

# A Review of Acne Etiology and Treatment in Iranian Traditional Medicine

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Received 2016 January 01; Revised 2016 February 15; Accepted 2016 March 15.

## Abstract

**Context:** Iranian traditional medicine (ITM) is based on humoral theory. Temperament or Mizaj is the result of a combination of four cardinal humors. They are blood, phlegm, yellow bile (Safra) and black bile (melancholy). Like any other disease, acne is the result of humoral imbalance. Acne is a highly prevalent dermatologic problem, which has both physical and psychological effects. The aim of this study was to introduce the etiology of acne and its remedies from the perspective of ITM.

**Evidence Acquisition:** Etiology and treatment of acne were studied and analyzed from selected medical textbooks of ITM. Some of the effective plants in these books were assessed in a table, and their anti-acne activities were compared with conventional medicine's database.

**Results:** From the perspective of ITM, considering six essential schemes for health, diet and herbal remedies as well as manipulation are recommended for acne treatment. Although the introduced plants have antibacterial, anti-inflammatory and antioxidant effects but some of them have special proven effects on acne formation process. There is also a strong relationship between digestive system and skin.

**Conclusions:** This paper was rendered to show ancient Persian scholar's point of view about acne and its treatment, and it was shown that Iranian traditional medicine has practical recommendations for acne treatment.

**Keywords:** Acne, Iranian Traditional Medicine, Diet, Herbal Remedies, Digestivesystem

## 1. Context

Acne is a common dermatological disease highly prevalent in the age group of 12 to 25 years. It affects patients both physically and psychologically, resulting impaired psychosocial development, reduced self-esteem and emotional distress due to perceived disfigurement (1). Acne vulgaris is diagnosed by variable clinical manifestations such as white or black comedones, papules and pustules. Acne scarring is the sequel of severe cases (2). The etiology of this problem involves high sebum secretion, bacterial infection, hyperkeratinisation as well as hormonal change in the body (3). Reducing scars and erythematous lesions is the aim of treatment. Hence combination of systemic and topical agents is recommended in severe cases (4, 5). Oral Isotretinoin is the main choice of treatment in severe cases yet side effects like dyslipidemia and dry mucous membranes are usually considered (6, 7). In Iranian traditional medicine (ITM), skin and nervous system have the same origin. Skin can represent internal organs function and its duty is to protect human body from external stressors (8). Body temperature regulation is another crucial task performed by the skin in human body and small pores in the skin play important roles regarding this abil-

ity. In addition to this, skin has an ability to secrete surplus substances in different forms of discharges, and acne formation could be the result of this phenomena. According to the theory of humors in ITM, dystemperament or "Suemizaj" may occur when there is an imbalance in humoral quantity or quality (9). This humoral imbalance has very important role in acne formation. Ancient scientists believed that acne could be the result of internal organs dysfunction and all treatment strategies should include and manage internal organs (10, 11). These principles make the differences between traditional approaches and conventional medication for acne treatment. This study was conducted to determine acne etiology and the role of diet and herbal remedies and physical manipulation in acne treatment from ITM point of view.

## 2. Evidence Acquisition

This was a review study in which seven valid books of Iranian traditional medicine were investigated. Terminology, etiology and treatment of acne were studied and analyzed, including manuscripts between 9th and 19th centuries AD. These books included Al- Mansuri- Fi- Teb (9th-10th centuries), Canon of medicine (11th century), Mofarah-

Al- Gholoub(18th century), Exir- e- Azam (19th century), Makhzan- Al- Advieh (18th century), and Al-shamiland Moalejat - e-Aghili (12<sup>th</sup> - 13th century). First, the words “acne”, “abscess”, “pustules”, “papules”, “white comedones” and “black comedones” were searched in these resources. Any subject related to acne and its treatment as well as important information about these medications was extracted from each source and notes were taken. Then animal and mineral medications as well as food materials were excluded from the results. Hence 80 herbal plants were left for the study. The medicinal plants, which were toxic or did not have certain scientific names or had several scientific names were excluded from the list, and finally 13 herbal medicines were chosen for this study. Finally, notes were put together and the required concepts were extracted, summarized and classified. These concepts were provided in the results in the form of texts and tables with different names. Electronic databases including Google Scholar, Scopus, PubMed, Web of Science, and the Cochrane library were checked with all scientific names of recommended medicinal plants separately up to December 2015. Inclusion criterion of all selected articles was provision of clinical, animal or in vitro evidence of the efficacy and pharmacological mechanisms on acne healing process. All studies, which exhibited apparent efficacy or indirect effectiveness on acne healing process, were selected for the current research. English language publications were included. The publications without available full text, unpublished data, letters to the editor, case reports and experimental studies without proven biological effects were excluded from the study. Duplication was also avoided by excluding multiple copies of the same article in different databases. The key words were scientific names of each plant in the whole text and the terms “acne healing” or “acne treatments” or “anti-oxidant” or “inflammation” in title and abstract.

