



Review on the Pharmacological Properties of Cocos Nucifera Endocarp

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Author declare no competing interests.

Review on the Pharmacological Properties of *Cocos Nucifera* Endocarp

Author(s): Singla RK

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 as 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 baumannii* (Clinical isolate), *Citrobacter Freundii* (Clinical isolate), *Enterococcus* (Clinical isolate), *Streptococcus pyogenes* (Clinical isolate), *Candida albicans* (Clinical isolate), *Bacillus subtilis*, *Pseudomonas aeruginosa*, *E. coli*, *Staphylococcus aureus*, *Micrococcus luteus* using Kirby bauer 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 I-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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Reviews

Review 1

Review Title: [Review](#)

Posted by **Faculty Dr. Ajit S Narang** on 25 Jun 2012 05:42:59 PM GMT

What are the main claims of the paper and how important are they?:

The paper purports to be an original research article investigating the pharmacological properties of the endocarp of *Cocos nucifera*.

Claims seem to be made from previously published and cited literature. Therefore, they do not seem to be novel.

Literature is referenced at the right places.

Results are not presented appropriately in an easily comprehensible manner.

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

Methods are inadequately described.

Methodology is difficult to assess since it is not described in adequate detail.

English needs significant improvement.

English needs significant improvement.

Rating: 2**Comment:**

Organization of the manuscript should be improved. Results should be presented more clearly, perhaps using some visual aids.

Competing interests: No

Invited by the author to make a review on this article? : No

Have you previously published on this or a similar topic?: No

Experience and credentials in the specific area of science:

Drug delivery

How to cite: Anonymous.Review[Review of the article 'Review on the Pharmacological Properties of *Cocos Nucifera* Endocarp ' by].WebmedCentral 1970;3(6):WMCRW001978

Review 2

Review Title: Review on the Pharmacological Properties of Cocos Nucifera Endocarp

Posted by **Faculty** Dr. Mohammad Amin Abolghassemi Fakhree on 23 Jun 2012 06:33:15 AM GMT

What are the main claims of the paper and how important are they?:

Ethnopharmacology of coconut (*Cocos nucifera*) could has a impact on its new applications in treatment. There are a number of previously published articles supporting this fact.

This is a review article.

It is acceptable as a mini review.

This is a review article.

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

This is a review article.

This is a review article.

Doing more bibliography

Doing more bibliography

Rating: 7

Comment:

If there'll be a discussion or conclusion about the overall usage and importance of the coconut, it will be better. Please use " , " with a space after it, like this: "coconut, is" Also please use italic first capital letter for scientific names, like this: "*Cocos nucifera*"

Competing interests: Nothing.

Invited by the author to make a review on this article? : No

Have you previously published on this or a similar topic?: Yes

References:

I have contributed in 2 research article about ethnopharmacology. And also I am preparing a review article about a herb. But all of them are under review or not ready yet.

How to cite: Anonymous.Review on the Pharmacological Properties of Cocos Nucifera Endocarp [Review of the article 'Review on the Pharmacological Properties of Cocos Nucifera Endocarp ' by].WebmedCentral 1970;3(6):WMCRW001964

Review 3

Review Title: Review on the Pharmacological Properties of Cocos Nucifera Endocarp

Posted by **Faculty Mr. Prasanta K Choudhury** on 23 Jun 2012 04:54:11 AM GMT

What are the main claims of the paper and how important are they?:

This is a review articles. The article explains the traditional medicinal use of endocarp of cocos nucifera. This findings are based on already established traditional uses.

Data on the use of cocos nucifera endocarp is already reported in some standard reports on traditional systems of medicine. The authors compiled the data basing on ethnobotanical use of cocos nucifera endocarp.

Yes, but more informations

Compilations of informations and data collected is short

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

NA

NA

Authors are suggested to findout Phytochemical chemical constitents of cocos nucifera endocarp.

Authors are suggested to findout Phytochemical chemical constitents of cocos nucifera endocarp.

