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Therapeutic Uses of Mom Zard (Beeswax) in Unani System of Medicine - A Review

Abstract

Mom Zard (beeswax) is an animal source of origin medicine which is secreted by wax glands of honey bees. Since ancient periods Unani physicians have been using it as medicinal purpose orally as well as topically as a base of *Qairooti* (oil+beeswax), *Zamad* (paste) and *Marham* (ointment). Ibn-e-Sina (Avicenna) stated that Mom Zard has mainly talyeen (aperient), tahleel-e-auram (resolution of inflammations) andindemal (healing) properties. The effects of mom zard can be attributed to the presence of palmitate, palmitoleate and oleate esters and triacontanyl palmitate to cerotic acid. The aim of this paper is to highlight the pharmacological actions and therapeutic applications of the Mom Zard as per descriptions in Unani literatures.

Keywords: Mom Zard; Anti-inflammatory activity; Healing activity; Anti-hemorrhoid Activity; *Qairooti; Zamad*; *Marham;* Palmitate; Palmitoleate; Oleate; Unani; Triacontanyl palmitate

Review Article

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Introduction

Mom Zard (beeswax) is an animal source of origin medicine which is secreted by wax glands of honey bees. The ancient Persians used wax to embalm the dead, while the ancient Romans modeled death masks and life-size effigies from beeswax. The world mummy derives from a Persian word meaning wax. In ancient times beeswax was used as an adhesive to join two surfaces together [1]. The great Greek physician, Discorides, wrote of rolling beeswax into sheets which was then used to make artificial flowers [1]. The Greek-Roman doctor Galen (2ndAD) used beeswax in a cooling ointment. The famous Iranian physician Avicenna (10thAD) recommended beeswax for medicine [1,2]. The Greek philosopher Aristotle wrote between 344 and 342 B.C. that beeswax originates in the flowers. This theory, which was supported by the Roman apiculturists and writers Varro (116 to 27 B.C.) and Pliny, the Elder (23 to 79 A.D.), predominated until the Renaissance. Swammmerdam wrote in 1673 that wax was prepared by bees from pollen. In 1684 Martin John observed for the first time wax scales. In 1744 the German scientist Hornbostel reported that bees themselves produce the wax [3]. This report was not considered by the scientific community until the publications by Hunter in 1792 and in 1814 by Huber [4,5]. Hunter noted that bees secrete wax and build combs, and also, that newly built combs are white [4]. He observed that bees do not need pollen to make wax [4]. The views of Hunter were expanded by Huber, who proposed that sugar is needed to produce wax [5]. In 1903 the process of wax synthesis was described in detail by Dreyling [6].

Beeswax is used for cosmetics 25-30%, pharmacy 25-30%, candles: 20% and other purposes: 10-20% [7]. Cosmetic applications are found in cold creams, moisturizing cream, depilatories (hair removers cream), hair creams, hair conditioners, lip balm, natural lip gloss, lotions, lipstick, mascara, eye shadows, deodorants, Emollient and emulsifier. For the pharmaceutical purpose beeswax are used in drugs, pills, capsules, salve and ointments as consistency, binding agent, time release mechanism and carrier of drug [1].

Vernacular name [8-13]

a. Unani: Qairoos, Bairoos

b. Arabi: Shama

c. Persian: Mom Zard

d. Hindi: Mom

e. English: Bees Wax

Chemical formula

$C_{15}H_{31}COOC_{30}H_{61}$

Description

Beeswax *(Ceraalba)* is a natural wax produced by honey bees of the genus *Apis*. The wax is formed by worker bees which secrete it into "scales" from eight wax-producing mirror glands on the inner sides of the sternites (the ventral shield or plate of each segments of the body) on the abdominal segments 4-7. For the wax-making bees to secrete wax, the ambient temperature in the hive must be 33ºC to 36ºC (91ºF to 97ºF) [14] (Figure 1).

Physical properties

The new is initially glass-clear and colorless, becoming opaque after mastication and adulteration with pollen by the hive worker bees. Also, the wax becomes progressively more yellow or brown by incorporation of pollen oils and propolis. The wax scales are

about 3mm (0.12 in) across and 0.1 mm (0.0039 in) thick and about 1100 are required to make a gram of wax. Beeswax has a relative low melting point range of 62ºC to 64ºC (144ºF to 147ºF). If beeswax is heated above 85ºC (185ºF) discoloration occurs. The flash point of beeswax is 204.4ºC (400ºF). Density at 15ºC is 958 kg/m^3 to 970 kg/m^3 [14,15]. The taste of beeswax is normally pleasant and is not specific - any unpleasant taste is a sign of quality deterioration due to foreign matter. Odour should be pleasant and honey-like [15].

