

BLACK CATECHU WITH PHARMACOLOGICAL AND MEDICINAL PROPERTIES AND FORMULATION AND EVALUATION OF HERBAL TOOTHPOWDER CONTAINING BLACK CATECHU

Manisha Hiranman Lahare^{*1}, Priyanka Sudhakar Mahajan² Shravani Santosh Kottawar³, Shaikh M. Zainuddin⁴ and Dr. Shaikh Alim⁵

^{1,2,3}Students, Department of Pharmaceutical, Shri Sai Institute of Pharmacy and Research, Chh. Sambhajinagar.

⁴Asst Prof., ⁶Principal, of Department of Pharmaceutical, Shri Sai Institute of Pharmacy and Research Chh. Sambhajinagar.

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***Corresponding Author**
Manisha Hiranman Lahare
Students, Department of
Pharmaceutical, Shri Sai
Institute of Pharmacy and
Research, Chh.
Sambhajinagar.

ABSTRACT

Black catechu, also known as cutch, acacia catechu or khair is a deciduous tree belonging to the febraceae (Leguminosae) family. It is an medicinal plant that has been used in traditional medicine for therapeutic and psychotropic properties. It is mainly used in many traditional systems like Ayurveda and Unani system of medicine. Black catechu shows good effects in medical field to treat different diseases like dermatological and sore throat etc. It also developed great importance in historical traditional plants. Phenols and polyphenols are natural chemical compounds found in Black catechu. Black catechu contains phenolic ring in its structure. It is also found in citrus fruits, chocolate and many other plants. It has main important features that shows anti-oxidant properties to treat skin disorders. It is the type of medicinal plant that helps in treating the skin diseases, wounds and hemorrhoids, mouth ulcers and sore throat. In this review article, we focuseS on black catechu and effort is made together up the

researchers, which has been done on acacia catechu which will be helpful and graleful for so many aspects. For this plant are yet to be determined.

INTRODUCTION

Black catechu is a medicinal plant that helps in treating skin diseases and sore throat, etc. Black catechu is derived from dried aqueous extract of wild acacia and wild Chundra, prepared from the heartwood and it belongs to the family Leguminosae. Black catechu is also known as cutch, acacia catechu, kottha. The black catechu is found in parts of South Asia, South East Asia including India, Myanmar, Thailand and Indonesia, China, Pakistan. Black catechu or acacia catechu is previously known as Senegalia catechu. It is a deciduous thorny tree which grows up to 15 M (50 ft) in height. The plant is called kachu in Malay. Black catechu is very hard, heavy and odourless but has strong astringent taste. It is also used in traditional medicine to treat diarrhea, sore throat and leprosy. It also has its anti-oxidant and anti-inflammatory properties. The catechu are of two types:- 1] Black catechu, 2] Pale catechu. But it has slightly different chemical compositions but these are used for same purposes and at same dose. It grows with a dense, spreading crown and crooked branches. Black catechu contains many biologically active components like, catechin, epicatechin, kaempferol, dihydrokaempferol, tannins, catecutanic acid, epicatechin Gallate, epigallocatechin, rocatechin, etc. It also includes 5-lipoxygenase enzyme inhibitory effect for rheumatoid arthritis.



Black Catechu.

History: Black catechu also known as Acacia catechu, has its roots in ancient civilization. The plant is native to Asia, specifically in the Indian subcontinent, China, and Southeast Asia.

Ayurvedic and Traditional Medicine: Black catechu has been used for centuries in Ayurvedic and traditional medicine. The plant's bark, heartwood, and leaves were used to treat various ailments, including digestive issues, skin conditions, and oral health problems.

Chines Medicin: In traditional Chines medicine, black catechu was used to treat a range of conditions, including fever, diarrhea, and respiratory problems. The plant was also used to a dye and a tanning agent.

Indian Traditional Medicine: In Indian Traditional medicine, Black catechu was used to treat various conditions, including digestive issues, skin conditions, and oral health problems. The plant was also used as mouthwash and a gargle.

