

## Phytochemical Screening and Review of the Pharmacological Importance of *Erythrina Senegalensis*

\*Bioltif, Yilni Edward; Sase, Terver John; Nehemiah, Tonkum Obadiah

Department of Chemistry, Plateau State University, Bokoos, Nigeria

### ABSTRACT

The plant *Erythrina senegalensis* have been observed by the natives to have medicinal values. The present study was carried out to investigate the phytochemicals of the root and pharmacological importance of the plant. The crushed root was subjected to sequential extraction (maceration) by increasing polarity index of solvents (hexane, ethyl acetate and methanol). The methanol extract gave the highest percentage yield (4.28%) followed by Ethylacetate (3.62%) and Hexane (2.48%) was the least in the yield in extraction. All the three solvent extracts were then used for phytochemicals screening test. The phytochemical screening has shown the presence of Flavonoids, alkaloids, anthraquinones, phenols, quinones, steroids, saponins, tannins, terpenoids, Xanthoproteins. All the phytochemicals were found to be present in atleast one of the extract with Flavonoids, Quinone, Anthraquinones and Xanthoproteins present in all the three extracts. This result of the phytochemical screening of the root shows why the plant *Erythrina senegalensis* has such pharmacological importance.

**KEYWORDS:** *Erythrina senegalensis*, extraction, pharmacological, phytochemicals

### INTRODUCTION

Plant material has remained central to traditional medical practices and has remained useful sources of new drugs [1]. For a long period of time, plants have been a valuable source of natural products for maintaining human health especially in the last decade, with more intensive studies for natural therapies [2]. Medicinal plant would be the best source to obtain a variety of drugs while 80% of the developing countries rely directly on crude concoctions, infusions, decoctions of plants in traditional medicine for their health remedies [3]. Phytochemical and pharmacological studies are very important since a single plant may contain up to thousands of compounds, the possibility of making new discovery become evident [4]. The understanding of plants and investigation to better understand their properties, safety and efficiency is therefore important.

Phytochemicals are chemicals produced by means of secondary reactions resulting from primary carbohydrates, amino acids and lipids [5]. Such chemicals are known to participate in plant defense mechanisms against herbivores and pathogens [6]. The most common classes of these chemicals are saponins, tannins, anthraquinones, flavonoids, and alkaloids which are widely distributed amongst various plant families in abundant quantities. It is these chemicals which attract so much attention from scientists due to their ability to inhibit the growth of microbes pathogenic to man and to aid in drug discovery [7, 8].

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Plants have served as models for drugs development for three basic reasons: 25% percent of all prescription drugs contain active compounds from higher plants, secondly because secondary plant metabolites are useful in studying biological systems and disease processes, and lastly because biologically active compounds sometimes have poor pharmacological activity in humans, and in this case these compounds are used as template for synthetic modification and or manufacturing [9].

A. *Erythrina senegalensis*



Figure 1: *Erythrina senegalensis* Plant

# Review Of Literature Phytochemical Screening

**Ashish S. Verma, Anchal Singh**



## **Review Of Literature Phytochemical Screening:**

**Phytochemical analysis of fruit extracts of *Baccaurea courtallensis* and evaluation of cholesterol lowering property** Prem Jose Vazhacharickal, Jiby John Mathew, Sajeshkumar N. K., Esther Elsa George, 2017-07-18 Scientific Study from the year 2017 in the subject Chemistry Bio chemistry grade 1 5 Mar Augusthinose College language English abstract The experiment was carried out to extract and analyze the phytochemical constituents of the *Baccaurea courtallensis* fruit and to find out the cholesterol lowering efficacy of the extract The water extracts of *Baccaurea courtallensis* fruits were subjected to preliminary phytochemical analysis and they showed the presence of alkaloids flavonoids terpenoids saponins phlobatannins coumarin anthocyanin leucoanthocyanin phenols and carbohydrates The extract was evaluated for cholesterol lowering efficiency against different fatty food materials like egg yolk pork and chicken fat ghee and cod liver oil by Zak s method The maximum efficiency was observed on egg yolk and chicken fat followed by pork fat and ghee In cod liver oil no beneficial change were noticed

