

Review

Monograph of *Holarrhena antidysenterica* (linn.) Wall

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Abstract

Holarrhena Antidysenterica is a very significant herbal drug in Unani system of medicine and Ayurvedic system of medicine. This meticulous herb was used to treat a variety of infectious diseases especially in *Staphylococcus aureus*, *Entamoeba histolytica* and *Escherichia coli*. It is a large tree of 30 to 40 feet in height grows widely on the mountains. A large number of pharmacological studies have been done on the bark and seed of the tree.

Keywords: *Holarrhena Antidysenterica*, Conessine, amoebic dysentery

Introduction

Botanical Name: *Holarrhena Antidysenterica*

Family Name: Apocynaceae

Common Name: Bitter Oleander, Conessi Bark, Kurchi Bark, Dysentery Rose Bay, Tellicherry Bark

Part Used: Bark, Root, Seeds

History

The Conessi tree is popular for its numerous medicinal properties considered to be most popular valuable medicinal product of India. The seed and bark of tree has been used in British Materia Medica for a long time. The tree forms a part of several indigenous system of medicine, where has been used in the treatment of dysentery and diarrhea. Several Indian tribes have been used the plant in different diseases like anemia, epilepsy and cholera. In Ayurvedic and Unani system of medicine it is used in antihelmintic, diarrhea and skin diseases.



Fig 1. *Holarrhena Antidysenterica* leaves

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Habitat

It throughout the India up to the altitude of 4000 ft. It is especially abundant in the sub Himalayan tract.



Fig 2. *Holarrhena Antidysenterica* bark

Description

It is a large tree of 30 to 40 feet in height. Its flowers color white and fruits of half inch in size. A large to small sized deciduous tree, yielding milky latex. The stem bark is grayish-brown and rough. The stem is white and soft. The leaves are simple, large, arranged opposite to each other, oval shaped, papery, and smooth or hairy. The flowers are white, small and arranged in a cluster which looks like flattened top. The petals are salver shaped and overlap towards right side. The fruits are long follicles, which look like two slender pencils arising from a node. The follicles have white warty spots on the surface. Dried fruits break open releasing numerous flat seeds with brown hairs. The hairs are short lived [1].

Chemical Composition

Around 30 alkaloids have been isolated from the plant, mostly from the bark. These include conessine, kurchine, kurchicine, holarrhimine, conarrhimine, conaine, conessimine, isoconessimine, conimine, holacetin and conkurchin [2].

The bark contains the alkaloids, regholarrhenine-A, -B, -C, -D, -E and -F; pubescine, norholadiene, pubescimine, kurchinin, kurchinine, kurchinidine, holarrifine, holadiene, kurchilidine, kurchamide, kurcholessine, kurchessine, conessine and isoconessimine, and the steroidal compounds kurchinacin and holadyson. The alkaloid conessine is used as a therapeutic drug for the treatment of dysentery and helminthic disorders. Conessine and conimine inhibited the growth of *Shigella sonnei*, *S. flexneri* and *Salmonella enteritidis* strains *in vitro*. In chronic amoebiasis, Bi-iodide compound of total alkaloids, given orally, compare favourably with emetine Bi-iodide. The plant possesses potent immunostimulant property [3].

Steroidal alkaloid from the seeds of *Holarrhena antidysenterica*

A new steroidal alkaloid, named antidysentericine, has been isolated from the seeds of *Holarrhena antidysenterica* and characterized as 3 beta-dimethylaminocon-5-enin-18-ones [4].

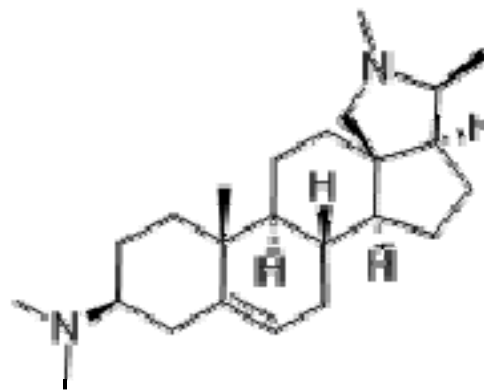


Fig 3: Conessine (3 beta-dimethylaminocon-5-enin-18-ones)

Therapeutic Uses

The bark is used as an astringent, anthelmintic, antidontalgic, stomachic, febrifuge, antidropsical, diuretic, in piles, colic, dyspepsia, chest affections and as a remedy in diseases of the skin and spleen. It is a well known drug for amoebic dysentery and other gastric disorders. It is also

indicated in diarrhoea, indigestion, flatulence and colic [5].

Root and bark is used in amoebic dysentery. Bark is astringent, anthelmintic, amoebicidal, diuretic. Used in colic, dyspepsia, piles, diseases of the skin and spleen. Seed is antibilious. Used for promoting conception, also for toning up vaginal tissues after delivery [3].

Pharmacological Activity

Conessine from the bark killed free living amoebae and also kills entamoeba histolytica in the dysenteric stools of experimentally infected kittens. It is markedly lethal to the flagellate protozoon [6].

α -Glucosidase inhibitory activity of *Mangifera indica* bark

The ethanolic extracts of *Lawsonia inermis* leaves, *Holarrhena antidysenterica* bark, *Swertia chirata* whole plant and *Mangifera indica* bark were tested (in-vitro) for α -glucosidase inhibitory activity. *M. indica* extract was found to be the most potent, with an IC₅₀ value of 314 μ g/ml [7].

Anti-methicillin-resistant *Staphylococcus aureus* (MRSA) activity

Anti-methicillin resistant *Staphylococcus aureus* (MRSA) activity of ethanolic extracts of *Holarrhena antidysenterica* (bark) were detected with inhibition zone size ranged from 11 to 44 mm and minimum inhibitory concentration (MIC) varied from 0.32 to 3.25 mg/mL [8].

Management of diabetes

Aqueous extract of *Holarrhena antidysenterica* plant part has both anti-diabetic and antihyperlipidemic activities [9].

Inhibition of enteropathogenic *Escherichia coli* adhesion

Inhibition of enteropathogenic *Escherichia coli* adhesion on host epithelial cells by *Holarrhena antidysenterica* [10].

Holarrhena antidysenterica in gut motility disorders

The gut stimulant and relaxant activities of *Holarrhena antidysenterica* are mediated possibly through activation of histamine receptors and Ca⁺⁺ channel blockade, respectively and this study provides sound mechanistic background for its usefulness in gut motility disorders such as constipation, colic, and possibly diarrhea [11].

Anti-diabetic Activity

The result of this experiment demonstrated that the extracts of the *Holarrhena antidysenterica* plant part possess a promising anti-diabetic efficacy [12].

Anti-amoebiasis activity

Various fraction of *Holarrhena Antidysenterica* showed promising activity against the experimental amoebiasis in rats and hamsters [14]. The fruit extract showed anti-protozoal effect against human *Entamoeba histolytica* stain STA, *Trypanosoma evansi*, anticancer effect against human epidermoid carcinoma of nasopharynx in tissue culture and hypoglycemic activity in rats [15].

Toxicity

Use of conissne must however be closely supervised as in some cases it can produce neurological disorders like vertigo, insomnia, agitation, anxiety and delirium [13].

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