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Application of Herbal Exudates in Traditional Persian Medicine

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Abstract

Introduction: Traditional Persian medical and pharmaceutical manuscripts authored by medieval Persian scholars offer not only accumulation of traditional medical systems knowledge, but also contain collection of ingenious studies that provide vast information in the field of medicinal herbs application. One of the most cited derivative compositions of medicinal herbs are exudates. A large group of these compounds along with their different clinical and pharmacological applications can be found in the manuscripts of Persian medicine. **Methods and Materials:** This work is a literature research on some main traditional manuscripts of Persian medicine, including the book of Alhavi, Canon of Medicine, the book of Tohfat ol Moemenin, and Makhzan ol advieh. Also, current investigations on related subjects were considered by searching in Medline/PubMed and Google Scholar databases. **Results:** According to the investigated manuscripts, thirty-one substances, incorporating plant exudates relating to sixteen plant families, were used to combat simple to sophisticated ailments. Mostly exudates were derived from herbs of family, Asteraceae, Apiaceae with six and five citations, respectively. Other than the reported clinical applications for herbs, which were defined as a source for gummy compositions, numerous pharmacological approaches were also remarked for the secreted gums. **Conclusion:** Application of ethnobotanical findings on simple remedies offers rational criteria to evaluate the potential therapeutic properties of medicinal plants. [GMJ. 2012;1(2):78-83]

Keywords: Gum; Herbal exudates; Persia; Traditional medicine

Introduction

Since the beginning of civilization, medicinal herbs have been widely applied for the human ailments.⁽¹⁾ Well before herbs as well as animal and mineral medicaments were considered as the only choice for even com-

plicated disorders.⁽²⁾ Despite the emergence of new chemical drugs in contemporary medicine, the application of herbal remedies has not yet been declined.⁽³⁾ On the other hand, active ingredients of many herb species have been isolated and applied even in combination of current synthetic medicines.⁽⁴⁾

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Today herbal derivatives are considered as the basis for a large proportion of the medications in traditional and modern systems of medicine.⁽³⁾ Due to insufficient therapeutic approaches, many diseases and complications are still unmanaged⁽⁵⁾; as a result, the medical and pharmaceutical aspects of complementary and integrative medicine can be beneficial.⁽⁶⁾ Traditional Persian medical and pharmaceutical manuscripts authored by medieval Persian scholars offer not only accumulation of traditional medical systems knowledge, but also contain collection of ingenious studies that provide vast information in the field of medicinal herbs application.⁽⁷⁾ One of the most cited derivative compositions of medicinal herbs are exudates. These compounds are now widely applied in medical sciences as well as pharmaceutical and cosmetics.⁽⁸⁾

A large group of these compounds along with their different clinical and pharmacological applications can be found in the manuscripts of Persian medicine. In this regard, the current study was carried out to collect and introduce different cited exudates in Persian traditional pharmacopeias along with the related reported applications.

Methods and Materials

This work is a literature research, investigating some surviving Persian medical and pharmaceutical manuscripts from the 10th to the 18th century AD. The manuscripts were comprised of the book of Alhavi, Canon of Medicine, the book of Tohfah ol Moemenin, and Makhzan ol advieh.⁽⁹⁻¹²⁾ These texts are defined as Persian traditional references in medicine and pharmacy and are now used exclusively as references for the Iranian PhD program in traditional pharmacy.

The scientific names of the reported gums were authenticated using botanical textbooks such as Dictionary of Medicinal Plants, Popular Medicinal Plants of Iran, Pharmacographia Indica, and Indian Medicinal Plants.⁽¹³⁻¹⁶⁾ In order to establish relationships between traditional knowledge and current findings, a search was performed on the reported pharmacological effects (experimental, animal, and human studies) related to the mentioned

medicinal herbs using the Pub Med, Scopus, and Google Scholar databases.

