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Review Article

Therapeutic potential of Murmakki (*Commiphora myrrha*) in gynaecological disorder: A Unani review

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Abstract

Murmakki is a well-known and potent herbal drug used in various traditional medicines for its various beneficial effects on different Gynaecological ailments and diseases. It is commonly known as Gum Resin. It Consists of oleogum resin obtained by exudation from the stem of a plant of *Commiphora myrrha*. It is used in Saudi Arabia, Indian and Western Medicine and is listed in the British pharmacopoeia as an antispasmodic and expectorant. In ancient traditional Persian manuscripts, it has been noted that myrrh acts as a uterine stimulant and probably cause complete abortion. In Unani Medicine, it is used as a potent drug for dysmenorrhea and amenorrhea as mentioned by Avicenna and Razi in their treatises. This review article discusses the pharmacognosy, phytotherapy, phytochemical and biological studies of *Commiphora myrrha* along with comprehensive review based on Unani Medicine.

Keywords: *Murmakki*, *Commiphora myrrha*, Oleo gum resin, Gynaecological disorders.

1. Introduction:

The health of women is one of society's most critical issues because women must be physically, mentally and emotionally well before they can devote themselves to serving their families and consider other important social issues. There are many Gynaecological disorders found in women eg. *Usr-i-tams* (Dysmenorrhoea), *Ehtabas-i-tams* (Amenorrhoea), *Sailan-ur-rahem* (Leucorrhoea), *kasrat-i-tams* (menorrhagia), *Warm-i-Farj wa Mehb* (Vulvitis and Vaginitis), *Marz akyas khusyur rehm* (Polycystic ovarian disease), *Quruhal reham* (cervical ectopy), *sul'ah-ur-Rehm* (uterine tumour), *isthasqa ur Rahem* (hydrometra), that needs to be timely diagnosed and cured to avoid major health problems.¹ We have several single drugs to treat gynaecological ailments, drug *Murmakki* (*Commiphora myrrha*) has tremendous outcomes as per classical Unani literature in gynaecological diseases.

The *Commiphora* genus belongs to the family Burseraceae and comprises over 200 species, which is a native that belongs to the seasonally dry tropic of Africa, Arabia, and India.² The name *Commiphora* originates from the Greek words *kommi* meaning gum and *phero* meaning to hear. The African name for *Commiphora* is *kanniedood* the direct translation cannot die.³ Myrrh, a yellow fragrant oleo-gum resin, is a famous traditional herb, which is derived from the damaged bark of *Commiphora* genus *Commiphora myrrha* (Nees) is a small tree

or a large shrub found in the dry and arid regions of Ethiopia and Somalia (the largest producers and exporters of myrrh) and to some extent in northern Kenya.²

In the Unani system of medicine, various formulations are available in the treatment of Gynaecological diseases, which have been used locally in the form of *Humool* (pessary),^{4,5} *Shiyaf* (suppository), *Farzaja* (tampoon),⁴ *zimid*,⁵ *Huqna* (enema)⁴ and *Abzan* (Sitz bath)⁵ for immediate healing of the wound. Exhibiting the properties of myrrh followed by *Mudirr-i-haiz* (emmenagogue),^{6,7,8} *Usr-i-tams* (dysmenorrhoea),⁷ *Munaffis-i-balgham* (expectorant),^{6,7} *Qatil-i-deedan-i-ama* (antihelmintic)^{4,8} *Muhallil-i-warm* (anti-inflammatory),^{7,8} *Mudamil-i-qurooh* (wound healing),^{6,7,8} *dafa'e ta'ffun* (antiseptic)^{6,7,8} etc. Myrrh causes expulsion of *janin o mashima* due to its bitter taste.⁸ Myrrh used as *hamool* in *farj* foul smell will disappear.^{4,8} Myrrh act as the best uterus cleanser.⁸ scientific reports have claimed the medicinal values of *Commiphora myrrh* have Anti Inflammatory, Antipyretic activities, Antimicrobial activity, and Analgesic activity against zoonotic disease.³

This review article gives a detailed description of gynaecological diseases as mentioned in classical Unani text, ethnobotanical description, action, therapeutical uses, treatment as well as evidence-based Unani medicine.