Modern Uses: Today, Black catechu is still used in traditional medicine, but it is also used in modern applications, such.

Cosmetics: Black catechu extract is used in skincare products due to its antioxidant and anti-inflammatory properties.

Pharmaceuticals: Black catechu extract is used in certain medicines, such as anti-diarrheal and anti-inflammatory drugs.

Food and Beverage: Black catechu is used as a flavoring agent and a food additive in certain products, such as chewing tobacco and betel nut.

Properties and uses: Black catechu has several properties and uses .It is use for various purposes, including.

Toothpowder: Black catechu is used as toothpowder.

It strengthens teeth and prevent dental problems.

Skin disorders: It keeps the skin healthy and prevent skin problems.

Other uses: It is used ti treat to joint problems, diagestive issues and other health problems.

Keywords: Acacia catechu, history, Chemical constituents (phytochemicals), properties and uses, bioactivities, pharmacological activities, mechanism of action, clinical applications, dosage forms, specific dosage for different conditions, precautions, ancient use of Black catechu, cultural and Spiritual significance of black catechu, Traditional medicine.

Chemical constituents: The chemical constituents present in black catechu are, catechin, flavonoids, and terpenoids. The plant is rich in catechins, which are polyphenolic compounds that are responsible for its astringents and anti-inflammatory activities. Those flavonoids

which are present in catechu plant have been shown to have antimicrobial and anti-oxidant activities.

Tannins: Gallic acid and phobotannins (25-33%).

Alkaloids: Kaempferol, dihydrokaempferol (2-12%), toxifolin, ofzelenin Gum.

Sugars: d-galactose, d-rhamnose and L-arabinose.

Catechins: epicatechin, epigallocatechin, epicatechin Gallate and rocatechin (2-12%).

Mechanism of Action

Inhibition of prostaglandin synthesis: Black catechu's flavonoids inhibit the synthesis of prostaglandins, which are involved in inflammation and pain.

Modulation of immune response: The plant's polysaccharides modulate the immune response, increasing the production of cytokines and activating immune cells.

Antioxidant Activity: Black catechu's antioxidant scavenge free radicals, reducing oxidative stress and cell damage.

Inhibition of bacterial adhesion: The plant's phenolic compounds inhibit the adhesion of bacteria to host cells, and reducing the risk of infection.

Pharmacological Activities

Astringent Activity: The catechins which are present in the Black catechu have been shown to have astringent activity, which makes it useful in treatment of dysentery, diarrhea, and other GIT disorders.

Anti-inflammatory Activity: Black catechu contains flavonoids and terpenoids which have been shown to have Anti-inflammatory activity, which makes it useful in the treatment of inflammatory diseases like arthritis and gout.

Antioxidant Activity: The flavonoids and terpenoids which are present in the Black catechu have been shown to have antioxidant activity, which makes it very useful in the prevention and treatment of oxidative stress-related disorders such as cancer, and neurodegenerative diseases.

Antimicrobial Activity: Black catechu has been traditionally used to treat microbial infections including antibacterial infections, antifungal infections and antiviral infections.

Wound healing: Due to its astringent and antimicrobial qualities, it helps to treat wounds (wound healing) and prevent infections.

Cardiovascular Health: About the use of Black catechu, some studies suggest that it may help in managing the blood pressure and improves heart health, though more research is needed.

Anti-cancer potential: Early research indicates that the plant might have anti-cancer activities, but here is also more studies are required to confirm its effectiveness in this regard.

Clinical Applications: Black catechu has been used in traditional medicines for centuries, and has a range of clinical applications and many biological, pharmacological and also therapeutic applications; these are as follows;

Gastrointestinal disorders: Black catechu is used in the treatment of gastrointestinal disorders like diarrhea, dysentery and it is also used in the treatment of irritable bowel syndrome.