Results and Discussion

Application of various exudates and gummy compositions of medicinal herbs has a history as long as mankind civilization.⁽¹⁷⁾ Exudates are defined as large group of herbal biochemical derivatives possessing pharmacological activities. Generally, these compounds may be known as non-starch polysaccharide, which may have opportunities to be applied for pharmaceutical and industrial approaches other than clinical purposes.⁽¹⁸⁾ Structurally, gummy exudates may be found as resins, gum resins which are defined as resins attached to a polysaccharide part, and oleo gum resins. Oleo gum resins are naturally occurring mixture of resin, gum, and volatile oil.⁽¹⁹⁾ The recent compounds are often referred to as balsam.⁽¹⁷⁾

Gummy exudates which were cited in Persian manuscripts structurally correspond to the above-mentioned types. In fact, all plant exudates were called gum (Samgh) in the medieval manuscript of Persian medicine.⁽¹²⁾ Most exudates are obtained by tapping or applying cuts on tree or shrub barks.⁽⁹⁾ It is also noted that the best time for collecting the product is before sunrise or sunset.⁽¹²⁾

According to the investigated manuscripts, thirty-one substances incorporating plant exudates relating to sixteen plant families were used to combat simple to sophisticated ailments (Table 1).

Mostly, exudates were derived from herbs of family, Asteraceae, Apiaceae with six and five citations, respectively. Other than the reported clinical applications for herbs, which were defined as a source for gummy compositions, numerous pharmacological approaches were also mentioned for the secreted gums. Accordingly, Table 1 also involves medical applications and considerations for the cited exudates. As is mentioned in the manuscripts, for some herbs, gummy compositions were the only medicinal part used by medieval practitioners. Overall, sixteen cited exudates were the only part exhibiting clinical activities.

These medicaments are marked with star (*) in Table 1.

Fundamentally, gummy exudates were administered via oral, topical, and also nasal routes of application. Persian physicians knew about the undesirable effects of these compounds other than different parts of the herb. Many pharmacological activities and clinical aspects were attributed to these medicaments.

Apparently, plants exudates were used for neural, musculoskeletal, gastrointestinal, respiratory, urinary and genital systems as well as skin disorders (Table 1). Other than the recommended application directions by early Persian practitioners, cautions on the oral administration of these gummy compounds are also cited. The oral application of many cited exudates was restricted.

Table 1- Gums reported in Persian medical manuscripts

| Plant Family | Scientific Name | Common name | Traditional Name | Medieval application(s)/ Disease(s) | Traditional consideration(s) |
|---------------|--|------------------|------------------|--|--|
| Anacardiaceae | <i>Pistacia atlantica</i> Desf. | Mt. Atlas mastic | Alak-ol-batm | Analgesic, Digestive, Diuretic, Nerve tonic | It was used in Balms together with Ratianaj |
| | <i>Pistacia lentiscus</i> L.* | Mastic | Mastaki | Cough, Headache, Melancholia, Tremor | The medicine should be soaked in vinegar for a night before application |
| | <i>Pistacia terebinthus</i> L. | Terebinth | Habbat ol khazra | Aphrodisiac, Laxative/ Otitis, Respiratory ulcers | - |
| | <i>Prangos ferulacea</i> Lindl. | Prangos | Javsheer | Abortifacient, Carminative, Diuretic, Nerve tonic, Nerve tonic, Topical analgesic | Soaking in decocted grape juice may reduce the side effects of this medicine |
| Apiaceae | <i>Thapsia garganica</i> L.* | Deadly carrots | Safsia | Appetite killer, Carminative, Nerve tonic | It should not be applied in GI upset |
| | <i>Ferula assa-foetida</i> L.* | Asafoetida | Heltit | Anthelmintic, Anti-hemorrhoid/ Common cold, Cough, Epilepsy, Tremor | It was used to prepare antidote (pat-zahr) |
| | <i>Dorema ammoniacum</i> D.Don* | Gum ammoniac | Oshagh | Analgesic, Antidote for toxins, Laxative/ Sciatic pain | Caution should be applied in the administration |
| Asparagaceae | <i>Peucedanum officinale</i> L. | Peucedanum | Bokhur ol ekrad | Diuretic/ Cough, Meningitis, Paralysis, Renal stone, Respiratory ulcers | Maximum dose is 4g/day |
| | <i>Dracaena cinnabari</i> Balf.f.* | Dragon's Blood | Khun siavashan | GI bleeding | It should be accompanied with Tragacanth |
| | <i>Amberboa amberboi</i> (L.) Tzvelev* | Amberboa | Kahroba | Anti-abortion, Cardiac tonic, Styptic agent / Jaundice | It should be applied in combination with viola flower |
| | <i>Anacyclus pyrethrum</i> (L.) Lag. | Pellitory | Aghaghia | Astringent, Hair coloring agent, Joints tonic | It should not be applied in GI upset |
| Asteraceae | <i>Carlina gummifera</i> (L.) Less. | Pine Thistle | Eshkhees | Gastric tonic/ Inflammation | The medicine may cause headache. It should be applied with sugar or milk |
| | <i>Ferula galbaniflua</i> Boiss. & Buhse | Galbanum | Barzad | Anti-hemorrhoid, Laxative/ Apnea, Asthma, Renal stone | It is not appropriate in CNS ailments, It should be applied with honey |
| | <i>Cynara cardunculus</i> L. | Cardoon | Harshaf e barri | Inflammation, Vomiting | It should be administered with honey |
| | <i>Ferula persica</i> Willd.* | - | Sakbinaj | Analgesic, Carminative, Visual tonic/ Colic pain, Cough, Epilepsy, Headache, Paralysis, Pleurisy | It should be accompanied with Tragacanth |