TAXONOMIC CLASSIFICATION

Kingdom	Plantae
Phylum	Anjiosperms
Class	Eudicots
Order	Sapindales
Family	Burseraceae
Genus	Commiphora
Species	C.myrrha
Binomial name	Commiphora myrrha (nees)
Synonym	Commiphora molmol
Common names	Myrrh gum, common gum

2. Material and Method

A small tree, branches are often spiny, leaves are usually 3-foliolate, the lateral leaflets sometimes small or absent, flowers small fascicled, polygamous, calyx tubular, teeth usually 4, valvate petals usually found inserted on edge if the disk, valvate stamens 8-10 on the disk alternately long and short filaments dilated below, ovary sessile, 2-4 celled: ovules 2 in each cell style short, stigma 3-4 lobed; drupe ovoid resinous, containing a1-3 celled nut or 2-3 nuts.⁶

Ethnobotanical description of Commiphora myrrha :

More than 200 species of Commiphora are native to the seasonally dry tropics about 40 species occur in Arabia and on the African^{3,10} coast of the red sea often cultivated in western India, and South Africa. Yellowish and shedding of leaves occur early in autumn, and the plants are deciduous for most of the year they are brittle and on breaking show a rough and waxy fracture.³ A small, thorny tree or shrub that can grow to 9 feet tall branches with sharp spine Leaves are 3- foliate, flowers are small polygamous. Flowers not seen.¹⁰ A gum resin exudates spontaneously from the bark.⁸ Gum masses are irregularly roundish of various sizes, opaque reddish and when broken exhibits a rough waxy surface³ it is brittle⁶ and pleasant.^{10,12}

2.1 Vernacular names:

Eng	: myrrhh ^{9,12}
Arabic	: mur, ^{9,11} makki ³
Hindi	: bol, ³ hira bol ^{9,11,12}
Malayalam	: narumpasamaram ¹²
Bengali	: gandارش ^{6,12}
Persian	: bol, mur ^{3,9,11}
Sanskrit	: bolah, rasagandha ¹²
Kannada	: bola,vola ^{6,9,12}
Tamil	: velliappa polam ^{6,7,9}
Telugu	: ballintropolum ^{6,9} balamitra-polam ¹²
Urdu	: mur
Unani	: murmakki ^{6,7}
Gujrathi	: bol ^{6,9}
ayurvedic	: bola,hirabolah,surasa,barbara , gandarasa ⁷

2.2. Parts used: Resin from the stem^{3,6,9,11,12,14}

2.3 Temperament: Har 3⁰ and Yabis 2⁰^{3,6,10,11,14}

2.4. Dosage: ½ gm to2 gm,¹⁴ 5to15 gms⁶ 3-5 g,⁷ 5to15 grains,⁹ 1-2gms^{3,11,13,15}

2.5. Form used: *safoof*,³ *shiyaf*,⁴ *humool*,^{4,10,11,13,18} *faraja*,^{4,5,18} *fathila*, *abzan*, *zimid*,⁵ *huqhna*,⁴ *joshanda*,¹³ tincture^{9,16} *Majoon*,³ *qurs* (pills)^{3,5}

3. Results

3.1. Af'al (action):

Mudir-i-haiz(emmenagogue),^{3,6,7,8,9,10,11,13,14}, *Ushr-i-tams* (dysmenorrhea),^{10,11,13}*Muhallil-i-awram* (anti-inflammatory)^{3,6,7,8,10,13} *Dafa-i-taffun* (antiseptic)^{3,6,7,8,10,11,13,14} *Mujaffif* (siccative),^{3,11} *Jali* (detergent)^{3,8,10,11,14} *Kāsir-i-riyāh* (carminative)^{3,7,8,10,11,14} *Muqavvi-e-meda* (gastric n intestinal tonic)^{10,11} *Muhallil* (resolvent),^{10,11,14} *Mufatteh* (deobstruent),^{3,11} *Musakhin* (analgesic),^{3,10} *Muharrik* (stimulant)^{3,6,7,9,10,11} *Munaffis-i-balgham* (expectorant),^{2,3,6,7,9,10,11,13,14} *Tiryaaq* (antidote)³ *qabiz* (Astringent),^{6,7,8,9,10,11,13} *qatil-i-deedan* ama(antihelmintic),^{10,13,11,14} antifungal, cytotoxic¹⁰ stomachic, *hazim* (digestive),^{9,13} bacteriostatic,⁷ *mudir-i- baul* (diuretic),^{8,10,13,14} deodorant,¹⁰ ophthalmic^{8,10,13,14} anti viral,^{7,10,13} *Musaffi* , (blood purifier),⁷ arthritis,¹³ Asthma,¹³ *Muqawwi-e-bah* (aphrodisiac).¹⁰

