



## MEDICINAL PROPERTIES OF MUSTAKA IN AYURVEDA: A COMPREHENSIVE REVIEW

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## ABSTRACT

*Ayurveda* medicine exists on the planet for the benefit of humanity. *Ayurveda's* value is in its ability to maintain individual health and treat a patient's condition. Following the daily routine, seasonal regimen, codes for healthy behaviour, ethical regimen, and so on, one can obtain good health. *Plants are the foundation of Ayurveda, an ancient Indian system of holistic treatment. Mustaka (Cyperus rotundus Linn)* is described as 'Kyambu' in the Vedic literature, its synonyms like 'Gundra & Gangeyam' denotes the *hydrophytic* nature of this plant. *Mustaka can be used to treat a variety of ailments. It is a significant herbal medication that may be utilised in a variety of ways to treat a variety of illnesses, mostly in the Kapha-Pitta dosha. Acharya Charaka* has emphasised that each substance on the earth is useful in combating illness when applied with planning and for a specific purpose.

**Keywords:** *Ayurveda, Mustaka, Kyambu, Kapha, Pitta.*

## INTRODUCTION

*Musta* is mentioned in the Vedas and other Vedic writings. The *Atharva parisista grantha*, *Varaha srotasutra*, and *Hiranyakesi srota sutra* all mention it.<sup>1</sup> In the *Atharvaveda Parishishta*, *Mustak* is mentioned among *Usheer*, *Tagara*, *Kushtha*, and *Sarshapa*. Here it has been told that God is also hypnotised by fumigation of these drugs in powdered form.<sup>2</sup> *Musta* is also known as *Gangeya*, which means it is thought to be the image of *Ganga*, *Gundra*, which means it grows near water, *Sugandhi*, which means it has a pleasant odour, *Vaarid*, which means it grows near water, and *Hima*, which means it reduces the effects of burning and heating.<sup>3</sup> *Musta* is used in many simple and compound drug preparations to treat various ailments since time immemorial. *Musta* is having a variety of dosage forms used internally as well as externally. *Musta* can be applied externally in the form of *Taila* and *Ghrita* (medicated vegetable oil and animal fat), *Lepa* (Topical application), *Pradeha* (Thick or Viscid ointment), and *Upanaha* (Thick or Viscid ointment), and *Upanaha* (Poultice), *Pragharsha* (Rubbing), *Parisheka* (Drug Sprinkling/Showering), and *Dhupana* (Fumigation) formulations are available. *Musta* can also be used internally in various forms such as *Kashaya* (Decoction), *Churna* (Powder), *Swarasa* (fresh juice), *Guti/Vati* (Pills), *Varti* (Suppository), *Kalka* (Paste form), *Lavana* (Salt preparation), *Kshara* (Alkali form) and administered in various *Karmas* such as *Vasti* (Enema), *Nasya* ((Nasal drop), *Gandusha* (Gargling), *Anjana* (Collyrium). It can be used as a food item in the form of *Pramathya* (dough prepared by boiling medicinal substances) and *Paniya*.<sup>4</sup> *Mustak* and *Nagarmustka* are important drugs of *Ayurveda*. *Mustaka* and *Nagarmustaka* have a wide therapeutic range because they are employed in a variety of traditional formulations for the treatment of various ailments. *Mustaka* (*Cyperus rotundus* Linn.) is an erect and perennial glabrous herb with a woody subterranean stoloniferous rhizome which is clothed with fibrous remains of leaf sheaths. Stems are nodose at the base, 3—gonous and 10-60 cm high.<sup>5</sup>

## TAXONOMICAL CLASSIFICATION OF *MUSTAKA*<sup>6</sup>

### Taxonomic Classification of *Mustak*

Kingdom - Plantae

Division - Phanerogams

Subdivision - Angiosperms

Class - Monocotyledonae

Series - Glumaceae

Order - Glumiflorae

Family - Cyperaceae

Sub Family - Scirpoideae

Genus - *Cyperus*

Species - *Cyperus rotundus*

Botanical Name - *Cyperus rotundus* (Linn.)

### VERNACULAR NAMES<sup>7</sup>

English - Nut Grass/Purple nutsedge, Hindi - *Nagarmotha* & *Motha*, Bengali – *Mutha*, Gujarati - *Moth*, *Nagar Moth*, Tamil - *Korai*, *Muthakach*, Telugu - *Tungmuste*, *Tungmustalu*, Arabic - *Sohed Kufi*, Rajasthan - *Motha*

### BOTANICAL DESCRIPTION<sup>8</sup>

**Habit & Habitat-** Perennial herb 10-75 cm height, perennating using a creeping sympodial rhizome, growing in damp, boggy or marshy habitat.

**Stem-** At base nodosely thickened and suddenly constricted into a wiry rhizome, subsolitary, triquetrous at top.

**Leaves-** Long, often overtopping stem.

**Flowers-** In compound umbel, spikes loosely spicate of 3-8 spikelets.

**Seed-** Trigonous nuts.

### FLOWERING AND FRUITING PERIOD-

July- August and November-December

### DISTRIBUTION<sup>9</sup>

It has a worldwide range but is mostly found in the Northern and Southern hemisphere's Sub-arctic and temperate zones. It can be found all over India, up to an elevation of 1800 metres, from Kashmir to Shimla, Garhwal and Khasia hills in practically all states, and ascending the Central Tablelands ranges from Mount Abu and Pune to the Nilgiri highlands.

