



PHYTOCHEMICAL AND THERAPEUTIC POTENTIALS OF MURR MAKKI (COMMIPHORA MYRRHA): A REVIEW

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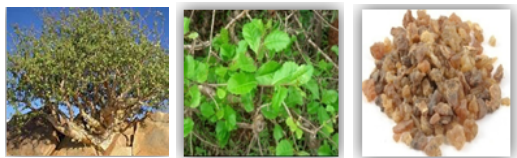
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ABSTRACT Commiphora myrrha is an important medicinal plant used in traditional system of medicine since Bible times, first described in Chinese medical literature in 600 AD. It belongs to the family Burseraceae. Murr is an oleo gum resin obtained from bark of this plant. Unani physicians mentioned its use in gynecological diseases like amenorrhea, menorrhagia, leucorrhoea, pelvic inflammatory disease, cervical stenosis; as an abortifacient and galactagogue; in treatment of wounds and ulcers, and also in various gastrointestinal, urinary tract and respiratory disorders due to its properties like detergent, desiccant, carminative, anti-inflammatory, astringent, analgesic, anti septic, diuretic, emmenagogue, expectorant, etc. Pharmacological studies proved that it has antitumor, immunomodulatory, antioxidant, anti-inflammatory, analgesic, cytotoxic, antibacterial, hepatoprotective, antimicrobial and anti-ulcer activities due to the presence of volatile oil, tannins, phenols, steroids, terpenoids, carbohydrates, resins etc.. The present review focuses on traditional uses of Murr as mentioned in Unani literature in scientific manner.

KEYWORDS : Commiphora myrrha, Murr, Unani text

INTRODUCTION:

Commiphora myrrha is a big tree, derived from genus Commiphora, is the most species-rich genus of flowering plants in the family Burseraceae. The word myrrha is derived from arabic word murr means bitter and it has been used throughout the history in incense and perfume. Greek soldiers would not go to the battle without a poultice of murr to put on their wounds.¹ Also known as Balsamodendron myrrha,^{2,3,4} Commiphora molmol^{3,5,6} In Unani system of medicine, it is termed as 'Murr' is an oleo gum resin obtained from bark of tree Commiphora myrrha (Myrrh),⁷ first described in Chinese medical literature in 600AD.



Murr: Plant, leaves & oleo gum

Ethanobotanical descriptions: Small tree or a large shrub,^{3,5,7} not reaching more than 9 feet in height, but with a trunk of considerable thickness, numerous irregular, knotted branches, smaller branchlets clustered, stout, spreading nearly at right angles, and terminating in a sharp spine; bark smooth, thin, flaking off in small portions, pale orange brown, becoming ash grey when detached. Leaves about ½ inch long, trifoliate, leaflets sessile, unequal, but the terminal ones more or less toothed. Flowers not seen,³ the ploem (inner most layer of bark) contains schizogenous ducts and lysigenous cavities which are filled with yellowish granular resinous liquid.⁸

Habitat: The genus Commiphora is mainly found in Arabia,^{3,7,9,10} Somaliland,^{3,7} Ethiopia,⁷ Abyssina, Persia, Siam,¹¹ to some extent in Northern Kenya.⁷ The bushes grow on very hot and sunny places, at an elevation of 1500-3000 feet.¹² The specimens were collected in March.⁹ The oleogum resin is obtained by making incision in the bark, or it appears spontaneously from the cracks or fissures formed in the bark. At first it is liquid exudes and hardens to a reddish brown mass.^{18,13,14,15,16} Myrrh occurs in irregular masses, external surface is rough and reddish brown, covered with yellowish dust. Pieces are brittle, fractured surface is waxy, granular and oily with whitish marks. It is bitter and pleasant¹⁶⁻¹⁹ in taste with aromatic odour.²

Temperament:

Hot 3⁰¹⁴ / 2^{016,20} Dry 2^{014,16,20}

Therapeutic dosage: 1-2 g,¹⁶ 1-2 g,^{18,21} Upto 1 g,¹⁵ 5-15g²²

Chemical constituents:

