 2022-12-14 This is an open access book The 4th ICB Pharma The 4th International Conference Current Breakthrough in Pharmacy invites all potential authors from universities and various organisations to submit papers in the area of pharmacy This conference is part of a conference program called International Summit on Science Technology and Humanity ISETH 2021 Organized by Universitas Muhammadiyah Surakarta Theme Pharmaceutical Development in the post Covid 19 Era **Characterization and nutritional analysis of commonly cultivated banana varieties in Kerala: an overview** Prem Jose Vazhacharickal, Eldho Mathews Bobby, Sajeshkumar N.K, Jiby John Mathew, P. E Sreejith, M. Sabu, Banana is one of the most common and widely used food all over the universe from ancient time In this work mainly the nutrition analysis of various commonly cultivated banana varieties in Kerala has been used such as Najalipoovan Poovan Etha Palenkodan Robesta Chemkadali Pachakadhali Sundari and Kannan The peel contain about 40% of weight of banana fruit its nutrition analysis is been also done to analyse various contents of significance Further there is chance of occurrence of nutrients in peel since banana fruit is rich in various nutrients And the peel of banana a biomass just discarded into nature can thus be converted to various value added products like drugs soaps animal feed etc It is been observed that these peel is source of various natural antioxidants dietary fibre crude fat and crude protein On analysis Pachakadali fruit has highest moisture content and moisture content of peel is highest for Etha Crude protein content of fruit and peel is highest for Kannan Crude fibre content of fruit is highest for Kannan and crude protein content of peel is highest for Sundari Ether extract in fruit and peel is highest for Kannan Total ash content of fruit is highest for Kannan and ash content of peel is more for Pachakadali Gross energy of fruit is highest in case of Najalipoovan fruit and gross energy of peel is highest for Robesta On comparing these varieties on the basis of test result Kannan is the most superior variety on the basis of nutritional quality Further on analysing test results it has been found that the peel has superior nutrient and moisture content So from the analysis it is revealed that one of the most useful part of a banana is its

peel By the above analysis one can easily understand importance of many varieties of banana and further detailed researches can extend the scope of study **High Performance Liquid Chromatography in Phytochemical Analysis** Monika Waksmundzka-Hajnos, Joseph Sherma, 2010-11-08 The powerful efficient technique of high performance liquid chromatography HPLC is essential to the standardization of plant based drugs identification of plant material and creation of new herbal medicines Filling the void in this critical area High Performance Liquid Chromatography in Phytochemical Analysis is the first book to give a comp **Phytochemical Methods A Guide to Modern Techniques of Plant Analysis** A.J. Harborne, 1998-04-30 This long awaited third edition of Phytochemical Methods is as its predecessors a key tool for undergraduates research workers in plant biochemistry plant taxonomists and any researchers in related areas where the analysis of organic plant components is key to their investigations Phytochemistry is a rapidly expanding area with new techniques being developed and existing ones perfected and made easier to incorporate as standard methods in the laboratory This latest edition includes descriptions of the most up to date methods such as HPLC and the increasingly sophisticated NMR and related spectral techniques Other methods described are the use of NMR to locate substances within the plant cell and the chiral separation of essential oils After an introductory chapter on methods of plant analysis individual chapters describe methods of identifying the different type of plant molecules phenolic compounds terpenoids organic acids lipids and related compounds nitrogen compounds sugar and derivatives and macromolecules Different methods are discussed and recommended and guidance provided for the analysis of compounds of special physiological relevance such as endogenous growth regulators substances of pharmacological interest and screening methods for the detection of substances for taxonomic purposes It also includes an important bibliographic guide to specialized texts This comprehensive book constitutes a unique and indispensable practical guide for any phytochemistry or related laboratory and provides hands on description of experimental techniques so that students and researchers can become familiar with these invaluable methods

Development, assessment, improvement, and standardization of methods in herbal drug research Gunawan Indrayanto, Kornkanok Ingkaninan, Abdul Rohman, 2022-12-08 **Soil Organic Matter, Impacts on Productivity 1979-April 1988** Karl Schneider, 1988 **Bioactive Phytochemicals: Drug Discovery to Product Development** Javed Ahmad, Javed Ahamad, 2020-10-28 Natural bioactive compounds from medicinal plants are inexplicably diverse in chemical structure and biological properties The unmet therapeutic requirements for various diseases serve as a guide for researchers to study natural compounds These studies are intended to isolate identify the structural characterization and eventually discover the pharmacological activity of natural compounds from their plant sources with the goal of treating specific diseases Bioactive Phytochemicals Drug Discovery to Product Development explores the scope and approaches of drug discovery from natural products Chapters in the book cover information about the cultivation collection and processing of medicinal plants the methods and high throughput techniques for isolation and characterization of bioactive phytochemicals

and pharmacological screening for activity formulation and quality control Information about the regulations specified for natural medicinal products in different region of the world is also presented followed by a concluding chapter devoted to the role of natural herbal products for treatment of human diseases such as cancer cardiovascular diseases diabetes obesity inflammation and neurological disorders Each chapter concludes with a general reference section which is a bibliographic guide to more advanced texts The contributing authors for this volume are drawn from a rich blend of experts in various areas of herbal medicine which encompass herbal drug discovery to product development The concise and organized layout along with a broad coverage of phytochemistry and drug discovery makes this book a suitable reference for students of medicinal chemistry researchers and industry professionals interested in herbal product development *Quick Bibliography Series*, 1976

