

A Critical Review: Acacia Catechu Used for Mouth Ulcer

Mr. Mohammad Sameer Ansari*, Mr. Pranay Wankhede, Dr. Rashmi Trivedi, Dr. Milind Umekar
*Department of Quality Assurance, Smt. Kishoritai Bhoyar College of Pharmacy, Kamptee, Nagpur
441002, Maharashtra, India. Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur,
Maharashtra, India*

Abstract - Acacia Catechu L. (Fabaceae) has been significantly utilized in holistic drug alongside method of the Austronesia for ancient history many thousand years previously. An extensive range of therapeutic properties, including antioxidant, anti-inflammatory, antibacterial, antifungal, astringent, anthelmintics, analgesic, anti-diabetic, wound healing, anti-tumor, and immunological booster, are found throughout the entire plant of Acacia catechu. Survey of Different types of oral ulcer (Minor ulcer, Major ulcer and Herpetiform ulcer) mentioned in this article. The different preparation of Acacia catechu mouthwash and oral mucosal patch prepared.

Keywords – Acacia catechu, wound healing, oral ulcer and Mouthwash.

INTRODUCTION

One of the commonly occurring plants is Acacia Catechu, which may be found at an altitude of 1200 metres in sub-Himalayan regions of India, Pakistan, Nepal, Bhutan, Thailand, and China [1]. The heartwood of A. Catechu L. (Fabaceae), whose commercial appearance is commonly referred to as a Katha, is extracted using 10% hydro-alcoholic solution.[2] Prior to the development of the Ayurvedic and Unani systems of medicine, it has been extensively used in holistic treatment in Austronesia .[3] An extensive range of therapeutic properties, including antioxidant, anti-inflammatory, antibacterial, antifungal, astringent, anthelmintics, analgesic, anti-diabetic, wound healing, anti-tumor, and immunological booster, are found throughout the entire A. Catechu plant. [4]

There are over 1300 species of Acacia (family Mimosaceae), and there are several uses for its exudates, leaves, seeds, heartwood, and bark. Since over 2500 years ago, gum acacia (gum arabic) has been utilised for its therapeutic benefits. It is used as an emulsifier, demulcent (agent that soothes and protects), and to improve the viscosity of solutions and suspensions. Additionally, it is employed in the food, soft drink, tanning, textile, cosmetic, and

confectionary industries. Acacia catechu heartwood extracts are used in the traditional production of betel quid (paan masala), which includes Piper betel leaves, A. catechu paste, chopped Areca nut, lime, and other spices with or without tobacco.

Other names for the Acacia Catechu include Cutch tree, Terra Japonica, and Black Catechu. In Hindi and Sanskrit, it is also known as Khair and Khadira. This plant was formerly referred to as Kat or Cacho. This tree was widely exported from India to China, Persia, and Arabia, particularly in the early 16th century. This plant was mostly used for tanning and dyeing. Japan brought this plant to European nations in the 17th century. Acacia catechu is a tree that may be found all throughout India. Eastern Western Ghats slopes and Himalayan tracts make up the majority of its habitat in the nation. [5]

According to a chemical analysis of this plant, which is widely cultivated, it has very high concentrations of tannin, flavonoids, and phenolic compounds, including catechin/epicatechin, epigallocatechin, quercetin, taxifolin, and procyanidin, among others. These active ingredients demonstrate that the medication has excellent antioxidant, anti-inflammatory, astringent, and anti-diabetic effects [6]. This plant's heartwood produces a substance known as Katha, which has a wide range of therapeutic potential. The primary plant components of the heartwood are catechin or epicatechin/catechin, which are found in this plant and have key properties such antioxidant, anti-inflammatory, antibacterial, and anticancer potential [7]. Catechins are significantly and quickly metabolised in vivo, which gives them their antioxidant properties [8].

They frequently contain polyphenols and flavonoids, which have poor absorption properties due to their unfavourable benzene ring structure, inappropriateness as passive drug carriers, lack of a carrier-mediated drug transport mechanism, or poor partition coefficient value [9].



Fig no. 1 – Image of Acacia catechu Plant

Morphology of Acacia catechu –

Acacia Catechu plants have a common peak that ranges in height from 5 to 15 metres [10]. A. Catechu has a straight, brownish-gray stem [11]. Acacia Catechu's bark is darkly brown and internally exfoliates in thin brown and red stripes [12]. The acacia plant's leaves are bipinnate, with 20–50 pairs of leaflets and 10–30 pairs of pinnae exclusively [13]. Short, hooked-shaped spines and an auxiliary pedunculate spike make up the inflorescence. July through September, Journal of Ayurvedic and Herbal Medicine. The blossom has a creamy milky fragrance. Figure 1 depicts the flat-brown, 5–15-seeded pods. As depicted in Figures, the wood of A. Catechu is divided into three components: bark, sapwood, and heartwood.

CHEMICAL CONSTITUENTS OF A. CATECHU HEARTWOOD

This plant is a useful herbal drug since it has a variety of active ingredients that are found in its heartwood, bark, leaves, flowers, and roots. The heartwood of A. Catechu plays a significant part in the study and potential, thus it should be used for therapeutic purposes. Major chemical components of the heartwood of A. Catechu Willd are catechin, (-) epicatechin, epigallocatechin, epicatechin gallate, epigallocatechin gallate, rocatechin, phloroglucin, protocatechuic acid, quercetin, poriferasterol

glucosides, poriferasterol, acyglucosides, lupenone, lupeol, procyanidin AC, kaempferol, dihydrokaempferol, L-arabinose, D-galactose, Drhamnose andaldobiuronic acid, afzelchin gum, and mineral [14]. The antioxidant capacity of these substances is what gives A. Catechu its therapeutic usefulness.