## COLLECTION PERIOD-

September- October

## CHEMICAL CONSTITUENTS<sup>10</sup>-

Cyperen 1 & 2, eplerenone, isopatchoulenone, cyperotundone, cyperol, cyperolone, isocyperol, isoko-

busone, kobusone, mustakone, patchulene, sugenol etc.

## SUBSTITUTES & ADULTRANTS<sup>11</sup>

*Cyperus scariosus* (R. Br.) and *Cyperus arundinaceum* (Baker) are used as substitutes to *Cyperus rotundus*.

**Table 1:** CATEGORIZATION OF MUSTAKA IN AYURVEDA CLASSICS:

S. No.	Classical texts	Gana and Varga
1.	<i>Charak Samhita</i>	<i>Lekhaniya</i> , <sup>12</sup> <i>Trishnanigrahana</i> , <sup>13</sup> <i>Kandughna</i> , <sup>14</sup> <i>Stanyasodhana</i> <sup>15</sup>
2.	<i>Sushruta Samhita</i>	<i>Mustadi</i> , <sup>16</sup> <i>Vachadi Gana</i> <sup>17</sup>
3.	<i>Astang Sangraha</i>	<i>Mustadi</i> , <sup>18</sup> <i>Vachadi Gana</i> <sup>19</sup>
4.	<i>Dhanvantri Nighantu</i>	<i>Guduchaiyadi Varga</i> <sup>20</sup>
5.	<i>Madanpal Nighantu</i>	<i>Abhyadi Varga</i> <sup>21</sup>
6.	<i>Kaidev Nighantu</i>	<i>Aushadhi Varga</i> <sup>22</sup>
7.	<i>Bhavaparkasha Nighantu</i>	<i>Karpuradi Varga</i> <sup>23</sup>
8.	<i>Priya Nighantu</i>	<i>Satpushpaadi Varga</i> <sup>24</sup>

## AYURVEDIC PROPERTIES

### Pharmacodynamics (*Rasa Panchaka*)<sup>25</sup>

- *Rasa* - Tikta, Katu, Kashaya
- *Guna* - Laghu, Ruksha
- *Veerya* – Sheeta
- *Vipaka* – Katu

**Doshakarma**, Kapha-Pitta Shamak

**Part used**, Rhizome

**Dose:** *Churna* (Powder) 3-6 gm, *Kwatha* (Decoction 50-100 ml)

### TYPES OF MUSTAK IN CLASSICAL TEXTS

*Brihatrayi*, has only mentioned the *Mustaka* and there is no description of *Nagarmustaka*. Description of *Nagarmustaka* is mainly found in different *nighantu*. *Nighantu* created so much confusion regarding the identity of *Mustaka* and *Nagarmustaka*. Some considered both as synonyms and some described both as varieties.

- *Dhanwantari nighantu*<sup>26</sup>, *Bhavprakash nighantu*,<sup>27</sup> *Raj nighantu*<sup>28</sup> and *Shaligram nighantu*<sup>29</sup> considered *Mustaka* and *Nagarmustaka* as varieties.
- *Sodhala*<sup>30</sup> and *Madanpal nighantu*<sup>31</sup> considered as synonyms.

- *Priya nighantu*<sup>32</sup> had only mentioned the *Mustaka* and there is no description about *Nagarmustaka* in this *nighantu*.

Botanical sources of Three types of Mustak are described as under<sup>33</sup>-

1. *Mustak (Bhadra Mustak)* - *Cyperus rotundus* Linn. (Nut Grass)
2. *Nagar Mustak* – *Cyperus scariosus* Linn.
3. *Jal Mustak* – *Cyperus esculentus*

### CLASSICAL REFERENCES<sup>34</sup>

#### Fever-

- Water boiled with *Musta*, *parpata*, *usira*, *chandana*, *balak* and *sunthi* and cooled should be given to pacify thirst and fever.
- *Parpata* mixed with *musta* or *sunthi* or *duralabha* should be given in form of decoction or cold infusion.
- *Musta* and *parpata* are excellent remedies for fever.

#### Diarrhoea-

- Decoction of *musta* alone should be taken mixed with honey.
- *Musta* rhizomes (twenty in number) should be boiled in milk with three times more water reduced to milk. Its intake checks mucus and pain.

- The patient should be given to drink water processed with *vacha* and *prativisha* or *musta* and *parpata* or *haridra* and *sunthi*.
- *Mustaka* is crushed and boiled in equal milk reduced to one-fourth. When cooled it is mixed with honey and taken. It checks diarrhoea with mucus and blood.

**Halimaka-** *Lauha-bhasma* mixed with *musta* powder should be taken with a decoction of *khadira* in the case of *halimaka*.