Bioactivity of Indian Legumes and their Conservation for Sustainable Utilization Komal Kumar Javarappa, A.G. Devi Prasad, 2019-08-29 Academic Paper from the year 2019 in the subject Environmental Sciences The University of Mysore course BSc MSc PhD language English abstract The present study focuses on medicinal legumes such as *Atylosia albicans* Wight *Arn Benth* *Caesalpinia mimosoides* Lam *Derris scandens* Benth *Humboldtia brunonis* Wall *Indigofera cassioides* Roxb *Kingiodendron pinnatum* DC and *Tephrosia tinctoria* Baker belonging to the family Fabaceae These legumes were collected from different biogeographical regions of Western Ghats of Karnataka Herbaria of these plants with taxonomic details are deposited in Biodiversity laboratory Department of Environmental Science University of Mysore Mysore Karnataka India Phytochemical screening antimicrobial of these plants was carried out In the present investigation bioautography method is used for the identification of bioactive molecule from the ethyl acetate extract of *Kingiodendron pinnatum* This technique has been used for the detection of antimicrobial substances in many biological extracts This method eliminates the need for the development of large numbers of plates in multiple solvent systems reduces the amount of waste solvents for disposal and substantially reduces the time needed to identify active compounds The results indicated that the isolated compound 2 formyl 12 oxo A norcleroda 2 13 16 dien 15 oic acid is a diterpene The database search on phytochemicals present in the *Kingiodendron pinnatum* reported by earlier workers did not record the presence and biological activity of this diterpene which is well described in the present study This diterpene is a novel chemical entity described first time from the ethyl acetate extract of the plant *Kingiodendron pinnatum* The study carried out on the seven legumes have clearly depicted their potential medicinal value It is therefore necessary to give prime importance for their conservation In view of this conservation of medicinal plants by using Ex situ method was made for sustainable development Of all the plants tested for seed germination and survival status *Kingiodendron pinnatum* showed the highest percentage of survival and acclimatization in field trials No conservation strategies on these legumes are reported by earlier workers In the present study efforts made to initiate the Ex situ conservation of these plants revealed that establishment of seedling orchards are the base means of multiplication and conservation than any vegetative means

Phytomedicine Rouf Ahmad

Bhat,Khalid Rehman Hakeem,Moonisa Aslam Dervash,2021-02-20 Phytomedicine A Treasure of Pharmacologically Active Products from Plants aims to present updated knowledge of plant based medicines in terms of their research and development production and utilization from the viewpoint of sustainability and by using the latest technologies The book explores different phytometabolites on a mass scale coupled with the efficacy performance and applicability on target organisms to treat curable and fatal diseases Readers will find a coherent package of phytotherapeutic information regarding inclusive assortment of research based scientific amplitude of metabolites from the plant world encompassing various action plans Information is presented sequentially regarding phytochemistry biological activity and the serviceable aspects of bioactive compounds The book also addresses various advancements and achievements of novel drugs from plants using molecular and enzymatic activities and various technological tools in an ecofriendly fashion Discusses phytotherapeutic properties for a wide range of medical conditions including anti pyretic anti infective anti malarial Anti AIDS anti diabetic anti cancerous immune modulatory applications Includes a discussion of synergistic effects of formulations and antagonistic drug interactions Addresses advancements and achievements of novel plant based drugs using molecular enzymatic activities and various technological tools in an eco friendly fashion Phytochemicals in Human Health Venketeshwer Rao,Dennis

Mans,Leticia Rao,2020-02-12 Naturally present bioactive compounds in plants are referred to as Phytochemicals and are being studied extensively for their role in human health Studies have shown that they can have an important role to play in the prevention and management of several human diseases Recognizing the increasing interest in this area this book is being published in response to the need for more current information globally about phytochemicals and their role in human health Chapters of the book are authored by internationally recognized authors who are experts in their respective field of expertise The chapters represent both original research as well as up to date and comprehensive reviews We are sure that the book will be an important reference source meeting the needs of a wide range of interest groups **Advances in**

Phytochemistry, Textile and Renewable Energy Research for Industrial Growth Charles Nzila,Nyamwala