Rating: 5

Comment:

Reports on chemical contituents of cocos nucifera endocarp and thier specific uses for pharmacological preperty need to be collected and compiled

Competing interests: No

Invited by the author to make a review on this article? : No

Have you previously published on this or a similar topic?: No

Experience and credentials in the specific area of science:

5 years, I am working on establishing antioxidant properties of some natural plants and their chief constituents.

How to cite: Choudhury P.Review on the Pharmacological Properties of Cocos Nucifera Endocarp[Review of the article 'Review on the Pharmacological Properties of Cocos Nucifera Endocarp ' by].WebmedCentral 1970;3(6):WMCRW001962

Review 4

Review Title: Review on the Pharmacological Properties of Cocos Nucifera Endocarp

Posted by **Lead Faculty Prof. Ambikanandan R Misra** on 22 Jun 2012 11:10:20 AM GMT

What are the main claims of the paper and how important are they?:

Pharmacological properties of Cocos nucifera endocarp and relevancy of Cocos nucifera in the medicinal world. Cocos nucifera useful in treatment of metabolic disorders hence evaluation of each and every property is important.

Claims are not novel but properly stated in the article.

Yes upto certain extent.

Provided data supports the claim.

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

No

Yes, to good extent

No

No

Rating: 6

Comment:

Abstract repeated in introduction.

Competing interests: No

Invited by the author to make a review on this article? : No

Have you previously published on this or a similar topic?: No

Experience and credentials in the specific area of science:

Formulation and Development of novel drug delivery systems such as Liposomes, Nanoparticle and Dry powder Inhalers.

How to cite: Anonymous. Review on the Pharmacological Properties of Cocos Nucifera Endocarp [Review of the article 'Review on the Pharmacological Properties of Cocos Nucifera Endocarp ' by]. WebmedCentral 1970;3(6):WMCRW001959

Review 5

Review Title: Review on the Pharmacological Properties of Cocos Nucifera Endocarp

Posted by [Dr. Varadaraj G Bhat](#) on 09 Jun 2012 05:18:26 AM GMT

What are the main claims of the paper and how important are they?:

Endocarp of cocos nucifera and its pharmacology is very important are where no much reserach took place. So it is worth to have a detailed study

Eventhough the use is since history No scientific studies have been done on it to prove

Yes to some extent

The results supports the claim

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

no

yes, to good extent

good for presented part

good for presented part

Rating: 7

Comment:

nil

Competing interests: no

Invited by the author to make a review on this article? : Yes

Have you previously published on this or a similar topic?: No

Experience and credentials in the specific area of science:

antifungal activity of cocos nucifera

How to cite: Anonymous.Review on the Pharmacological Properties of Cocos Nucifera Endocarp [Review of the article 'Review on the Pharmacological Properties of Cocos Nucifera Endocarp ' by].WebmedCentral 1970;3(6):WMCRW001897

Review 6

Review Title: Review on the Pharmacological Properties of Cocos Nucifera Endocarp

Posted by [Dr. Rakesh Singh](#) on 03 Jun 2012 10:47:40 AM GMT

What are the main claims of the paper and how important are they?:

This review articles explains the medicinal use of cocos nucifera endocarp, hard shell of the coconut fruit. Article is short but significant.

It is a review article, compilation of the already supported data.

Yes

Yes

If a protocol is provided, for example for a randomized controlled trial, are there any important deviations from it? If so, have the authors explained adequately why the deviations occurred?

Not required

Significant

No

No

Rating: 8

Comment:

NA

Competing interests: No

Invited by the author to make a review on this article? : No

Have you previously published on this or a similar topic?: No

Experience and credentials in the specific area of science:

I am a pharmacologist with special interest in the natural agents.

How to cite: Anonymous.Review on the Pharmacological Properties of Cocos Nucifera Endocarp[Review of the article 'Review on the Pharmacological Properties of Cocos Nucifera Endocarp ' by].WebmedCentral 1970;3(6):WMCRW001854

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