3.2.Uses:

Qabis (astringent), digestive, *Kāsir-i-riyāh* (carminative),^{8,12} *Munaffis-i-baigam* (expextorant),^{8,9,12,15} *muqawwi-i- bah* (aphrodisiac),^{8,12}*Qatil-i- Deedan-i-ama* (antihelmintic),^{8,12,15} *mudir-i- baul* (diuretic), deodorant,^{8,10} *warm-i-shabatur riyah* (bronchirtis),^{8,12} *Waja ul mufassil* (rheumatoid arthritis),^{8,12,15} *irqunis* (sciatica),^{8,12,15} *qhuru* (ulcers),^{3,8} *amaraz-i-jild* (skin diseases),^{8,12} *dafa-i-taffun* (antiseptic)^{12,15} *Mudir-i-ḥayḍ* (emogongue).¹²

3.3.Gynaecological Uses;

Ihtibase tams: (Amenorrhea) Myrrhh prepared as decoction used for Emegongue,¹³ *murmakki*, *marzanjosh*, *azkhar*, *saleeqha*, *podina*, *hasha*, *karanb*, *shonez*, *qhust*, *akleelul mulk*, *khurdmana baranjasif* each 12 gms to boil in water for the use of sitz bath.⁵ *murmakki*, *zafran* each 7 gms *sibr zard* 25 gms, *namake lahoori* 7 gms to grind and add *shehad* for preparation of pills each pill 2 times a day.⁵ *Mur* is used with Elwa and iron components to induce menstruation.⁸

Cervical stenosis: *shafa* of *mur* is inserted into the introitus for the opening of cervix in cervical stenosis^[4] *Kasrath -i- tams* (menorrhagia) : *murmakki* 1.75 gm along with half boiled egg stops excessive bleeding,^{4, 8} *Ilthihab-i-rahim*: (PID) application of *mur* in the form of *humool* cures the inflammation. *Qhatil-i- janeen* (Abortifacient); is used as an abortifacient due to its bitter taste.⁸

Ushr-i-tams (Dysmenorrhea): *Mur*, *satarfarsi*, *tukhme shaphth*, *qust talaq*, *tukhme karafs*, *shaham e Hanzal* each 4gms grind with *aabe sabz marooqh* and add *roghan e baid anjeer* for application of paste *Istharkha ur Rehm*: (hydrometra) *humool of murmakki* , *qharanfil* ,narkachor reduces water accumulation in the uterus.⁵ *Huqna* (Enema)of *murmakki* causes immediate expulsion of fetus and placenta. *Huqna* (Enema)of *murmakki* along with *methhi* (fenugreek) removes the hardness of uterus.⁴

Humool (pessary); *murmakki* grinded with *Aabe aas* remove the bad smell of vagina.

Murmakki along with alcohol inserted into the cervix causes

immediate expulsion of newborn.⁸

Murmakki acts as a uterine cleanser.^{4,8}

Joshanda (Decoction) of *murmakki* is useful as emmenagogue and diuretics.¹³

Galactagogue: *murmakki* along with jaggery increases milk secretion.⁸

Uterine tumours: *Murmakki*, *sibr*, *tukhme ulsi*, *ersa*, *ajwain desi* each 4 gm, *tukhme hulba* 13 gms, *filfil e siya*, *charaita*, *gogul*, *ushkh*, *furfeoon*, *qust talqh*, *zaravand mudarij*, *ratinj* each 12 gms grind it a fine powder and mix with *Aabe makoo sabz marookh* and applied as *zimad* for uterine tumours.⁵