### 3. Results

#### 3.1. Etiology of Acne Formation

According to ITM, human body organs consist of four fundamental humors named cardinal humors including blood, phlegm, yellow bile and black bile. All of them are composed of very specific quantity and quality. Some categories of diseases result from quality or quantity change of these humors (12, 13). In Iranian traditional manuscript, there is a chapter named “Oram and Busoor”, in which physicians discuss swellings and rashes and their treatments. They described white comedo as “Busoor-e-Labnieh”. This disease was defined by Avicenna (11th). “busoor-e - labnieh” is known as very small swelling-like

milky points located mostly on the adults face (10). Actually, busoor is an abnormal swelling that can occur in any organ (11).

#### 3.2. Acne Management Steps

Early practitioners believed that acne treatment with internal medicine approaches could reduce its recurrence significantly. They applied three main steps for acne treatment (Table 1). The first step was dietotherapy. Eating habits and types of foods can exacerbate the problem. Continuous use of some fruits and plants in daily regimen has the ability to reduce this problem. The ingested food undergoes four stages of digestion. These stages are: gastric, liver, vascular and tissue digestion (14). Stomach and liver should be strengthened properly. As a result humoral production would be balanced and proportionate and acne severity decreases prominently (15). Digestive system could be strengthened by consuming different kinds of jams, such as Ginger jam. Complete defecation is one of the treatment rules in ITM, as chronic constipation causes specific toxins accumulation in the intestinal loop and facilitates its spread all over the body (16). Medicinal plants are recommended in the second step. Plenty of medicinal plants were ordered by Iranian scientists to manage acne and its permanent scars. Table 2 shows the most recommended medicinal plants and their chemical fragments and current findings about acne treatments. In the third step, physical manipulation such as venesection, hirudotherapy and wet cupping should be applied to reduce acne scarring or hyperpigmentation.

### 4. Conclusions

According to conventional medicine, bacterial colonization, sebum secretion, hormonal change as well as follicular hyperkeratinisation are the main causes of acne formation (3). In ITM humoral imbalance is one of the etiologies of this problem. Hence, there may be an excess or deficit of these four humors. In acne treatment, like any disease in ITM, the six essential schemes (weather, food and drink, action and inactivity, retention and release, sleep and wakefulness as well as sensual states) are considered as main preventive approaches (17). The role of diet is significant in prevention and treatment in the first step. Restricted consumption of meat, dairy products and sweets reduce cystic acne formation. Legumes, cucumber, pomegranate and barley decrease skin inflammation (10, 11). Barley consists of peptide lunasin so it has anti-inflammatory properties and is a powerful antioxidant agent (18, 19) and it can play a role in acne treatment, especially when it is consumed in patient’s daily diet. Although

**Table 1.** Acne Treatment Principles in Iranian Traditional Medicine

	Acne Treatment Principles	Examples
1	Dietotherapy	It consists of adjusting two main parts: -Type of foods: barley, plum, pomegranate, sumac, lentil, cucurbit (they decrease skin inflammation) -Eating habits: reducing intake of three food products, including meat, dairy and sweets in daily regimen
2	Medicinal plants	They are prescribed in order to treat and manage acne and internal problems (Table 2)
3	Physical manipulations	Venesection "Fasd", Wet cupping "Hijamat", Hirudotherapy, Massaging, "Dalk"

in conventional medicine the relationship between diet and acne pathogenesis is controversial, some articles support this idea (20). However, the effective mechanism is not clearly defined. This means that dermatologists should have enough information about the relationship between nutrients and the complexity of skin and sebum production. It is usually recommended that people with acne should restrict their consumption of chocolate and oily or fatty foods (21). Glucose-containing foods increase glycemic indexes, which lead to hyperinsulinemia and increased IGF-1 in the body. Therefore, alteration of retinoid pathway, which mediates acne formation, occurs gradually. According to ITM, increased consumption of glucose-containing foods can disturb normal humoral production in the liver, which results in acne exacerbation (8, 10, 22). Also, digestive system strengthening aids successful acne treatment, and conventional medicine believes that there is a strong relationship between skin and digestive system. There are various types of systemic disease that involve both internal organs such as gastrointestinal tract and skin, which need to be treated at the same time, as controlling the internal disease leads to skin protection (23). Medicinal plants are the second step in acne treatment. According to conventional medicine, the major role of *Propionibacterium acnes* at different stages of disease, such as pro-inflammatory cytokines production and reactive oxygen species release, is well understood. Hence, anti-acne remedies should have antioxidant, antimicrobial and anti-inflammatory effects. In vitro studies have shown that flavonoids such as kaempferol and quercetin possess antibacterial activities against *P. acnes* (24). However, recommended medicinal plants include pomegranate, *Rhus coriaria* l (25), *Viola tricolor*, and *Ficus carica* and *Trigonella foenum* composed of quercetin and kaempferol as their main compounds. Physical manipulations such as hirudotherapy are the third step of treatments in ITM. This procedure is a well-known manipulation, especially in cosmetic surgeries in conventional medicine (26). This paper was performed to show ancient Persian scholars opinion on the acne management. Recommended diets, reported medicinal plants and physical manipulation could be valuable items for clinical trials in the future. Therefore, ITM

can introduce practical treatments with lower complication for acne treatment.