Oral Ulcer and Its Types –

Oral mucosa ulcers are common, and patients may complain of pain or worry about the ulcer's origin [15]. Mouth ulcers may have a similar clinical look, but they can have a variety of causes, from small injuries to infections, malignancy, or systemic diseases. The duration, pattern of recurrence, clinical appearance, mucosal location, and presence or absence of systemic symptoms, among other factors, can all be helpful indicators in identifying the cause of ulceration. In this article, the causes of mouth ulcers are examined. Finding the reason may start with distinguishing between mouth ulcers that are acute and those that are chronic.

Episodes of acute oral ulcers are defined as being either solitary or reoccurring and lasting less than six weeks. [16,17]

An ulcerative lesion that lasts more than two weeks is referred to as a chronic ulcer. Ulcers can be classified based on their beginning time, number of ulcers, and etiological factors. Acute ulcers are short-term, typically painful ulcers that persist no longer than two weeks. Mouth ulcers can be brought on by physical or chemical injury, infectious neoplasia, immune system disorders, particularly autoimmune diseases. Many oral lesions could be efficiently treated using a variety of conservative methods because the majority of these lesions have a straightforward aetiology that can be identified by history and clinical appearance. On the other hand, some ulcers require laboratory procedures such as a biopsy or culture in order to establish a precise diagnosis and create a personalized treatment strategy. [18,19,20]

Types of mouth ulcer

Based on their size and number, mouth ulcers are classified as large, minor, or herpetiform [10]. The most typical types of oral ulcers are as follows:

Minor ulcers: The most common sort of aphthous ulcers, which account for about 80% of cases, are minor ones. These have a diameter of 2 to 8 mm and

often go away in 10 to 2 weeks. These ulcers frequently heal without leaving any scars, are superficial, small (less than 1.0 cm in size), few in number, and appear alone or in groups.[21]

Major ulcers: The second category includes major aphthous ulcers, which affect about 10% of patients. These have a diameter of over 1 cm, are bigger and deeper in shape, and have a raised or irregular border.[22]

Herpetiform ulcers: The third category of ulcers is known as "herpetiform ulcers," and it describes lesions that appear to be grouped together. Numerous small lesions the size of pinheads make up this ulcer's cluster. Herpes virus involvement is unrelated to this. These are made up of several microscopic lesions that eventually unite to create larger plaques, and they arise in tremendous numbers, anywhere from 10 to 100 at a time. According to the size and depth of the ulcer, they may leave a scar after healing in 7 to 30 days.[23]

The common consensus is that gingivitis is a site-specific inflammatory disorder caused by dental biofilm buildup that is characterized by gingival edema and redness but not by periodontal attachment loss. Most people are unaware they have gingivitis or are unable to identify it since it frequently causes little discomfort, seldom results in spontaneous bleeding, and frequently exhibits minor clinical changes.

Acacia Catechu used for Mouth Ulcer –

The heartwood of the tree (Acacia catechu) is mainly used for extracting Katha and Cutch (decoction obtained after filtration) which are sold in the market.

Acacia bark contains tannins and gallic acid and is a brown, hardened woody substance with a rusty appearance. The bark of the acacia tree is frequently used to maintain dental and oral hygiene. To safeguard gums and teeth, utilize the plant's young twigs. Additionally, it is effective as an external treatment for oral ulcers and can even lessen gingival irritation.

To treat mouth ulcers, katha, or a heartwood decoction, is applied to the tongue and mouth. Additionally, it is used externally as a disinfectant on gums, skin eruptions, boils, and ulcers.

Because of its antibacterial and anti-inflammatory properties, acacia catechu extract might be a useful oral hygiene product. A survey of the literature showed that there are very few in vivo research evaluating the effectiveness of A. catechu extracts as mouthwash in the treatment of gingivitis worldwide. The purpose of the current study was to determine A. catechu bark extract mouthwash compares to 0.2% CHX in terms of plaque and sulcular bleeding levels in patients with gingivitis aged 18 to 45.

A. catechu extract was tested in this study against 0.2% chlorhexidine. A. catechu extract's antibacterial and anti-inflammatory properties make it a potential candidate for use in oral hygiene products. This study was conducted to evaluate the effectiveness of mouthwash containing 20% cinnamon in treating gingivitis and to compare it to mouthwash containing 0.2% chlorhexidine because there aren't many studies on the topic. Both the A. catechu and chlorhexidine mouthwash groups had significantly different clinical levels of dental plaque, bleeding, and gingival index before and after the experimental period.

Table no 1. – Oral formulation of acacia catechu and its outcome

Sr. No	Oral Formulation of Acacia catechu	Outcome	Reference
1.	Oral mucosal patch	Showed effective against mouth ulcer	[24]
2.	Mouthwash	Acacia Mouthwash treating effectively	[25]

CONCLUSION

Acacia Catechu heartwood has been used in traditional system medicine for centuries to treat a variety of illnesses. Studies in science have validated the traditional medical system's assertions.

Dental and oral hygiene routines commonly involve the use of acacia tree bark. It can even lower gingival irritability and is useful as an external therapy for mouth ulcers. Mouth wash, Mouth ulcer patches made from Acacia catechu.

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Conflict of Interest –

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