3.4. Adverse effect: (Muzir): Headache, hot temperament (*har mizaj*).^{3,8,15} Bladder.¹⁴

3.5. Correctives (Musleh): *Shehad*,^{6,11,14,15} *Kafoor*,^{6,8,14} *Barid wa ratab drugs*.¹³

3.6. Substitute (Badal): Gum of *Mukul*, *Chiraita*,⁶ Black pepper, *Gond*, *Badam Talkh*,³ *Qust*^{3,11,12,13,14,15} *Momiyai*,^{14,15} *Jundbedastar*.^{11,14,15}

3.7. Compound formula (Murakkabat): *Hab-i-Mudir*^{3,6,11,12,13,14,15} *Majoon Kundar*^{3,6} *Majoon Murmakki*, *Dawaul Kurkum sagheer*, *Dawaul Kurkum Kabeer*⁶ *Tiryaaq Arba*,^{3,6,11,13,14,15} *Tiryaaq-i-Wabayee*,^{3,6,13} *Qurs*, *Musalas*,^{3,15} *Tiryaaq e nazla*,³ *Habb-i-Taoun*,^{11,12,13} *tiryaaq-i-samania*, *zimade khanzeer*.³

3.8. Chemical constituents:

Myrrh contains resin (25–40%), gum (57–61%), and volatile oil (7–17%). A large portion of the resin is ether-soluble containing α -, β -, and γ -commiphoric acids, resenes, the esters of another resin, acid and two phenolic compounds. The volatile oil is a mixture of cuminic aldehyde, eugenol, cresol, pinene, limonene, dipentene, and two sesquiterpenes. The disagreeable odour of the oil is due to mainly the disulphide. The gum contains proteins (18%) and carbohydrates (64%) which is a mixture of galactose, arabinose, glucuronic acid, and an oxidase enzyme.¹⁶

phytochemicals present in this plant resulted in a series of metabolites including terpenoids, steroids flavonoids, lignans, and carbohydrates and exhibited diverse biological activities such as cytotoxic, anaesthetic, anti-inflammatory and antimicrobial effects, anti dysmenorrhic activity.²

3.9. Pharmacological Studies:

Cytotoxic activity: *C. myrrha* was reported to have cytotoxicity activity on human gynecologic cancer cells in clinical trial due to the presence of two compounds of diterpene resin acid, which significantly inhibit proliferation of human ovarian cancer.²

Emmenagogue activity: Khatoun et al. reported that *Mur* is effective in PCOD-related secondary amenorrhoea when used in combination with *Muqil* and *Abhal* and induced withdrawal bleeding along with menstrual regulation due to the presence of steroids and flavonoids. Moreover, *Mur* 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.¹⁷

Anti dysmenorrhic activity:

Extract of myrrh exhibits significant anti dysmenorrhic activity (Wang et al.2009) and inhibits uterine contraction and aromatase activity. (Su et al.2008)²

Anti inflammatory activity:

C. myrrha extract exhibits anti-inflammatory effect as evident by the decrease in volume of paw oedema induced by formalin in rats probably due to an inhibition of release of inflammatory mediator PGs.¹⁰ anti-inflammatory and antipyretic activities in mice has been documented for myrrh.³

Analgesic activity:

C. molmol extract exhibit analgesic activity in rats due to the presence of bioactive compounds that raised the 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 an analgesic effect through both central and peripheral mechanisms.¹⁰ analgesic activity and antihyperlipidemic effect of *Commiphora myrrh* extract was investigated in sprague-Dawley rats. It showed positive significant results by reducing the inflammation and elevated serum levels of triglycerides and total cholesterol.³

3.10. Experimental Studies:

1. Cervical Ectopy in *Quru reham*: *Murmakki* -half part and each one part of *phitkiri*, *poste anar*-, finely powdered and mix with *aabe aas* and *aabe barge saru*, later on add equal quantity make as *Hamool* in fresh ulcers and traumatic oozing wounds. *Farzaja* - *Kundur*, *anzaroot*, *damul akhwain*, *jozsaru*, *poste anar*, *shibe yamani*, *Murmakki*, *gule surkh* are finely powdered and mixed with *aabe bartang* or *aabe aas* or *aabe lal* prepared as *farzaja* if the ulcer is associated with blood stained discharge.¹⁸

