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Review Article

Medicinal benefits and scientific justification of *Commiphora mukul* (*Muqil*): A review

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Abstract

Commiphora mukul (*Muqil* or *Guggul*), oleo-gum, has been in use for thousands of years as a medicine in Unani and Ayurvedic medicinal systems. It was primarily used for swellings, inflammation, piles, arthritis and urinary disorders. Among its various types *Muqil-i-Arzaq*, a gum, having reddish hue is considered to be the best form of *Muqil* for medicinal purposes. It has been revealed to inhibit the nuclear factor-kb, a regulator of inflammatory response, and act as a potent antagonist to the receptors of androgens, mineralocorticoids, and glucocorticoids. *Muqil* is a versatile herb with diverse medicinal benefits which demand scientific validation. A coherent review of properties, medicinal benefits, traditional uses and scientific studies of *Muqil*, along with the overall processes involved from collection to consumption is judiciously described in this paper. The aim of this review is to provide a base for multiple research works, validating *Commiphora mukul* in different chronic ailments.

Keywords: *Commiphora mukul*, Inflammation, *Muqil*, Nuclear factor-KB, Unani

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Introduction

Commiphora mukul (*Muqil* in Arab) is oleo gum of a small tree, which mostly grows in Arab countries. The plant is commercially cultivated in India and Pakistan. It is widely used as medicine for different diseases in Unani and Ayurvedic system of medicines. It is of many types, *Muqil-i-Arzaq*, *Muqilul yahūd*, *Muqil-i-Saqalbi* and *Muqil-i-Makki*. Except the last one which is a fruit, all other types are gum (*Gond*). Among all these types *Muqil-i-Arzaq*, having reddish hue, is considered to be the best form of *Muqil*. It dissolves in water easily and its life span is about 20 years.¹ Because of its over harvesting in India, world conservation union has kept it in red list of threatened species.² In Greco-Arab (Unani) medicinal system muqil is one of the versatile medicinal herb having wide range of properties. Some of which have been scientifically evaluated, yet much of them are still under curtains.

Taxonomical classification and nomenclature^{3,4,5}

Kingdom: Plantae

Order: Spindales

Family: Burseraceae

Genus: *Commiphora*

Botanical name: *Commiphora mukul*

Synonym: *Commiphora wightii*, *Balsamodendron mukul*

Vernacular names^{1,3,4,5}

English: Indian bdellium, Gum Guggul

Arabic: Muqil, Qafr

Persian: Bu-i-jahudān

Greek: Madiqūn, Aflatīn, Fadīlūn

Roman: Bazaliūn

Hindi: Guggul

Sanskrit: Devadhupa, Kaushika

Bengali: Gugal, Gugu

Gujarati: Gugali, Gugar

Tamil: Erumaikan, Kungiliyam

General description

Macroscopic description

Muqil tree grows up to 4 m tall, densely branched, having simple or trifoliate leaves, with serrated margins. The plant has separate male and female flowers, so that it reproduces

sexually. The colour of flowers vary from pink to red, stamens are alternatively long and short, with ovoid ovary. Fruit of the plant is small, rounded and red in colour when ripe. Gummy resin obtained from the stem of this plant is



Image 1. Muqil tree

used as a traditional medicine for centuries. *Veds* have mentioned its five types, all of which are bitter in taste with a balsamic odour.^{3,6}



Image 2. Muqil oleo-gum

Microscopic description

Leaflets are mesomorphic, with prominent midrib. This midrib has two types of vascular bundles, medial one is larger and adaxial bundle is smaller. Lamina has single layer of epidermal cells, while as mesophyll is differentiated into single layer of palisade cells and aerenchymatous parenchyma cells. Gum-resin contains essential oils, steroids, alcohol and aliphatic triols.^{6,7}

Habitat

Italy, Yemen, Oman, India.¹ In India it is found in Rajasthan, Madhya Pradesh, Andhra Pradesh, Assam and Karnataka.⁴

Period of occurrence

Plant of *Muqil* is perennial. Seeds can be sown in March – April and vegetative propagation can be performed throughout the year except in winter.⁶

Procedure and time of collection

The bark of the plant is tapped in the month of November to January and then the oleo-gum is obtained from the month of January to March after it is solidified.⁶

Method of processing

Good quality *Muqil*, cleaned from dirt and dust, is put in water in which it gets dissolved and the un-dissolved matter is sieved out.⁷

Pharmacognosy

The plant is gynodioecious with separate male and female flowers. Oleo-gum used as medicine is somewhat reddish yellow in colour, and was mainly used for swellings and inflammations both internally and externally. After finding a number of useful constituents in it, oleo-gum is now widely

accepted to be effective in number of other diseases as well.^{7,9}

Chemical constituents

Muqil resin contains many steroids, guggulsterones Z and E, guggulsterols I-V, diterpenoids^{4,9} and essential oils, myrecene, dimyrecene and polymyrecene.⁵ Another constituent isolated from oleo-gum is called mukulol (allylcembrol).