### Acknowledgments

This work was supported by the School of traditional medicine of Tehran University of Medical Sciences.

### Footnotes

**Authors' Contribution:** All of the authors participated completely in the design, analysis, discussion and results, and approved the final version of this paper.

**Financial Disclosure:** There was no financial interest related to the material of this manuscript.

**Funding/Support:** This study was supported by the school of Iranian traditional medicine of Tehran University of Medical Sciences Tehran Iran.

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Table 2. The Most Recommended Herbs for Acne Treatment in Iranian Traditional Medicine

Plant Family	Scientific Name	Traditional Name	Part	Current Findings	Fraction/ Constituent
<b>Alliaceae</b>	<i>Allium cepa</i>	Basal	bulb	Onion gel improves scar softness, redness, texture (27), tumor inhibitory effect in lab studies (28), antibiotic effect (29)	Flavonols Organosulfur such as Allicin
<b>Compositae</b>	<i>Cichorium intybus</i>	Hendaba	Dried leaves and root and stem	Antioxidant (30), antibacterial and antifungal activity, anti-inflammation, wound healing (31)	Phenolic acids Organic acid Inhibition of TNF- $\alpha$ Hyaluronidase and collagenase inhibition
<b>Umbelliferae</b>	<i>Coriandrum sativum</i> L.	kosbora	Leaves and dried ripe fruit	Antiseptic, effect on gram-positive skin infection, anti-inflammation (32), antioxidant, protection against UV-B induced photo aging, increases procollagen type (33)	Linolenic acid
<b>Moraceae</b>	<i>Ficus carica</i>	Tin	fruit	Antioxidant, decreases skin melanin, increases skin hydration value, reduces sebum content (34)	Phenolic compounds, gallic acid, catechins Vit C Quercetin, kaempferol, syringic acid
<b>Poaceae</b>	<i>Hordeum distichon</i>	Shaeer	seeds	Anticancer, antioxidant (35), restoration of healthy skin (36)	Lunasin Biotin vitamins
<b>Linaceae</b>	<i>Linum usitatissimum</i>	Ghortom	Seeds	Antimicrobial activity against acne causing bacteria, skin hydration (37)	Linolenic acid Linoleic acid
<b>Compositae</b>	<i>Matricaria chamomilla</i>	Babuna]	Flowers	Anti-inflammatory effect, antioxidant effect, effective for hand dermatoses (38), immunoregulatory potential for alleviating atopic dermatitis (39), Approved by commission E: inflammation of skin, anti-microbial (40)	Inhibition of leukotriene B Flavonoids GC oil $\alpha$ -bisabolol
<b>Lythraceae</b>	<i>Punica granatum</i>	Romman	Fruit	Antioxidant, anticancer and has apoptotic effects (41), protection from the adverse effects of UV-B radiation (42), inhibitory effect on pigmentation in the human skin (43), anti-acne activity as compared to clindamycin (43, 44)	Phenolic acids, Ellagic acid, Ellagitannins, Estrogenic flavonols
<b>Rosaceae</b>	<i>Rosa damascena</i>	Vard- e-ahmar	Flower	Antibacterial activity against gram positive and negative (45, 46) bacteria. Antioxidant properties (47), UV absorption, anti-solar activity (48)	Phenolics flavonoids
<b>Combretaceae</b>	<i>Terminalia chebula</i>	Halleh	Fruit	Promotes cutaneous wound healing in rats (49), Anti-aging activity in vivo (50), antimicrobial activity (49-51), antioxidant (52)	Tannins, Gallic acid Flavonoids
<b>Fabaceae</b>	<i>Trigonella foenum-graecum</i>	Holbeh	Seeds	Approved by commission E: inflammation of the skin. The extract inhibits allergic skin inflammation as well as Th <sub>2</sub> mediated allergic response (53). Anti-microbial effect (54) and skin cleanser. decrease in pruritus, reduction of wrinkles, effective inhibitor of hyper pigmentation (55)	Isoflavones, plant hormones and sterols diosgenin
<b>Poaceae</b>	<i>Triticum vulgare</i>	Hanteh	Seeds	Significant increase in skin hydration (56) and excellent antioxidant (57)	Rich in vitamin E
<b>Violaceae</b>	<i>Viola tricolor</i> L.	Banafsaj	Flowers	Antioxidant, anti-inflammatory effect (58-60), sun protection activity (59), extract compress soothes and relive pain associated with acne (60)	Flavonols (quercetin and kaempferol) Phenolic compounds, saponins, glycoside, gautherin, salicylic compounds