

PHARMACOLOGICAL ACTIONS OF AN AGARU (*AQUILARIA AGALLOCHA* ROXB)- A  
REVIEW

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## ABSTRACT

The word *Aguru* means the one which is not heavy. It is commonly known as Eagle wood, Aloe wood, Agar wood. It is one of the aromatic plant used since centuries from all over the world. It belongs to family called Thymelaeaceae. The bark exhibits a pleasant odour hence used for fumigation. It is found in the eastern parts of India like *Arunachala Pradesh, Assam, Manipur, Nagaland, Myanmar, Sumatra, Malaysia*. As per Ayurvedic classics it of five types according to its colour viz; *Krishnagaru*- Black in colour- "*Lohavat Vaari Majjati*"- Which looks like iron oxide and sinks in water. *Kasthagaru*- Yellow in colour. *Dahagaru*- Contain excess oil. *Mangalyagaru*- Best and superior variety and it smells like Jasmine. *Kaleyaka Agaruru*- Yellow in colour. As the drug is on high demand of its aromatic property it is adulterated with other species of *Aquilaria crassana, Aquilaria malaccensis, and Aquilaria sinensis*. The present work dealt with complete review on the *Aquilaria agallocha* Roxb with Ayurvedic and modern aspects.

## INTRODUCTION

*Agaru* is one of the *Gandha Dravya* (Aromatic drug / fragrant wood) in used since Vedic time. The word *Aguru* means which is not heavy ie light in weight. Another meaning of *Agaru* is "*Age Rauti*" the one which grows on the hill station or terrestrial region. It is referred as the oil of *Agaru* was welcome offering in ancient Indian traditions. After the crucifixion of Jesus Christ he was anointed with myrrh and *Agaru* oil. In all religious ceremonies *Agaru* oil is used as fragrant product. The *Agaru* wood beads are made to keep one self safe from external evil spirits and bringing good luck. There are total 17 species in the genus of *Aquilaria* and 8 are known to produce *Agaru* oil. It is obtained, the bark is gets infected with a fungus called *Phaeoacremonium parasitica*, which turns the bark in dark brown or black. This leads to special fragrance due to presence of oleoresin. This infected part yield *Agaru* wood oil.

## DISCUSSION

The *Agaru* has various synonyms,<sup>[1]</sup> viz; *Pravara, Loha, Rajarha, Yogaja, Vamshika, Krimija, Krimijagtha, Anaryaka, Krishnagaru, Shrestha Vriksha, Jongaka, Vishwarupa, Malina, Sheershaka, Kaley, Laghu, Shringara, Agaruru, Sheersha*. It grows in the eastern parts of *India, Arunachala Pradesh, Assam, Tripura, Bhutan, Meghalaya, Manipur, Sikkim, Myanmar, Malaysia,*

*Phillippines, Thailanda, Singapore, Sri Lanka, Tibet, Europe, Africa.*

*Swaroop*-(Morphology)<sup>[2]</sup>

The *Agaru* is big evergreen tree growing up to 60-80ft with thick stem of 3 to 4 ft in diameter. The bark is papery thin, leaves are thin like leather shiny, alternate 0.5 to 10 cms by 2-5cms, oblong, lanceolate and glabrous with slender nerves. Venation is parallel and petiole is 0.3-0.5 cm long. Flowers are white in colour, bisexual, pedicellate in axillary and terminal umbellate cymes, shortly peduncleed, preianth, campanulate, lobete 5 spreading and densely pilose. Pedicels is 0.5-0.8cm long, slender. Perianth remains persistent in fruit and 1.3-1.5 cm long, silky densely villous, connate at the base. Stamens are 10, anthers 10 with subsessile disc. Ovary is subsessile, villous and two celled. Stigma is large, subsessile. Fruit is capsular, 3-5 cms long, obovoid, thin, pericarp coriaceous and densely tomentose. Seeds are ovoid with a long tail. The bark gets infected with a fungus named *Phaeoacremonium parasitica* which turns the bark into light brown to dark brown or black. This leads special fragrance due to presence of oleoresin (Sesquiterpenes and epoxides). The infected part of the tree yields *Agaru* wood oil.

