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Myrica Esculenta and it's Anti-Asthmatic Property with Ayurvedic approach : A Review

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ABSTRACT

Myrica esculenta is a perennial shrub, of myricaceae family. From ancient time *myrica esculanta* reported to be used in traditional system of medicine. Various parts of the tree bark, fruit, flower are used therapetucally including for treatment of anemia, bronchitis, cough, chronic dysentery, fever, liver complaints, nasal catarrh, piles, sores, throat complaints, tumors, ulcers, urinary discharges. This review gives us a bird's eye view on detailed information of this plants and targeted anti-asthmatic property of plant,as per *Ayurvedic* view concern.

Key words: *Myrica Esculenta, Anti-Asthmatic, Katphala.*

INTRODUCTION

From ancient era, plant have been used as an exemplary source of drugs. A significant number of modern pharmaceutical drugs are derived from medicinal plants.[1] *Myrica esculenta* (*Katphala*) is drug of myricaceae family. This family got only one genus i.e. *Myrica* and 45 species. In India only one species occurs. Since ancient time *myrica esculenta* reported to be used in traditional system of medicine. The bark of the *myrica esculenta* is astringent, carminative and antiseptic. A decoction of the bark is considered useful in asthma, diarrhea, fevers, lung infections, chronic bronchitis, dysentery and diuresis. The bark is chewed to relieve toothache and a lotion prepared from it is used for washing putrid sores. Fruit are considered pectoral, sedative, stomachic and carminative. The oil from flower is tonic; useful in ear ache, diarrhea and inflammation, paralysis. This review aims to document the morphology, distribution, antiasthmatic property as per Ayurvedic approach medicinal property of *myrica esculenta*.

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Taxonomy

Kingdom - Plant

Division - Spermatophyta

Sub-division - Angiospermeae

Class - Dicotyledonae

Sub-class - Monochlamydeae (Incompletae or Apetalae)

Series - Unisexuale

Family - Myricaceae

Genus - *Myrica*

Species - *esculenta* Buch – Ham[2]

Synonyms - *Myrica esculenta* Buch. - Ham. (Myricaceae)[3,4]

Morphology of M. *esculenta*

Habitat

A genus of shrubs or trees distributed over temperate and sub-tropical regions of both hemispheres, except Australia.

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Habit - Trees or shrubs, aromatic and glandular.

Leaves - Alternate, stipules none.

Inflorescence - Unisexual, in cylindric bracteate catkin like spikes. The male spikes sometimes fascicled or panicled. The female always solitary, occasionally a few female flowers at the top of the malespikes.

Male flowers

Male flowers often surrounded by two or more bracts; stamens 2 - 16, usually 4; filaments short, free or connate; anthers erect, two celled.

Macroscopic

Drug occurs in pieces of variable length, 1-2.5 cm thick, slightly quilled, fissured longitudinally and transversely, outer surface rough, grey to brownish-grey, inner surface dark brown and smooth; fracture, hard; taste, bitter.

Microscopic

Mature stem bark shows multilayered cork, composed of rectangular, tangentially elongated, thin-walled cells, some filled with red contents; secondary cortex a wide zone, composed of thin-walled, rectangular to polygonal, parenchymatous cells, a number of cells filled with red colouring matter and simple, round to oval starch grainsmeasuring 6-11 µ in dia.; a number of stone cells, in singles or in groups, circular polygonal or oval, thick walled, lignified with simple pits and radiating canals, found scattered throughout secondary cortex; secondary phloem consists of sieve elements, phloem fibers, crystal fibers, stone cells and phloem parenchyma traversed by phloem rays; numerous prismatic crystals of calcium oxalate present in secondary phloem; phloem fibers with blunt or pointed end and highly thick-walled, with very narrow lumen present in groups; stone cells similar to those found in secondary cortex, mostly in singles or in groups of 2-3, sometimes associated with fiber groups in phloem parenchyma; in isolated preparation and tangential sections crystal fibers show more than twenty chambers having single prismatic crystals of calcium oxalate in each chamber; a number of phloem parenchyma cells containing red colouring matter; phloem rays 1-4 seriate, containing red colouring matter. Powder - Rusty red; shows a number of stone cells, phloem fibers, crystal fibers and prismatic crystals of calcium oxalate and simple, round to oval, starch grains measuring 6-dia.[5]

There exist several vernacular names such as *Kayphal* in Hindi,*Vdulbark, Ajooree* in Assames, *Katphal* or *Kayphal* or *Kaychhal* in Bengali. *Kaypha* in Gujarati. *Marut* in Malayalam, *Marudam* or *Marudampatai* in Tamil, Bay Berry in English.

Table 1: Summary of phytochemistry of *Myrica esculenta* Buch.-Ham. (Myricaceae).