The main active constituents include volatile oil (cuminc aldehyde,

eugenol, metacresol, pinene, limonene, diterpenes, and sesquiterpenes).^{14,7,18,23,24}; resin up to 40% (ether soluble portion: α, β and γ commiphoric acids and esters of another resin acid and two phenolic resins).^{14,7,18,25} gums up to 60%(associated with enzyme oxidase, polysaccharides).^{14,7,12,26}, and bitter principle. Other constituents include Flavonoids^{7,23,24} Alkaloids^{19,27} Tannins^{19,26,27} Glycosides¹⁹ Steroids^{7,19} Saponins^{7,19,27} Terpenoids (sesquiterpenes, furanosesquiterpenoids) (Su et al., 2009). Carbohydrates⁷ Organic compounds (limonene, curzerene, germacrane B, isocericenine, myrcenol, beta selenine, spathulenol), Minerals (Magnesium, Potassium, Sodium, Manganese, Zinc, Calcium and Phosphorus, Aluminum, Scandium, Chlorine, Arsenic, mercury, lead etc).²⁸

Actions: antifungal, antibacterial^{1,5,27,19,23,26,29} cytotoxic,^{7,26,28} bacteriostatic, antiviral, expectorant,^{3,12,26,30} stimulant, leucocytogenic,^{3,4} aphrodisiac, diuretic, deodorant, ophthalmic,³⁰ antispasmodic,¹² antidermatophyte²⁴ desiccant,^{14,15,16,18,31} carminative,^{3,12,15,16,18,26,30,32} anti-inflammatory,^{3,12,13,14,16,17,26,30} astringent^{3,12,14,26,30} analgesic,^{1,14} anti-septic,^{1,13,14,15,16,18,26,30,31} diuretic,^{14,15,18,31} antitussive,¹⁴ emmenagogue^{3,12,13,14,15,16,18,30,28,31} expectorant,^{14,3} blood purifier,^{3,14,19} anthelmintic^{3,16,18,31} deobstruent,¹⁶ brain tonic,³¹ abortive¹⁹

USES:

Urogenital disorders:

- **Amenorrhea:** Murr is used with *elwa* and iron component to induce menstruation, if cause is *qillate dam*.^{14,17,18,24,31,33,34}
- **Menorrhagia:** 1.75 g of murr with *baiza neem barisht*^{14,33} or *roghane kunjad*³¹ is beneficial to arrest excessive menstrual blood loss.
- Oleo-gum resin act as emmenagogue and antispasmodic, hence used for irregular & painful menstruation.^{3,7,8,13,25,30,33}
- **Uterine infections:** Murr is beneficial in PID,^{12,13,14,18,33} leucorrhoea^{12,14} and cervical stenosis.
- **Abortifacient:** Murr causes expulsion of *janin wa masheema* as it is bitter in taste.
- Local application of murr is beneficial to remove bad smell of *farj* (*humool* form),^{17,18,24} as well as *rahim* (douche with *na'na*).¹⁷
- Useful in treatment of UTI¹⁹

Gastrointestinal disorders:

- Myrrh mixed with equal parts of honey and rectified spirit and dissolved in rose water or infusion of rose petals (50 parts) is effective in stomatitis.^{11,13,26}
- Murr is useful in diseases of spleen, kidney, urinary bladder (urinary retention¹¹ renal pain^{17,24} cystitis) & intestine (*seheje ama'a muzmin*²⁴ diarrhoea)^{17,24}
- GI diseases like dyspepsia,¹² decreased appetite^{13,12,13,25} gall bladder diseases.^{7,17,23,28}

- *Murr* with *suhaga* or *gulqand* is used in indigestion and constipation due to its *jali*, desiccant, and anti septic properties;^{16,17,19,32} even it kills intestinal worms when used with *arand*.^{16,17,19,20,21,24} *Murr* is used with *arqe charaita* in *yarqan zard*.²⁴

Respiratory disorders:

- It is used in chest ailments^{7,7,23,28} as an expectorant in respiratory tract infections especially asthma¹³ chronic cough, and also in diphtheria, tonsillitis, pharyngitis, common cold, bronchitis.^{1,4,7,12,13,17,18,19,20,24,26,32,38}

Ear diseases:

- *Murr* is beneficial in ear abscess or otorrhoea, when used with *jundbedastar* or *maameesa* and *afyun* in the form of ear drops (*Jalinoos*).^{17,24,32}