2. Trichomoniasis vaginalis infection: The effectiveness of an oleo resin extract derived from myrrh., *commiphora molmol* was given to the metronidazole and tinidazole resistant females as two capsules (600mg) for six to eight successive days on an empty stomach two hours before breakfast. All patients were considered cured, In conclusion, the results in the present study support the two safe plant extracts (*Commiphora molmol* and *Punica granatum*) proved to be valuable agents in treating *T. vaginalis* infection.¹⁹

3. Incomplete Abortion:

Myrrh used as capsules in incomplete abortion: capsules containing 500 mg of Myrrh oleo-gum-resin three times a day for 2 weeks. the result of ultrasound examination showed a significant decrease in the size of RPOC after treatment with myrrh and suggested that Myrrh was effective and safe and may be considered as an alternative option in the treatment of patients with RPOC.²⁰

4. PCOS: All crude drugs (*Muqil*, *Murmakki*, *Abhal*) were taken in equal quantity; cleaned, finely powdered and tablets were prepared; one tablet was approximate 750 mg and three tablets were administered orally thrice daily to fulfil the dose of 6 g/day with water for 7 days in a month for three cycles. The present study showed that oral administration of *Muqil*, *Murmakki*, and *Abhal* induced withdrawal bleeding in maximum patients (63.33%) of PCOD-associated secondary amenorrhoea in the first treatment cycle and menstrual regulation (73.33%) in subsequent cycles of treatment. Hence, it can be inferred that research drugs may be an effective therapeutic option in patients with PCOD-associated secondary amenorrhoea as it has a significant effect on inducing withdrawal bleeding.¹⁷

5. Episiotomy wound healing:

Women in intervention groups received a 10-min sitz-bath of myrrh extract of frankincense extract twice a day for 1 week. While the women in the control group received the betadine sitz-bath for the same time. The main outcome was the episiotomy wound healing, which was measured using the

REEDA scale before the intervention, on the 2nd and 7th postpartum days.

An improvement in the episiotomy wound healing was significantly in patients receiving myrrh. the total reeda score was significantly improved in patients receiving myrrh than those receiving either frankincense or betadine. This improvement in wound healing by myrrh was mostly contributed by better scores in redness, ecchymosis and approximation.²¹

6. Usur-E-Tams (Dysmenorrhea):

During the study, *Majoon Murrmakki* 3gm and control group mefenamic acid 500mg two times a day was given orally from 1st to 5th days of menstruation for two consecutive cycles, and significant relief was observed in dysmenorrhea and associated symptoms in the patients Hence, *Majoon murrmakki* is a safe, herbal therapeutic option that can provide an alternate management option with no adverse effects and conventional treatments in *usr tamth* (dysmenorrhea). The findings in the present study demonstrated that *majoon e murrmakki* is as effective as mefenamic acid in the management of *usr tamth*.²²

7. Leucorrhoea:

Murmuki 5 gm (Commiphora myrrh) along with boiled egg was given orally early in the morning for 2 months and the follow-up was taken after every 15 days. After one month the patient got remarkable improvement in the white discharge, backache and itching. At the end of 3 follow up the vaginal discharge was disappeared and the patient gets relief from other signs and symptoms. The Unani medicine is based on the principle of temperament and the medicine *Murmuki* bears temperament Hot and Dry which is an antagonist to temperament of *Sailanur-rehm* (Leucorrhoea) patient.²³

4. Discussion and Conclusion:

The findings from the present review of *Murmakki*, (Commiphora myrrha), Oleo gum resin used locally in the form of *humool*, *Shiyaf*, *Farzaja*, *Zimad*, *Abzan*. Capsules, *safoof*, *Qurs*, *Joshanda* and *majoon murrmakki* is effective in the management of Gynaecological disorders. The effect of *murmakki* may be attributed to its properties like *musakkinie-awjāh* (analgesic), *muhallil-i-awrām* (anti-inflammatory), *mudirr-i-bole-wa-hayd* diuretic and emmenagogue), *muffattih-i-sudad* (deobstruent) among others; also analgesic activity of furanosesquiterpenes such as furanoelemanes, furanoeudesmanes and furanogermacranes present in the gum resin extract of myrrh. Hence, *Murmakki* is a safe and effective herbal therapeutic option that can provide an alternate management option with no adverse events as caused by conventional treatments in Gynaecological disorders. *Murmakki* have greater significance in the treatment and management of various Gynaecological disorder.

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