**Rasa Panchaka**<sup>[3]</sup>**Rasa-** Katu, Tikta Rasas**Guna-** Laghu, Ruksha, Teekshna Gunas**Virya-** Ushna Virya**Vipaka-**Katu Vipaka**Prabhava-** Shwasaghna**Gana-** According to **Acharya Charak**<sup>[4]</sup>- Shwasahara Gana, Sheeta Prashamana Gana Shiro Virechana Gana, Tikta SkandhaAccording to **Acharya Sushruta**<sup>[5]</sup>- Salasaradi Gana, Eladi Gana, Shleshma Sanshamana GanaAccording to **Acharya Vagbhata**<sup>[6]</sup>- Eladi GanaAccording to **Dhanwantari Nighantu**<sup>[7]</sup>- Chandanadi VargaAccording to **Madanapala Nighantu**<sup>[8]</sup>- Karpuradi VargaAccording to **Kaiyadeva Nighantu**<sup>[9]</sup>- Oshadhi VargaAccording to **Bhavapraksha Nighantu**<sup>[10]</sup>- Karpuradi Varga**Bheda-** (Varieties) According to **Raja Nighantu**<sup>[11]</sup> 5 types;

1. **Krishnagaru-** Black in colour- "Lohavat Vaari Majjati"- Which looks like iron oxide and sinks in water
2. **Kasthagaru-** Yellow in colour
3. **Dahagaru-** Contain excess oil
4. **Mangalyagaru-** Best and superior variety and it smells like Jasmine
5. **Kaleyaka Agaruru-** Yellow in colour

According to **Acharya Kautillaya**<sup>[12]</sup> 3 types

1. **Kala Agaruru**
2. **Kalachitra Agaruru**
3. **Mandalachitra Agaruru**

According to **Unani system of medicine** 3 types

1. **Garki-** Sinks in water- Best variety
2. **Nimagarki-** Partially sinks in water
3. **Samalah-** Floats on water

**Good variety of Agaruru-** The good variety of Agaruru is black in colour, heavy, sinks in water. It should burn easily.**Chemical Constituents-** Agaruru heartwood is rich in essential oil, resins, alkaloids, saponins, steroids, terpenoids, tannins, flavonoids(Aquisiflavoside, Aquilarisin, Aquilarisin, Aquilarixanthone), Phenolic compounds<sup>[13]</sup> (Setapathy et al 2009). Agaruru wood is predominantly contains 2-(2-phenylethyl)-4H-Chromen-4-one derivatives and sesquiterpenes. Chromone derivatives include 7, 8-dimethoxy-2-[2-(3'-acetoxyphenyl)ethyl]chromones, 6-methoxy-2-(phenylethyl) chromones, aquilarone A-1, Aquiseninone A-D, tetrahydrochromone A-M, and quinone A-D. Sesquiterpenes include agarol, aquilochin, norketogarfuran, agarspirol, 10-epi-g-eudesmol, jinkoeremol, jinkohol, kusunol, dihydrokaranone, oxoagarspirol, qinanol A-F, aquilaeabietic acid A-K, aquilarin B, aquilacallane A-B, aquimavitalin, abietane ester, gmelofurn apigenin and 4',7 dimethyl ether<sup>[14]</sup> (Wang et al 2018); Agaruru oil contains selinene, dihydroselinene, agarol, b-agarofuran, vetispira-2(11), varenianol, dihydrokaranone and tetradecanoic acid (Nag et al 1992, 1995).**Identity, Purity and strength- According to The Pharmacopoeia Of India 2004**<sup>[15]</sup>

1. **Foreign matter-** not more than 1%
2. **Total ash-** Not more than 13%
3. **Acid-insoluble ash-** Notmore than 0.5%
4. **Alcohol -soluble extractive-** Not less than 1%
5. **Water-soluble extractive-** Not less than 2%

**Karma and Prayoga of Agaruru- (Pharmacological Actions)**<sup>[16]</sup>**Doshakarma-** The Agaruru is Kapha-Vata Shamak used in Kapha-Vataja Rogas.**Bahya Karma-External Application-** Agaruru Lepa is Uttejaka, Sheeta Prashamana, Durgandhahar, Kusthaghna, Shothahara, Vedanasthapana, used in Shaitya, Dusthavrina, Charmaroga, Sthotha and Vedana.**Abhyantara Karma- Internal administration-** It is Nadi Uttejaka, and Vatahara, used in Vatavyadhis.**Pachana Sansthana-** Agaruru is Mukhadurgandha Nashana, Deepana, Pachana, Anulomana, used in Mukhadurgandha, Agnimandya, Amadosha, Kosthagata Vata.**Raktavaha Snasthana-** The Agaruru is Hridaya Uttejaka and Raktashodhaka, used in Hridaya Daurbalya and Rakta Vikaras.**Shwasana Sansthana**<sup>[17,18]</sup> The Agaruru powder is mixed with honey alleviates Shwasa (Dyspnoea), and Kasa(Cough). Agaruru is Kaphaghna and Shwasahara, used in Kapha Vikaras, Kasa, Shwasa, Hikka.**Prajanana Sansthana**<sup>[19]</sup> Regular intake of Agaruru Powder with milk gives Rasaya effecct. Agaruru is Vajikara, used as aphrodisiac.**Mutravaha Sansthana-** Agaruru gives stability to the ureter therefore used in Shyayamutarata, Hasthimeha. In the Lavana Meha (A type of urinary disorders including diabetes)<sup>[20]</sup> the decoction of Agaruru and Patha gives relief from Lavanameha.**Twacha-** It is Twagdoshaha, used in Charmarogas.**Dadru, Kustha**(Skin diseases)<sup>[21]</sup>. External application of oil prepared from Agaruru Twak and Shinshipa alleviate Vrina (Chronic wounds and ulcers), Kustha(Dadru, Kitibha).**Tapakrama-** Agaruru is Sheeta Prashamana therefore indicated in Sheeta Jwara.