**Vatarakta-**

- In *vatarakta* predominant in *kapha*, decoction of *musta*, *draksha* and *haridra* mixed with honey should be taken. Similarly, that of *triphala* or *Guduchi* is useful.
- Decoction of *musta*, *amalaka* and *haridra* should be taken with honey, it alleviates *vatarakta* associated with *kapha*.

**Alcoholic-** Water boiled with *musta* digest the pathos. It should be used in all types of alcoholism.

**Loose teeth-** *Mustaka* is the main drug in *mustadi vati* useful in the disease.

**Cough-** *Sarkaradi* formulation should be given mixed with *musta* and *marica* in cough caused by *pitta* associated with *kapha*.

**Vomiting-** To control vomiting caused by *kapha*, powder of sour *badara* mixed with *jambu* seeds; *kar-katasringi*, mixed with *musta* or *duralabha* and mixed with honey should be taken.

**Thirst-** Thirst as a complication of *visuchika*, water processed with *bhadramusta* should be given.

**Accidental wound-** One root of *Musta* pounded finely with cow ghee is applied as a paste on the wound.

**Eye disease-** *Bhadramusta* rubbed with goat's urine is applied as collyrium. It destroys chronic corneal opacity and redness.

**PHARMACOLOGICAL ACTIONS**

The tubers are acrid, bitter, astringent, cooling, anti-inflammatory, revulsive, galactagogue, depurative, intellect promoting, nervine tonic, digestive, carminative, stomachic, anthelmintic, diuretic, expectorant, febrifuge, antiperiodic and tonic. They are useful in hyperdipsia, flatulence, colic, vomiting, intestinal

worms, diarrhoea, and dysentery, vomiting inflammations, fevers, intermittent and malarial fever.

**PROPAGATION AND CULTIVATION<sup>35</sup>**

It is a perennial weed, thrives on all kinds of soil under varying climatic conditions. Regeneration is mainly through underground rhizomes. Greenhouse observations show that a new tuber is formed in about 3 weeks after an isolated tuber is planted and 146 tubers and basal bulbs are produced from a single tuber in 3 1/2 months.

**PHARMACOLOGICAL STUDIES**

**Anti-Inflammatory activity-**The alcoholic extract of *Mustak* Possessed anti-inflammatory activity against carrageenan induced oedema and also found effective against formaldehyde induced arthritis in albino rats.<sup>36</sup>

**Anti-Pyretic activity-**The alcoholic extract of *Mustak* showed highly significant antipyretic activity against pyrexia produced in albino rats by subcutaneous injection of a suspension of dried Brewer's yeast in gum acacia in normal saline.<sup>37</sup>

**Analgesic activity-** The petroleum ether extract and essential oil of *C.rotundus* are reported to possess analgesic activity.<sup>38</sup>

**Tranquillizing activity-** The ethanolic extract of *C. rotundus* reduced the spontaneous motor activity, potentiated the pentobarbital narcosis and deranged the motor coordination abolished the conditioned avoidance response in the animal.<sup>39</sup>

**Anti-convulsion activity-** Pre-treatment with ethanolic extract of *C.rotundus* caused significant protection against strychnine and leptazol-induced convulsions in mice.<sup>40</sup>

**Anti-emetic activity-** The ethanolic extract of *C. rotundus* in the dose of  $128.1 \pm 11.6$  mg/kg was found to protect 50% of dogs against apomorphine-induced vomiting.<sup>41</sup>

**Inhibition of gastric motility activity-** Decoctions of Rhizome *Cyperus rotundus* were given orally to rats for 30 min. The findings in this study suggest that the protective action of *C. rotundus* Linn. is related to its inhibition of gastric motility and endogenous prostaglandins may play an important role. Zhu M, et al 1997

**Anti-diarrhoeal Activity-** The methanol extract of *Cyperus rotundus* rhizome, given orally at the doses of 250 and 500 mg/kg showed significant anti-diarrhoeal activity in castor oil-induced diarrhoea in mice. (Uddin S.J. et al 2006)

## CONCLUSION

*Musta's* botanical source has been identified as *Cyperus rotundus* Linn. In *Charak Samhita agreya dravya sangraha*, Acharya Charak said that *Musta* is best among those *Sangrahik*, appetizers and digestives. According to *Ashtang Hriday*, *Musta* is best for *Jwara* because of its *Tikta*, *Katu rasa*, it has *Amapachak* properties, making it useful in *Jwara* and *Amatishara*. In *Charak samhita Mustak* is classified in *Lekhaneeya mahakashaya* by virtue it has medoghna activity. Due to *Tikta* and *Katu rasa* it gets rid of altered *Jatharagni* and *Medodhatvagni*. Due to *Laghu*, *Ruksha guna* alleviates *Meda* and *Kapha shoshana* action. Because of its *Kashaya rasa*, it's utilised to heal loose teeth. *Musta* is also beneficial in *Stanya-vikriti*, *Kasa*, *Halimaka*, *Trishna*, *Vatarakta*, *Madatyaya* and other practises. It is also an especially useful plant from a modern standpoint because its variation *Cyperus esculentus* Linn includes various nutrients such as energy (starch, fat, sugar, and protein), dietary minerals, palmitic acid, stearic acid, oleic acid, linoleic acid, and fatty acids.

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