Temperament (*Mizāj*)

Hot and Dry in second degree¹

Actions

According to Avicenna *Muqil* is anti-inflammatory, and resolvent. It resolves all types of cold and hard swellings, both internal and external.¹⁰ It is a laxative, concoctive (*Mundij*) and purgative (*Mushil*) of phlegm (*Balgham*). However its laxative power decrease when it is old, but its property to dry up the body fluids (*Mujaffif*) increase.¹¹ It is diuretic (*Mudirr-i-Bawl*), lithotriptic (*Mufattat-i-Hasāh*), aphrodisiac (*Muqawwi-i-Bāh*), emmenagogue (*Mudirr-i-Hayd*), lactagogue (*Mudirr-i-Laban*), abortifacient (*Māni'al-Ham*), deobstruent (*Mufattih-i-Sudād*), expectorant (*Mukhrij-i-Balgham*), detergent (*Jālī*), emollient (*Murakhkhi*), heat producer (*Musakhkhan*), carminative (*Kāsir-i-Riyāh*), and antihelminthic (*Qātil-i-Kiram-i-Shikam*).^{1,5,8,10,11,12}

Therapeutic uses

Muqil is used in urinary discharges, urinary concretions, tumors, inflammations, tubercular glands in the neck, ascites, asthma, respiratory disorders, gastro intestinal disorders, indigestion, flatulence etc. It helps to remove the bad humors from the body and is effective in different phlegmatic (*Balghamī*) disorders like obesity, hyperlipidemia, and hypercholesterolemia (WHO). *Muqil* is

also used in rheumatoid arthritis, osteoarthritis, sciatica, gout, paralysis, tremors, piles, loss of libido, nervous diseases, and skin diseases.³ Galen has mentioned it effective in crushing the urinary stones, passing urine properly, removing flatus, and relieving muscular pain. Its smoke opens the uterine os during delivery and eases the process of parturition. Razi's has mentioned it useful for plague. *Muqil* resolves solid swelling (*Jamid Waram*). It is useful in intestinal ulcers, and resolves the hard swelling of testis, ovaries etc. Eating *Muqil* is useful in bronchitis, chronic cough, hemorrhoids and cleans up the uterus. It removes the obstructions of kidneys and urinary bladder. *Muqil* is also used externally in swellings, inflammations, wounds, non healing ulcers, scrofulous, alopecia, scar marks and blemishes of the skin.⁵ Also useful in hernia, hydrocoele, ring worm, warts, and proctitis, when used externally.¹

Dosage

3.5 g¹

4.5g¹³

Up to 9 g⁵

2-4 g (API VOL.I)⁴

0.5-1 g (CCRAS)⁴

Adverse effects (*Muzarrat*)

Over dose of *Muqil* is harmful to liver and lungs.^{14,15}

Corrective (*Muslih*)

Saffron (*Zafran*) for liver and tragacanth gum (*Katīra*) for lungs.¹⁰

Substitute (*Badal*)

2/3 *Murmakki*, ¼ *Sibr*, *Alakul Batam* and ½ *Kundur Behrī* are its substitutes.¹⁴

Ethnobotany

Muqil or *Guggul* oleo-gum has been used for thousands of years (nearly 3000 years) as a medicine in Unani and Ayurvedic systems. It was primarily used for swellings, inflammations, piles, arthritis and urinary disorders. Nowadays it is found highly effective in various diseases including, obesity, and hyperlipidaemia. As a mythical belief its smoke is used traditionally in India by Hindus to expel the evil spirits from the houses.^{2,3}

Important Unani formulations

Habb-i-Muqil, *Itrifal-i-Muqil*, *Habb-i-Jogrājgogal*, *Majoon-i-Jogrājgogal* etc.¹⁵

Scientific reports

» *Commiphora mukul* has been proven scientifically to be effective in hyperlipidaemia, hypercholesterolemia, obesity and arthritis (WHO).¹⁶

» Studies have revealed that *Muqil* act as a potent antagonist to the receptors of androgens, mineralocorticoides, and glucocorticoides.¹⁷

» Furthermore, it is an agonist to estrogen and progesterone receptors (Wu et al. 2002; Owsley and Chiang 2003; Brobst et al. 2004; Burris et al. 2005).

» Cheon et al in 2006 found it as an inhibitor to the nuclear factor- κ B, which is a regulator of inflammatory response.^{17,18}

» It has also been found useful in ischemic heart disease.^{17,18}

Conclusion

Commiphora mukul (*Muqil*) is a miraculous herb with versatile medicinal benefits. In Unani medicine and other Indian system of medicines it is categorized among top ranked medicines. A variety of benefits have been scientifically proven and good chunk of properties are yet to be evaluated. Time of the hour is to validate benefits of muqil scientifically in various chronic diseases as discussed above in this article in the context of Unani or Ayurvedic systems of medicine.

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