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

**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

**Phytochemical profiling of Garcinia gummi-gutta (Malabar tamarind) and in vitro analysis of cholesterol lowering effect**

Prem Jose Vazhacharickal, Jiby John Mathew, Sajeshkumar N. K., Ratheesh Mohanan, Preeja Mol MR, 2017-06-30 Scientific Study from the year 2017 in the subject Agrarian Studies grade 1 5 Mar Augusthinose College language English abstract In our society cholesterol related diseases are increasing day by day The major reason for this is our eating habit or food habit Eating foods containing trans fats which are often found in fast food and commercially baked breads cookies and snack foods It was observed that while peoples taking the fruits of Garcinia gummi gutta in their food preparations have low cholesterol level Some peoples are eating boiled fruits and drinking water in which the fruits peels are boiled in order to reduce the cholesterol level This study was carried out to explore the phytochemical constituents of the solvent extracts of Garcinia gummi gutta fruit and in vitro analysis of its cholesterol lowering effect The cholesterol lowering effect was carried out in vitro using common fatty food materials like ghee fats of pork and chicken hen egg and cod liver oil Each food materials were treated with extract and incubated for a number of days and each day the cholesterol level was estimated by Zak s method From the data pork and chicken fat egg yolk and ghee shows significant reduction in the cholesterol level From the present study it can be concluded that the constituents present in the extracts may be responsible for the cholesterol lowering activity

Phytochemical characterization of Averrhoa bilimbi and in vitro analysis of cholesterol lowering effect on fatty food materials

Prem Jose Vazhacharickal, Jiby John Mathew, Sajeshkumar N.K., Nila Joy, 2017-08-07 Scientific Study from the year 2017 in the subject Chemistry Bio chemistry grade 1 5 Mar Augusthinose College language English abstract As the prevalence of obesity and hypercholesterolemia are very common in our society plants with cholesterol lowering action has great value in modern therapeutics The phytochemicals present in the extracts of Averrhoa bilimbi were analyzed and its effect on lowering cholesterol in various fatty food materials was evaluated in vitro Various phytochemical compounds like tannins saponins alkaloids emodins proteins carbohydrate terpenoids glycosides flavonoids coumarins and phenols were found in the fruit extracts of the plant The level of cholesterol was evaluated by Zak s method in five different fatty food materials After the treatment with extract four of them showed significant reduction in the cholesterol level day by day and no change in the cholesterol level was observed in one sample

**Soil Organic Matter, Impacts on Productivity 1979-April 1988**

Karl Schneider, 1988 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

**Phytochemical analysis and cholesterol lowering efficiency of *Averrhoa carambola* Linn (star fruit).** Prem Jose Vazhacharickal, Jiby John Mathew, Sajeshkumar N. K., Ratheesh Mohanan, Ellamplackill Surya Santhosh, 2017-07-10 Scientific Study from the year 2017 in the subject Agrarian Studies grade 1 5 Mar Augusthinose College course Biochemistry language English abstract Aqueous extract of the fruit pulp of *Averrhoa carambola* star fruit were evaluated for cholesterol lowering effect in vitro against various fatty food materials Peoples are consuming food items made out of chicken beef mutton egg and fish which contains large amount of fat This study aims to analyze the effect of *Averrhoa carambola* in reducing the cholesterol level in this fat compound using water extract of the pulp For this fatty food samples like egg yolk pork fat chicken fat ghee and cod liver oil were treated with the extract and cholesterol level was estimated by Zak s method for a period of time Phytochemical constituents present in water extract of *Averrhoa carambola* Linn pulp includes alkaloids saponins steroids phlobatannins carbohydrate terpenoids phenols coumarins flavonoids and leucoanthocyanins The in vitro cholesterol lowering effect of *Averrhoa carambola* pulp extract shows a positive result on reducing chicken fat ghee and egg yolk But in case of cod liver oil no beneficial change was observed