Inflammatory disorders: It is largely used in the treatment of inflammatory disorders including arthritis, gout and rheumatism also.

Infectious disorders: Black catechu is used to treat infectious disorders such as tuberculosis, pneumonia and also used to treat skin infections.

Oral health: It is used in the treatment of oral health disorders which includes gum disease, tooth decay, and mouth ulcers also.

Dosage forms

Dried extract: 250 – 500 mg, 2 – 3 times a day.

Tinctures: 10 – 20 drops, 2-3 times a day.

Decoction: 10 – 20 grams of dried bark or heartwood, boiled in 400 – 500 ml of water, 2-3 times a day.

Powder: 1 – 2 grams, 2 – 3 times a day.

Specific dosage for different conditions

Digestive disorders: 250 – 500 mg of dried extract, 2 – 3 times a day.

Skin disorder: 10 – 20 drops of tincture, 2 – 3 times a day.

Oral health: 10 – 20 grams of dried bark or heartwood, boiled in 400 – 500 ml of water, 2 – 3 times a day.

Respiratory disorders: 250 – 500 mg of dried extract, 2 – 3 times a day.

Precautions

Pregnancy and breastfeeding: Consult a healthcare professional before using Black catechu.

Allergies: If you are allergic to black catechu or any of its constituents, avoid using it.

Interactions: Black catechu may interact with certain medications, such as blood thinners and diabetes medications. Consult a healthcare professional before using black catechu.

Ancient use of Black catechu

As a dye: The heartwood was used to create a brown – dye for fabrics.

In cosmetics: The extract of black catechu was used in ancient cosmetics to treat skin conditions and for promoting skin health. These are the ancient uses of Black catechu which highlights the significance of black catechu in traditional medicine, cultural practices, and daily life.

Cultural and spiritual significance

Paan: In ancient India, black catechu was mixed with betel leaves (paan) and chewed as a stimulant and breath freshner.

Tantric rituals: The plant was used in tantric rituals for its perceived spiritual and medicinal properties. (Note: In this article, this point is added only for ancient information about the Black catechu).

Traditional medicine: In Ayurvedic medicine, Black catechu was used to treat various ailments, including.

Digestive issues: The bark and heartwood of black catechu were used to treat diarrhea, dysentery, and other gastrointestinal problems.

Skin conditions: The extract was applied topically to treat skin conditions like eczema, acne, and wounds.

Oral health: Black catechu was used as a mouthwash to treat gum inflammation, tooth decay and bad breath.

While black catechu offers many potential benefits, its use should be approached cautiously, and it is advisable to consult a healthcare provide before using it for medicinal purposes.

The pharmacological and therapeutic potential of black catechu (*Acacia catechu*) is vast, with several studies highlighting its diverse biological activities. In this review we will see the detailed look at its key pharmacological effects and therapeutic effects.

Black catechu is also used in the treatment of snake bite and anemia. It is also used as hair conditioner in the form of medicine flavocoxid (limbrel, primus pharmaceuticals) combination products.

It also use to provide cooling effect to the ulcers and iruptions of the skin.

Here are some examples of medicines.

Orthofill: (it is a brand of orthodontic bond, to close gap between teeth).

Olvest – 250: (to treat hypertension).

Tvestin – 500: (used in treatment of bacterial infection in body including those affecting the respiratory tract).

Unibest – 250 (to treat pain, discomfort in joints).

Lupivestin – 500(reduce joints discomfort).

Formulation of toothpowder containing black catechu

Black catechu toothpowder: Black catechu toothpowder is also known as “Katha powder” or “Acacia catechu powder”, is a traditional Ayurvedic oral care product used for centuries in India and other parts of Asia. The powder is derived from heartwood of the acacia catechu tree and is known for its antibacterial, anti-inflammatory and astringent properties.

Uses of acacia catechu toothpowder

Oral health: Black catechu toothpowder is used to promote oral health by reducing plaque, gingivitis, and bad breath.

