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Review on the Pharmacological Properties of Cocos Nucifera Endocarp

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Abstract

Fruits of cocos nucifera have long been used in the traditional medicine for the treatment of metabolic disorders. Endocarp of cocos nucifera was supposed to be the hardest part of the its fruit, but ironically richest source of phenolic and flavanoid content.Scientific data has been found as evident for antioxidant, antimicrobial, vasorelaxant,antihypertensive and inhibitory effect on oral microflora of cocos nucifera endocarp. Current review article covers the relevancy of cocos nucifera endocarp in the medicinal world.

Introduction

Fruits of cocos nucifera have long been used in the traditional medicine for the treatment of metabolic disorders.Endocarp of cocos nucifera was supposed to be the hardest part of the its fruit,but ironically richest source of phenolic and flavanoid content.Scientific data has been found as evident for antioxidant,antimicrobial, vasorelaxant,antihypertensive and inhibitory effect on oral microflora of cocos nucifera endocarp.Current review article covers the relevancy of cocos nucifera endocarp in the medicinal world.Herbal Medicine also called botanical medicine or phytomedicine refers using plant's seeds, berries,roots,leaves,stems,bark or flowers for medicinal purposes. The use of natural products with therapeutic properties is as ancient as human civilization [1,2].Herbal Products are gaining progressively attention due to less toxicity and high efficacy against free radical mediated diseases[3].India has a rich heritage of traditional medicine and the traditional health care system have been flourishing for many centuries[4].At present,approximately 25% of drugs in modern pharmacopoeia were derived from plants(phytomedicines)and many others were synthetic analogues built on the prototype compounds isolated from plants.Indian folk medicine comprises of numerous prescriptions for therapeutic purposes such a healing of wounds, inflammation, skin infections,leprosy,diarrhea,scabies,venereal diseases ulcers,snakebite etc[5-8].Medicinal Plants are capable of synthesizing an overwhelming variety of low molecular weight organic compounds called secondary metabolites, usually with unique and complex structures[9].Moreover in the modern era,the knowledge and experience of herbs usage are being blend with advanced cosmetic technology to develop safe and elegant beauty product, which has wider range of consumer acceptability[10]. Ethno-pharmacologist,botanists,microbiologists and natural product chemists are combing the earth for phytochemicals which could be developed for the treatment of diseases & disorders[11].Cocos nucifera L.(Family Arecaceae) commonly known as coconut,is considered as an important fruit crop in the tropical countries. The fruits of Cocos nucifera have long been used in traditional medicine for the treatment of metabolic disorders[12].Literature data revealed that cocos nucifera endocarp is a rich resource of phenolic and flavanoid compounds which are responsible for diverse biological activities in medicinal plants beneficial to human health and disease prevention [1,13-19].

Pharmacological Properties

Antimicrobial Properties:

Cold macerated ethanolic(RNM-01),Hot percolated ethanolic(RNM-02),Aqueous(RNA) and Dry distilled(RNDS) extracts of cocos nucifera were evaluated for their antimicrobial activities against Methicillin resistant Staphylococcus aureus(Clinical isolate),Methicillin sensitive Staphylococcus aureus(Clinical isolate),Pseudomonas aeruginosa(Clinical isolate),E. coli (Clinical isolate),Klebsiella pneumonia(Clinical isolate),Acinetobacter bauminii (Clinical isolate), Citrobacter Freundii (Clinical isolate),Enterococcus (Clinical isolate),Streptococcus pyrogens(Clinical isolate), Candida albicans(Clinical isolate),Bacillus subtilis,Pseudomonas aeruginosa,E. coli,Staphylococcus aureus,Micrococcus luteus using Kirby baeur disc diffusion method. Results revealed that only the hot percolated ethanolic extract was having some antimicrobial effect, rest all were showing resistance[1].

Antioxidant Activity:

Cold macerated ethanolic(RNM-01),Hot percolated

ethanolic(RNM-02), Aqueous(RNA) and dry distilled(RNDS) extracts of cocos nucifera were evaluated for their antioxidant activity using DPPH radical scavenging assay. All extracts RNM-01,RNM-02, RNA-01 and RNDS were found to be significant antioxidant activity 4.1828,3.31,20.83,1.0179?gmL?1 respectively comparable to standard ascorbic acid[1].

Vasorelaxant Effect:

Cocos nucifera ethanolic extract was examined for its in vitro vascular relaxant effects in isolated norepinephrine, phenylephrine or potassium chloride pre-contracted aortic rings (both intact endothelium and denuded). Removal of endothelium or pretreatment of aortic rings (intact endothelium) with l-NNA (10_M) or ODQ (10_M) followed by addition of contractile agonists prior to extract significantly blocked the CNE induced relaxation.Indomethacin (10_M) and atropine (1_M) partially blocked the relaxation, whereas glibenclamide (10_M)did not alter it[12].Results revealed that cocos nucifera ethanolic extract exhibits vasorelaxant effect.

Antihypertensive Activity:

Cocos nucifera ethanolic extract was examined for its In vivo anti-hypertensive activity using DOCA salt-induced uninephrectomized male Wistar rats. Extract significantly reduced the mean systolic blood pressure in DOCA salt-induced hypertensive rats (from 185.3±4.7mmHg to 145.6±6.1 mmHg).The activities observed were supported by the polyphenols, viz. chlorogenic acid, vanillic acid and ferulic acid identified in the extract.It can be evidenced by the results that cocos nucifera exhibits antihypertensive role[12].

Inhibitory Effect Against Oral Microflora:

Ethnobotanically the use of Cocus nucifera shell ash has been stated so this study was undertaken to determine the inhibitory effect of the water extract of cocus nucifera shell ash on oral microflora from human being. Samples of mouth rinse and tartar were collected from male and female population.The inhibitory effect testing was carried out and results showed that the organisms were susceptible more to the stock as observed by the zone of inhibition in mm, with subsequent reduction in the zone of inhibition with the various fold dilutions. The results of this preliminary investigation revealed that the water extract of cocus nucifera shell ash had Inhibitory effect against oral microflora[20].

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