**Assessing the Efficacy of *Dracaena cinnabari* and other Yemeni Plants Against Vaginal Bacterial, Fungal, and Parasitic Isolates, Aden-Yemen** Nohad Fartwt, 2025-01-16 Doctoral Thesis Dissertation from the year 2024 in the subject Biology Botany language English abstract

The study examined the properties of various plant extracts *Dracaena cinnabari* of which that exhibited the highest ethanol extractive value low moisture content and contained specific phytochemical classes *Valachia nilotica* subsp *indica* *Capparis cartilaginea* and *Fagonia paulayana* displayed variations in their phytochemical profiles Gas Chromatography Mass Spectrometry GC MS and Fourier Transform Infrared Spectroscopy FTIR analysis aided in identifying the bioactive compounds present in these medicinal plants suggesting their potential for therapeutic applications The findings provide valuable insights into the properties and potential uses of these plant extracts Ethanol 70% and Aqueous *Dracenia cinnabari* *Capparis cartilaginea* *Vachellia nilotica* subspecies *indica* and *Fagonia paulayana* are medicinal plants used in traditional Yemen medicine for the treatment a variety of infectious and non infectious diseases These plants were selected to evaluate their potential antibacterial antifungal and *Trichomoniasis* anti activity The plant samples Aden Lahaj and Abyan governorates *Dracaena cinnabari* specimens were collected from different locations on the island of Socotra during the winter of 2019 used in this study were processed at the biology laboratory of the Faculty of Education in Aden Microbiological procedures including the isolation and identification of bacteria fungi and *Trichomonas vaginalis* were conducted at the laboratories of the Supreme Board of Drugs and Medical Appliances The research took place from January 2020 to August 2023 focusing on the city of Aden in Yemen The study encompassed various healthcare facilities both public and private including the German Aden Hospital Al Sadqah Hospital Al Madinah Medical Center Al Hanan Medical Center and Aden German International Hospital The choice of Aden was based on its environmental conditions such as high temperatures humidity and inadequate hygiene prastic which contribute to the increased prevalence of bacterial and fungal infections

Medical Botany and Herbal Medicine Jayne T. MacLean, 1988

**Interaction of Biomolecules and Bioactive Compounds with the SARS-CoV-2 Proteins: Molecular Simulations for the fight against Covid-19** Mattia Falconi, Arvind Ramanathan, James Leland Olds, 2022-07-18

Antioxidant Activity of Selected Wild Orchids of Nepal Mukesh Babu Chand, 2018-01-16 Master s Thesis from the year 2015 in the subject Biology Botany grade language English abstract The inhibitory or delaying action of both the synthetic chemicals and naturally occurring phytochemicals against oxidative damage to tissues by free radicals produced in biological system of living organisms is known as antioxidant activity Since some phytochemicals are responsible for biological as well as medicinal activities nine wild orchids of Nepal were assessed for total polyphenolics and flavonoids content along with the antioxidant activity The ethanolic extract of *Eria graminifolia* pseudobulbs *Gastrochilus acutifolius* leaf and root *G distichus* whole plant *Luisia trichorhiza* leaf and root *Otochilus albus* pseudobulbs *Papillionanthe uniflora* whole plant *Pholidota articulata* leaf and pseudobulbs *Rhynchostylis retusa* leaf and *Trudelia cristata* leaf and stem were prepared by Soxhlet extraction Phytochemicals were detected by previously established protocols with minor modifications The total flavonoids were estimated with aluminium chloride method and total polyphenolics content with Folin Ciocalteu phenol reagent method Antioxidant activity was assessed by