Plant part	Phytoconstituents
Fruit [6]	Reducing sugars, tannins, vitamin C, Gallic acid, catechin, chlorogenic acid, p-coumaric acid
Leaves[7]	Two flavonoid glycosides - 1) flavone4'-hydroxy-3',5,5'&;-trimethoxy-7-O-β-I-D-glucopyranosy)(1→4)-α-L-rhamnopyranoside2) flavone 3',4'-dihydroxy-6-methoxy-7-O-α-L-rhamnopyranoside with three known compounds β-sitosterol, β-sitosterol-β-D-glucopyranoside and quercetin have been isolated from the leaves of *Myrica esculenta*.
Bark [8]	Gallic acid, myricanol, myricanone,epigallocatechin 3-O-gallate, two prodelphinidin dimmers[epigallocatechin-(4β→8)-epigallocatechin 3-O-gallate and 3- Ogalloylepigallocatechin - (4β→8) - epigallocatechin 3-O-gallate], hydrolysable tannin castalagin. Prodelphinidin units with 2, 3-cisconfiguration having average of 5000 mean molecular weight (Mr)were found in the higher mean molecular weight (Mr) fractions. The terminal unit of the polymer has epigallocatechin 3-O-gallate, the extender units were also known to have galloyl group at C-327.Gallic acid, lupeol, oleanolic acid andstigmasterol were evaluated by HPTLC in bark extract.

Medicinal Use

In traditional Indian medicine Ayurveda; various parts of the tree are used therapetucally including for treatment of anemia, bronchitis, cough, chronic dysentery, fever, liver complaints, nasal catarrh, piles, sores, throat complaints, tumors, ulcers, urinary discharges. Oil extracted from the flowers acts as a

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tonic, and it is useful in earache, headache and diarrhea. Fruit constituents exhibit healing properties in caseof different ulcers, it also finds application in retention of placenta and bone fracture. Due to the high medicinal values, the leaves and bark of this medicinally important tree are imported and exported. Fruits are utilized in food industries in Himalayas in different forms like syrups, jam, and squash.[9] Even the yellow color extracted from the bark is used as a Medicinal colorant.[10] Traditionally, it was found that the bark of the tree has been used as a fish poison.[11]

Anti-asthmatic property an Ayurvedic approach

Targeted anti-asthmatic property of *Myrica Esculenta*. *Myrica esculenta* Buch.Ham. (Syn. *Myrica* sapida, Family Myricaceae, commonly known as *Kaiphal*) is known traditionally in Ayurveda for the treatment of asthma (bronchitis). *Myrica esculenta (Katphal)* is pungent *(katu),* bitter *(tikt),* astringent *(kashay*) in taste. It contain property like light in weight *(laghu),* quick or fast *(tikshna*) and has the property like hot potency *(ushna virya).* After initial digestion, it become pungent *(katu vipaka*). Ayurveda describe that *kapha* is responsible for the obstruction in respiratory system in bronchial asthma. Charaka explain the property of *Myrica esculanta* as, *vatatkrit-kaphhara*. It means it increases vata and decreases *kapha. Katphala,* as explained, is having *Katu Rasa* (*pungent rasa), Ushna Virya* (Hot potency*), Katu Vipak* and alleviate *Kapha*, As well as because of *Katu Rasa*, it might be aggravating *Vayu*. Aggravation of *Vayu* might be augmenting the expulsion of *Kapha* from the body, which is main responsible factor to manifest *Marga Avarodh* (Obstruction) and in consequence, aggravation of *Vayu* might be responsible for *Sankochana* (Contraction-spasm) of *Pranavaha Srotas*. As *Kapha* is expelled from the body, alleviation of *Vayu* might be there. Thus the concept, described by *Charaka* and commented by *Chakrapani* is established i.e. *Vatakrit-Kaphahara (Increase Vata - Decrease Kapha)* drug such as *Katphala* might be responsible for the alleviation of *Shvasakashtata* (Breathlessness), *Kasa* (Cough) and *Kaphashtivan* (Expectoration).[12,13]

Conclusion

In recent era, phytochemical and pharmacological studies are conducted on various plants. This literature supports the possible of *Myrica esculanta* as a medicinal plant. *Myrica esculenta* mainly used as a herbal medicine. Bark of the plant used as antiseptic, anti-asthematic, analgesic. Fruit are sedative and carminative. In future, there is remarkable scope in research on this plant as per asthma treatment concern with Ayurvedic approach. In future, there is remarkable scope in research on this plant for the development of safe drug. It will help to reduce steroid complication, which is used tremendously in recent treatment protocol of modern medicine. It will give the further research a clear view about the plants various important therapeutic activity concern.

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