Teeth Whitening: The powder helps remove stains and discoloration from teeth, leaving them whiter and shinier.

Gum Health: Black Catechu Toothpowder is used to treat gum inflammation, bleeding gums, and gum recession.

Mouth Ulcers: The powder helps heal mouth ulcers, cuts, and wounds by reducing inflammation and promoting tissue repair.

Fresh Breath: Black Catechu Toothpowder leaves the mouth feeling fresh and clean, reducing bad breath and boosting confidence.

Antibacterial Properties: The powder’s antibacterial properties help combat bacteria and other microorganism that can cause oral infections.

Natural and Chemical-free: Black catechu Toothpowder is a natural, chemical-free alternative to commercial toothpastes and mouthwashes.

How to use black catechu toothpowder?

To use Black Catechu Toothpowder, simply wet your toothbrush, dip it into the powder, and brush your teeth for 2-3 minutes, twice a day. You can also mix the powder with water to create a paste or mouthwash.

Formula for toothpowder (30 grams)

Sr. No.	Ingredients	Quantity
1.	Acacia Catechu powder	10 grams
2.	Crystallized sugar (Misri)	5 grams
3.	Turmeric powder	5 grams
4.	Clove powder	5 grams
5.	Cardamom powder	5 grams

Method of preparation

Firstly, we have to mix all the ingredients together in a bowl.



Then, grind these all ingredients into a fine powder by using a grinder or mortar and pestle.



Then, sift the powder to remove any lumps (or sieve this mixture by using sieve no. 85-180m thick mesh for fine powders and use sieve no. 120-125m thick mesh for very fine powder).



Finally, store the Toothpowder in an airtight container.

**Crude Drug****Final Product****Powdered Drugs**

Storage of Black Catechu Toothpowder: Store it in an airtight container and store the container in a cool, dry place, away from direct sunlight and moisture.

Container Requirements

Airtight: It is mainly to prevent moisture and air from entering.

Light-Resistant: To prevent degradation.

Moisture resistant: To prevent toothpowder from becoming damp or clumpy.

Food-grade: To ensure toothpowder remains safe for use.

Safety Precautions: Do a patch test before using the toothpowder to ensure you're not allergic to any of the ingredients.

If you experience any irritation, discomfort, or allergic reactions, discontinue use and consult a healthcare professional.

Please consult with an Ayurvedic practitioner or healthcare professional before using this Toothpowder, especially if you have any underlying health conditions or concerns.

Evaluation of Black Catechu Toothpowder

Physical evaluation tests

Appearance Test: Check the color, texture, and appearance of the toothpowder.

Odor Test: Check the aroma of the toothpowder.

Texture Test: Check the texture of the toothpowder, whether it's smooth or rough.

Note:- The dosage of black catechu may vary depending on the individual's health conditions, age, and other factors. It is recommended to consult a healthcare professional before using black catechu.

CONCLUSION

Black catechu has a rich history that spans thousands of years. From its ancient origins in Ayurvedic and Traditional medicines to its modern uses in cosmetics, pharmaceuticals, and food and beverage, Black catechu has proven to be a versatile and valuable plant. The plant has a range of pharmacological activities, including astringent, anti-inflammatory, antimicrobial and antioxidant activities, which makes it useful in the treatment of a range of clinical applications. Further research is needed to fully explore the potential of Black catechu as a therapeutic agent. Black catechu is a plant-based medicine that has been used for centuries in Traditional Ayurvedic and Unani systems of medicine.

Black Catechu Toothpowder is a natural, effective, and chemical-free oral care solution that promotes healthy teeth and gums, reduces bad breath, and whitens teeth. Its antibacterial and anti-inflammatory properties make it an excellent alternative to commercial toothpastes and mouthwashes. Regular use of black catechu toothpowder can lead to improved oral health, boosted confidence, and brighter smile.

RESULT

Black Catechu toothpowder was prepared and evaluated successfully.

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