**Satmikarana-** *Agaru* is *Balya* and *Rasayana*, indicated in *Daurbalya*.

**Vishishtha Yoga/Formulations-** *Agarvadi Taila*, *Agarvadi Choorna*, *Chandana Agaru Kwatha*, *Anu Taila*, *Madhukasava*, *Chandanadi Taila*, *Shwasahara Kashaya Choorna*, *Guduchyadi Taila*, *Khadiradi Gutika*.

**Substitutes and Adulteration**<sup>[22]</sup>- The powder is most susceptible agarwood for adulteration where it is mixed with healthy uninfected *aqularia* wood. *Agaru* is substituted with other species of *Aquillaria crassana*, *Aquilaria malaccensis*, and *Aquilaria sinensis*, *Symplocos recemosa* and *Mandragora officinalum*.<sup>[23]</sup>

**Amayika Prayoga of Agaru Kanda Sara and Agaru Taila- (Therapeutic applications)**<sup>[24]</sup>

- *Agaru* is *Laghu* (Light), *Ruksha*(Dry), *Teekshna* (Penetrating) properties. It is *Katu*, *Tikta Rasa* (Pungent and Bitter in tastes), *Ushna Virya*(Hot in potency), *Katu Vipaka* (Pungent in post digestive effect).
- It is *Kapha-Vata Shamak a*(Subsides *Kapha* and *Vata Doshas*).
- *Agaru* paste is applied in *Shaitya* (Stiffness), *Dustha Vrinda*(Chronic wound), *Charma Rogas*(Skin diseases), *Shotha* (Edema), *Sandhivata*(Osteo arthritis), *Amavata* (Rheumatoid arthritis).
- It alleviates *Mukha Durgandhya* (Foul smell from the mouth), *Agnimandya* (Loss of appetite), *Ama Dosha* (Rheumatic conditions), *Kosthagata Vata* (Flatulence, distention of the abdomen due to *Vata* accumulation).
- The *Agaru Taila* 2-4 drops is administered with *Nagavalli*(Betel leaves) in patients suffering from *Kasa*(Cough), *Shwasa*(Dyspnoea), *Hikka*(Hiccough). Drops are administered in *Kaphaja Rogas*(Sinusitis).
- *Agaru Choorna* is given in *Sheeta Jwara*, *Shayamutra*, *Hassthimeha*, *Krimi Roga* (Worms) and in generalized weakness.
- *Agaru Taila* alleviates *Karna- Akshi Rogas* (Diseases of ear and eyes).
- *Agaru* might protect the liver against damage caused by free radicals due to its antioxidant property and can reduce inflammation in the liver due to its anti inflammatory property
- *Agaru* oil along with coconut oil can also be applied on the skin to manage skin conditions like eczema due to its healing property.<sup>[25]</sup>

## CONCLUSION

The *Agaru* (*Aquilaria agallocha* Roxb) is an aromatic plant belongs to family called Thymelaeaceae. The bark exhibits a pleasant odour hence used for fumigation. It is found in the eastern parts of India like *Arunachala Pradesh*, *Assam*, *Manipur*, *Nagaland*, *Myanmar*, *Sumatra*, *Malaysia*. As per *Ayurvedic* classics it of five types according to its colour viz; *Krishnagaru-* Black in colour, which looks like iron oxide and sinks in water. *Kasthagaru-* Yellow in colour. *Dahagaru-* Contain

excess oil. *Mangalyagaru-* Best and superior variety and it smells like Jasmine. *Kaleyaka Agaru-* Yellow in colour. As the drug is on high demand of its aromatic property it is adulterated with other species of *Aquillaria crassana*, *Aquilaria malaccensis*, and *Aquilaria sinensis*. In all religious ceremonies *Agaru* oil is used as fragrant product. Here an attempt is made to highlight the detail description of *Agaru* with *Ayurvedic* and modern aspects. Further scope of study is to evaluate its *Shwasaghna* (Broncho dilator, Mucolytic, Anti tussive activity) property in the form of fumigation.

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