DPPH 2,2-diphenyl-1-picrylhydrazyl free radical scavenging assay. There was significant variation of total flavonoids, total polyphenolics content and antioxidant activity among the orchid extracts at P < 0.05. The total flavonoids varied with highest in *Rhynchosyris retusa* leaf (110.68 ± 4.52 mg QE/g) and lowest content in *Gastrochilus acutifolius* root (22.32 ± 1.10 mg QE/g) total polyphenolics with highest in *Trudelia cristata* stem (69.68 ± 2.78 mg GAE/g) and lowest content in *Gastrochilus acutifolius* leaves (11.89 ± 0.64 mg GAE/g). Also the antioxidant activity varied with highest in *Trudelia cristata* stem (IC<sub>50</sub> 79.69 g/ml) and lowest DPPH radical scavenging activity in *Gastrochilus acutifolius* leaf (IC<sub>50</sub> 341.79 g/ml). However, none of the orchid extracts were as effective as quercetin, the reference compound, in radical scavenging activity (IC<sub>50</sub> 32.90 g/ml). Total polyphenolics and flavonoids content and antioxidant activity of selected orchid extracts in this study were higher or lower than medicinal plant and orchid extracts of previous studies with considerable margin. Again, their antioxidant activity was positively associated with total flavonoids and total polyphenolics content.

**Traditional Medicinal Plants and Malaria**  
Merlin Willcox, Gerard Bodeker, Philippe Rasoanaivo, Jonathan Addae-Kyereme, 2004-06-28. Malaria is an increasing worldwide threat with more than three hundred million infections and one million deaths every year. The world's poorest are the worst affected and many treat themselves with traditional herbal medicines. These are often more available and affordable and sometimes are perceived as more effective than conventional antimalarials.

Directory of Research in the University of Malawi, 1968-1999 University of Malawi, 1999

*Animal Biotechnology* Ashish S. Verma, Anchal Singh, 2013-11-04. Animal Biotechnology introduces applications of animal biotechnology and implications for human health and welfare. It begins with an introduction to animal cell cultures and genome sequencing analysis and provides readers with a review of available cell and molecular tools. Topics here include the use of transgenic animal models, tissue engineering, nanobiotechnology and proteomics. The book then delivers in depth examples of applications in human health and prospects for the future including cytogenetics and molecular genetics, xenografts and treatment of HIV and cancers. All this is complemented by a discussion of the ethical and safety considerations in the field. Animal biotechnology is a broad field encompassing the polarities of fundamental and applied research including molecular modeling, gene manipulation, development of diagnostics and vaccines and manipulation of tissue. Given the tools that are currently available and the translational potential for these studies, animal biotechnology has become one of the most essential subjects for those studying life sciences. Highlights the latest biomedical applications of genetically modified and cloned animals with a focus on cancer and infectious diseases. Provides firsthand accounts of the use of biotechnology tools including molecular markers, stem cells and tissue engineering.

Reviews on Indian Medicinal Plants: CI-Co, 2008

**Cholesterol lowering effect of Tamarind (*Tamarindus indica*)** Prem Jose Vazhacharickal, Jiby John Mathew, Sajeshkumar N.K., Berin Babu, 2017-08-28. Scientific Study from the year 2017 in the subject Chemistry Biochemistry grade 1.5. Mar Augusthinose College course. Biotechnology language English abstract. Aqueous extract of the fruit pulp of Tamarind (*Tamarindus indica*) were evaluated for cholesterol lowering effect in vitro.

against various fatty food materials. People consume food items made by chicken, beef, mutton, egg, and fish, and it contains a large amount of fat. This study aims to analyze the effect of *Tamarindus indica* in reducing the cholesterol level in this fat compound using water extract of the pulp. For this fatty food samples like egg yolk, pork fat, chicken fat, ghee, and cod liver oil were treated with the extract, and cholesterol level was estimated by Zak's method for a period of time. Phytochemical constituents present in water extract of *Tamarindus indica* pulp include Alkaloids, saponins, steroids, phlobatannins, carbohydrate, terpenoids, phenols, coumarins, and leucoanthocyanins. The in vitro cholesterol lowering effect of *Tamarindus indica* pulp extract shows a positive result on chicken fat, ghee, and egg yolk. But in case of pork fat and cod liver oil, no beneficial change was observed. *Reviews on Indian Medicinal Plants: Ma-Me*, 2004. Biological & Agricultural Index, 1978. Annual Visiting Lecture Series University of Texas. College of Pharmacy, 1963.

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