Figure 1: Mom Zard (Beeswax).

Identification of natural beeswax

When cold it is brittle; at ordinary temperatures it is tenacious; its fracture is dry and granular. The specific gravity at 15ºC (59ºF) is from 0.958 to 0.975, that of melted wax at 98ºC to 99ºC (208.4 to 210.2ºF) compared with water at 15.5ºC (59.9ºF). It softens when held in the hand, and melts at 62ºC to 66ºC (143.6ºF to 145.4ºF), it solidifies at 60.5ºC to 63ºC (140.9ºF to 150.8ºF) [14].

Chemical properties

Chemically, beeswax consists mainly of esters of fatty acids and various long-chain alcohols. Its main components are palmitate, palmitoleate and oleate esters of long-chain (30-32 carbons) aliphatic alcohol, with the ratio of triacontanyl palmitate to cerotic acid. Beeswax can be classified into European and Oriental types. The saponification value is lower (3-5) for European beeswax and higher (8-9) for Oriental types [14,16].

Temperament *(*Mizaj*)*

a. Equable *(Moatadil)* [8,9,13,17]

b. Hot -Wet *(Har-Ratab)* [10-11]

Pharmacological actions *(Af'aal)*

a. Muhallil-e-Waram (Anti-inflammatory) [8-13,17]

b. Musakkin-e-Auja'a (Pain Sedative) [8-13,17]

c. Mulayyin-e-A'asab (nerves aperient) [8-13,17]

d. Mundamil-e-Qurooh (Wounds Healer) [9,11,17]

e. Munbit-e-Laham (muscle fibre grower) [8,12-13]

f. Mujaffif-e-Qurooh (Ciccative) [9,11,17]

g. Kasir-e-Riyah (Carminative) [9-10,17]

h. Dafey-e-Hikkah (Anti-pruritic) [9,17]

i. Dafey-e-Jarab (Anti-scabies) [9,17]

j. Nafey-e-Bawaseer (Piles Reliever) [9,13,17]

k. Nafey-e-Zaheer (Dysentry Reliever) [9,13,17]

l. Nafey-e-Kasrat-e-Tamas (Menorrhagia Reliever) [9,13,17]

m. Nafey-e-Waj-ul-Mafasil (Arthritis Reliever) [9,12-13]

n. Nafey-e-Waj-us-Sadar (Thoracic Pain Reliever) [9,12-13]

o. Nafey-e-Waj-ul-Meda (Stomach ache Reliever) [9,12-13]

p. Nafey-e-Khushoonat-e-Halaq (Sore Throat Reliever) [9,17]

q. Dafey-e-Jaraseem (Anti-bacterial) [18]

Therapeutic uses *(Mahall-e-istemalat)*

According to Ibn-e-Sina (Avicenna) Mom Zard has mainly talyeen (aperient), tahleel-e-auram (resolution of inflammations) and indemal (healing) properties [2]. It is specially recommended in the treatment ofwaj-ul-Mafasil (arthritis), waj-us-sadar (thoracic pain), waj-ul-meda (Stomach ache) and bawaseer (hemorrhoid)[8-13,17].It is also recommended in suaal-e-yabis (dry cough), bahwat-us-saut (horseness of voice), qarha-e-medi (peptic ulcer) and kasrat-e-tamas (Menorrhagia) [8-13, 17].

Scientific studies

Few scientific studies are illustrated below regarding Mom Zard.

Anti-inflammatory activity

Mendoza et al. (2013) [19] showed that D-002 (A Mixture of Beeswax Alcohols) in the dose of 50-400mg/kg was effective for preventing cartilage injury and structural cartilage changes, pannus formation and the degree of inflammation in rats with Monosodium Iodoacetate (1mg/50μL) induced Osteoarthritis [19].

Mendoza et al. (2013) [19] further studied thatoral administration of D-002 (50-400mg/kg) significantly decreased the formaldehyde (0.1mL of 2.0%) induced increases of rat paw and ankle enlargement [20]. Bothe studies suggestD-002 (A Mixture of Beeswax Alcohols) has potential anti-inflammatory action on osteoarthritis.