Eye diseases:

- *Murr* is beneficial in eye diseases; like in ulcers of eye with other drugs in *kahl* form due to its desiccant and *jali* properties; in cataract, when eyes are washed after dissolving *murr* in milk and in infraorbital hemorrhage, mixture of *murr* with *aabe mooli* is applied over the eyes.^{17,18,20,24}

Skin diseases:

- **Wounds and ulcers:** *Murr* is one of the best drug to eliminate infection,^{1,4,5,24,26,28,30,32,} hence beneficial in all types of ulcers when used in the form of paste with *kundur*,¹⁷ or *aabe dhaniya taaza* or *karafs taaza*,²⁴ even *murr* with *sirka* in ringworm and *roghane gul* in scabies.⁸ Paste is useful in non healing ulcers,^{17,24} malignant ulcer,³² hence, it is used in the preparation of *qabid marahim*.^{17,24} effective in skin infections (acne, boils, pressure sores),^{4,7,12,24,33} burns,²⁸ painful swellings,^{1,5,7,10,24,28,30,33} and athletes foot.^{5,10,26} Because of astringent and disinfectant action, especially its alcoholic tincture is used in skin applications even in snake and scorpion bites.^{7,23,28,33}
- *Murr* is useful in ulcers of head & remove dandruff, when applied over the scalp after dissolving in *makhkhan* and mixed with *zeera*.^{3,8,21,24,31,32}
- **Hair fall:** *Murr* strengthen the hair & prevents hair fall, if applied with *roghane aas*, *lazan* and *sharab*.^{14,16,24,30,32,33}
- Local application of *murr* is useful, with *lehej*, *pyaz dashti* (onion squill) & *shehed* in warts, with *sharab* and *phitkiri* remove bad smell of axilla and inguinal region. Paste of *murr* with *tezeb shura* in lymphadenopathy & scrofula.^{17,24,32}
- *Murr* is beneficial in epidemic diseases, if used with other drugs in the form of pills due to its antiseptic property.^{16,18,19}

Musculoskeletal system:

- *Murr* possess anti inflammatory, deobstruent and *musakhkhin* properties, hence, useful as *zimad* in *awrame balghami*¹⁶ like arthritis, gout and sciatica.^{16,17,21,24}
- Useful in backache,^{7,23,28} muscular pains and spasms.²³

OTHERS:

- **Galactagogue:** *Murr* increases milk secretion if used with *jaggery*.^{17,24}
- Decoction of *murr* strengthens the teeth & remove bad odour of mouth.^{16,19,24,31-33}
- *Myrrh* mixed with equal parts of honey and rectified spirit and dissolved in rose water or infusion of rose petals (50 parts) is good for mouth wash.^{11,13,26} *Murr* mixed with *arqe gulab* is used in aphthous ulcers.^{16,19,24,31,32,33}
- Gargle of *murr* is useful in *istirkhae halaq*;^{16,17,24,31,33} when gargle of *murr* is combined with *sirkae unsul* or *soya* or *joshanda beekhe hilyun* (*Asparagus officinalis*) or *zanjar* prevents falling of teeth.²⁴
- *Myrrh* has stimulant and antiseptic properties and hence used in the preparation of toothpaste and tinctures for the treatment of gingivitis.^{3,18}
- *Murr*, seeds of *ilaichi*, *banslochan* are mixed and grinded and used orally with honey in general weakness.^{17,24}
- It is helpful in hypertension, hyperlipidemia or obesity,^{2,4} fever,^{7,28} headaches
- Used in preparation of perfumes, incense, mouth washes etc.^{5,6,8,30,31}

Uses of leaves:

- Leaves of *murr* strengthen the stomach, act as carminative, remove *fuzlaat* & toxins of snake and scorpion bite; ³² stops menstrual bleeding if used in *humool* form, its extract (in the form of *sao'ot*) is useful in epistaxis.