Oluoch,Ambrose Kiprop,Rose Ramkat,Isaac S. Kosgey,2022-04-06 The International Conference on Phytochemistry Textile Renewable Energy Technologies for Sustainable Development ICPTRE 2020 was hosted by the World bank funded Africa Centre of Excellence in Phytochemicals Textile and Renewable Energy ACEII PTRE based at Moi University in conjunction with Donghua University China and the Sino Africa International Symposium on Textiles and Apparel SAISTA The theme of the conference was Advancing Science Technology and Innovation for Industrial Growth The research relationships between universities and industry have enabled the two entities to flourish and in the past have been credited for accelerated sustainable development and uplifting of millions out poverty ICPTRE 2020 therefore provided a platform for academic researchers drawn from across the world to meet key industry professionals and actively share knowledge while advancing the role of research in industrial development particularly in the developing nations The conference also provided exhibitors

with an opportunity to interact with professionals and showcase their business products technologies and equipment During the course of the conference industrial exhibitions research papers and presentations in the fields of phytochemistry textiles renewable energy industry science technology innovations and much more were presented

Recent Frontiers of Phytochemicals Siddhartha Pati,Tanmay Sarkar,Dibyajit Lahiri,2023-04-26 Phytochemicals have been present in human diet and life since the birth of mankind including the consuming of plant foods and the application of herbal treatments This coevolutionary interaction of plants and people has resulted in humans reliance on food and medicinal plants as sources of macronutrients micronutrients and bioactive phytochemicals Phytochemicals can be used as adjuvant agents and sensitizers in traditional antibiotic and anticancer therapy reducing the potential of selecting resistant microbial strains and cancer cells Recent Frontiers of Phytochemicals addresses the many processes of potential phytochemical evaluation of known sources with a focus on phytochemical and pharmacological evaluations and computational research into the structures and pharmacological mechanisms of natural products and their applications in medicine food and biotech Novel extraction characterization and application method for phytochemicals in food pharmacology and biotechnology Colour illustrations and extensive tables with state of art information Covers potential sources of phytochemicals their extraction and characterization techniques *Bibliography of Medical Reviews* ,1966 Improving crop nutritional security for sustainable agriculture in the era of climate change M. Iqbal R. Khan,Mohammad Irfan,Ravi Gupta,2023-10-25

Phytochemistry, 3-Volume Set Chukwuebuka Egbuna,Jonathan Chinenye Ifemeje,Stanley Udedi Chidi,Shashank Kumar,Jaya Vikas Kurhekar,Nadia Sharif,2022-05-29 The 3 volume set Phytochemistry covers a wide selection of topics in phytochemistry and provides a wealth of information on the fundamentals new applications methods and modern analytical techniques state of the art approaches and computational techniques With chapters from professional specialists in their fields from around the world the volumes deliver a comprehensive coverage of phytochemistry Phytochemistry is a multidisciplinary field so this book will appeal to students in both upper level students faculty researchers and industry professionals in a number of fields including biological science biochemistry pharmacy food and medicinal chemistry systematic botany and taxonomy ethnobotany conservation biology plant genetic and metabolomics evolutionary sciences and plant pathology

Evidence and Rational Based Research on Chinese Drugs Hildebert Wagner,Gudrun Ulrich-Merzenich,2013-02-11 After the successful introduction of acupuncture to the West recent advances in analytical methods in chemistry molecular biology and systems biology especially the development of the omic technologies have again brought Chinese drugs into the focus of research on Traditional Chinese Medicine TCM With more than 1000 publications on the chemistry molecular biology and pharmacology of TCM drugs in international journals over the last 10 years Chinese drugs are gaining increasingly reputation and impact These data offer great opportunities for the development of new pharmaceuticals for various clinical applications International scientists have compiled relevant and trend setting research

results in this book Topics range from the latest methods of quality and safety assurance by chemical and genetic fingerprints to the development of new pharmaceuticals for a future evidence based therapy e g for cancer cardiovascular inflammatory or infectious diseases as well as to recent experimental results on multitarget and synergy research for the preparation of multi extract pharmaceuticals from TCM

Metabolites of Medicinal Plants: Insightful Approaches Mallappa Kumara Swamy, Mohd. Sayeed Akhtar, 2024-12-17 *Metabolites of Medicinal Plants Insightful Approaches* provides a comprehensive exploration of the bioactive compounds found in medicinal plants and their pharmacological significance The book covers key topics such as the economics of medicinal and anticancer plants phytochemistry therapeutic potential and advanced applications like nanotechnology based drug delivery systems and CRISPR Cas techniques It also examines the role of these plants in combating diseases like diabetes and metabolic syndrome and their role in traditional medicine systems This resource is essential for students researchers and professionals in phytochemistry pharmacology drug discovery and healthcare practices

Key Features

- 1 Wide range of topics from medicinal plant economics to pharmacological applications
- 2 Latest discoveries in plant bioactive compounds and their therapeutic uses
- 3 Novel drug delivery methods to enhance efficacy
- 4 Linking genes to metabolites through advanced omics approaches

Advances in Chromatography, Volume 49 Eli Grushka, Nelu Grinberg, 2016-04-19 *Advances in Chromatography* is a venerable series that has reported on the latest state of the art developments in the field for the past four decades The newest installment Volume 49 continues the tradition of compiling the work of expert contributors who present timely and cutting edge reviews of current and emerging methods and applications in

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