Anti-stress activity

Anil et al. (2007) [21] studied that the polyphenols from beeswax exhibit hepato protective and anti oxidative properties in rats. In this study the polyphenols extracted by 80% methanol from bee wax (PBW) were fed to WistarratswithCCl4 (1.5 ml/kg body weight) -induced stress, at 100mg/kg body weight and 200 mg/kg body weight for 14 days. On 15th day all the rats were

sacrificed, blood was collected for serum and organs/tissues were excised forbio chemical analysis. The results showed a significant decrease in hepatic antioxidant enzyme activities viz. catalase, glucose-6-phosphatedehydrogenase (G-6-PDH), glutathione peroxidase (GSH-Px), glutathione reductase, superoxide dismutase (SOD) and a significant increase in glutathione S-transferase (GST) and γ-glutamyl trans peptidase (GGT) byCCl4, probably due to the peroxidative effects. The prophylactic use of PBW at 200 mg/kg level resulted in a significant increase in CCl4-induced reduction in catalase, G-6-PDH, GSSGR and SOD. The hepatic levels of lipid peroxidesviz. Malondialdehyde, conjugated dienes and lipid hydroperoxides, enhanced by the administration of CCl4 were brought down by the ingestion of PBW at a level of 200 mg/kg. The hepato toxicity caused by the administration ofCCl4 was reduced significantly [21].

Anti-hemorrhoid activity

Noori et al (2006) showed a mixture of honey, olive oil and beeswax is safe and clinicallyeffective in the treatment of hemorrhoids and anal fissure when applied locally. It was resulted,significant reduction in pain, bleeding and itching with hemorrhoids and anal fissureafter the4 weeks of treatment [22].

Healing activity

Moustafa et al. (2015) [23] revealed that a Mixture of, Beeswax, Honey and Olive Oil, clinically effective in Treatment of Canine Deep Second-Degree Burn. This study is performed in animal experiment to compare the healing of deep second degree burns treated with silver sulfadiazine (SSD) and a Mixture of Honey, Beeswax and olive oil (MHBO). A standard deep second-degree burn wound was produced, in five dogs, each dog has three groups; MHBO, SSD 1% cream and control group (no topical therapy at all). The efficacy of treatment was assessed based on the healing percentage of the wound, time to complete wound healing and the degree of inflammation and exudation. Wound contraction was higher in MHBO group than both SSD and the control group. It was significantly higher in MHBO group than the control group on days 18,21,24 and 27 while significantly higher than the SSD group on days 21 and 24.The mean times for wound complete closure were 21.9±2.23 and 24.7±2.39 days for MHBO and SSD, respectively, being significantly shorter for MHBO. Clinically, inflammatory reaction and exudation were less in MHBO group than the SSD group and control group. Using topical MHBO will accelerate the burn wound healing process in comparison with both the control and SSD groups [23].

Therapeutic dosage *(Miqdar-e-Khoorak)*

a. 500mg. - 1 gm. for internal use. [11-13]

b. 12gm. for external use. [11]

Adverse Effects *(MuzirAsraat)*

Muqallil-e-Ishteha (Anorexia), Masdood-e-Masam (Obstruction of skin pores) [12,13].

Corrective *(Musleh)*

Zeerahwashaker, Roghan-e-Kunjad (Flaxseed Oil) [12,13,17].

Substitute *(Badal)*

Ziftwa Zait, Roghan-e-Gulwa Murdarsang, Ard Baqla [12,13,17].

Formulations *(Murakkabat)*

Ointments *(Marahim)*

Marham Kafoor, Marham Quba, Marham Dakhilyoon, Marham Ral, Marham Kharish Jadeed, Marham Hina, Marham Bawaseer, Marham Khanazeer, No Bars Ointment [24-26].

Pastes *(Zamadat)*

Zamad Jaleenoos, Zamad Bawaseer [24,27].

Creams

Jiyofresh Cream, Acne Pimple Remover Cream [26].

Qairooti

Qairooti Ard Baqla, Qairooti ArdJau, Qairooti Ard Krisna [24-27].

Conclusion

Mom Zard is a very important and beneficial medicine for inflammation of joints, thoracic pain, gastric pain, and hemorrhoid, internal and external ulcers orally as well as topically. The scientific studies undertaken in this regard amply testifies and validates the claims of Unani physicians. However, Extensive research should be carried out on it for their better therapeutic utilization.

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