- Leaves are used in *marz kamzorie khoon* with iron, in gargle form in *qula*, *quruhe zuban*, *iltihabi liththa*, *istirkhae halaq* (with *gulab* and tincture *cincona*).¹⁷

Pharmacological studies:

- **Cytotoxic activity:** *C. myrrha* was reported to have cytotoxicity activity on human gynecologic cancer cell on clinical trial due to the presence of two compounds of diterpene resin acid, which significantly inhibit proliferation of human ovarian cancer.⁷
- **Emmenagogue activity:** Khatoun *et al.* reported that *Murr* is effective in PCOD related secondary amenorrhoea when used in combination with *Muqil* and *Abhal*. This combination induced withdrawal bleeding along with menstrual regulation due to the presence of steroids and flavonoids. Moreover, *Murr* contains phytosterols, saponins, terpenoids, lignans and phenolic compounds; and glycosides and alkaloids in *Abhal* which exerts hormone like action in the body and thus withdrawal bleeding and menstrual regulation.³⁵
- **Antioxidant activity:** Ethanol extract of *C. molmol* exhibit antioxidant activity on in vitro study due to the presence of phenolic and flavonoid contents.²³
- **Anti-microbial activity:** The methanolic extract of *C. myrrha* demonstrated antimicrobial activity against *E. coli*, *S. aureus*, *B. cereus*, *E. coli*, & *K. pneumoniae*¹⁹ due to the presence of broad spectrum antimicrobial compounds that act against gram negative bacteria.²³ Even its petroleum ether extract showed antibacterial effect against *S. aureus*, *E. coli*, *Pseudomonas aeruginosa*; and antifungal to *Aspergillus niger* and *Candida albicans*.²⁶
- **Anti-fungal activity:** The ethanolic extract and essential oil of *C. myrrh* reported to have antifungal effect against *T. rubrum*, *T. mentagrophytes*, *M. canis*, *M. gypseum*, and *T. verrucosum* on in vitro study due to the presence of furanocoumarin 1,3-diene and menthofuran in myrrh oil while 2-tert-butyl-1,4-naphthoquinone, benzene methanol, 3-methoxy- α -phenyl, and curzerene in myrrh ethanol extract.²⁴ Petroleum ether and methanol extracts of oleogum resins of *C. myrrha* revealed antifungal activity against of *Aspergillus species: A. flavus*, *A. fumigatus*, *A. terreus* and *A. niger* on in vitro study.²⁹
- **Anti inflammatory activity:** *C. myrrha* extract exhibit anti-inflammatory effect as evident by decrease in volume of paw edema induced by formalin in rats probably due to an inhibition of release of inflammatory mediator PGEs.^{1,10}
- **Analgesic activity:** *C. molmol* extract exhibit analgesic activity in rats due to the presence of bioactive compounds that raised pain threshold by depressing pain receptors centrally in the brain and also by inhibiting the release of prostaglandins (Pgs). Thus *C. molmol* extract appeared to produce analgesic effect through both central and peripheral mechanisms.
- **Anti hyperlipidemic activity:** *C. myrrha* significantly decreased the body weight gain, normalized the high levels of blood lipids and decreased atherogenic index, low-density lipoprotein/high-density lipoprotein in obese hyperlipidemic rats due to the presence of guggulsterones, plant sterol etc.¹⁰
- **Anti dysmenorrhoeic activity:** Extract of *myrrh* exhibit significant anti dysmenorrhoeic activity (Wang *et al.* 2009) and inhibits uterine contraction and aromatase activity. (Su *et al.* 2008).⁷
- **Hepatoprotective effect:** *Commiphora myrrha* treatment improved liver histology towards more normalization in rats as evident by a reduction in liver enzymes in a dose-dependent manner. It increases hepatic antioxidant activity and decreases the oxidative stress by down-regulation of important key players such as TNF- α , IL-6, IL-10, iNOS-2, and HO-1, which might be sufficient to combat cellular damage. Histological recovery towards normalization also suggests that *C. myrrh* extract may protect parenchymal cells and improve liver tissue regeneration. The hepatoprotective effect is due to the presence of flavonoids, terpenoids and alkaloids.³⁶

DISCUSSION AND CONCLUSION:

Murr appears to be one of the oldest medicines. The use was recorded since ancient Rome and in the texts of Hippocrates. *Murr* and its tincture have a very long history of medicinal uses. Unani physicians have mentioned its uses in various systemic disorders. However, scientific studies have proven its efficacy in some properties of drug. Hence, further clinical trials are needed to prove other properties of drug as mentioned by Unani physicians.

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