| | | | | | |
|---------------|---|-----------------------|-----------|---|--|
| | <i>Commiphora myrrha</i> (Nees) Engl.* | Gum myrrh | Morr | Analgesic, Antidote for toxins/ Cough, Dyspnea, Inflammation , Wound healing | The odor of this medicament may cause headache or induce sleep |
| Burseraceae | <i>Commiphora mukul</i> (Hook. ex Stocks) Engl.* | Guggal | Moghl | Diuretic, Expectorant, Liver tonic/ Sciatic pain, Gout, Renal stone | It was used to prepare antidote (pat-zahr) in accompanying with Tragacanth |
| | <i>Boswellia sacra</i> Flueck.* | Frankincense | Kondor | Anti-hemorrhoid, Cardiac tonic, CNS tonic, Expectorant, Stomach tonic, Styptic/ Tumor | It may induce idiopathic headaches and should be administered with sugar |
| Convolvaceae | <i>Convolvulus scammonia</i> L.* | Scammony | Saghmunia | Abortifacient, Analgesic, Laxative/ Vitiligo | The medicine is a potent laxative |
| Cupressaceae | <i>Cupressus sempervirens</i> L.* | Mediterranean Cypress | Sandrus | Styptic agent, Visual tonic/ Common, cold Fatigue | It should be applied with acacia gum |
| Malvaceae | <i>Althaea officinalis</i> L. | marshmallow | Khatmee | Laxative/ Thirst and dehydration, Vomiting | - |
| Moraceae | <i>Morus alba</i> L. | White mulberry | Toot | Toothache | - |
| Oleaceae | <i>Olea europaea</i> L. | Olive | Zeytun | Diuretic, Memory enhancer/ Cough, wound healing | - |
| Papilionaceae | <i>Astragalus arbusculus</i> Bornm. & Gauba* | - | Anzarut | Abortifacient, Anthelmintic, Carminative, Purgative/ Scabies, Sciatic pain | This medicine should be applied in combination with acacia gum and almond oil |
| | <i>Astragalus spp</i> * | Tragacanth | Katira | Analgesic, General tonic, Laxative/ Cough, Lip fissures | It may not be appropriate in colon disorders unless in accompanying with Anise seeds |
| Pinaceae | <i>Populus alba</i> L.* | Abele | Ratianaj | Anti-hemorrhoid/ Chronic Cough, Common cold, Scabies | It may be useful in accompanying with olive oil |
| Rosaceae | <i>Cerasus avium</i> (L.) Moench | Wild cherry | Ozdu | Anti-hemorrhoid, Astringent, GI tonic/ GI ulcers | Adjuvant therapy with GI medicine is needed |
| | <i>Prunus domestica</i> L. | Plum | Ejjas | Cough, Renal stone, Wound healing | |
| Rutaceae | <i>Ruta graveolens</i> L. | Common rue | Sodab | Abortifacient, Dysmenorrhea, Inflammation, Wound healing | Maximum dose is 2g/day |
| Styracaceae | <i>Styrax officinalis</i> (Torr.) Thorne* | Styrax | Estarak | Laxative/ Common cold, Cough | It may be abortifacient |

Among those medicaments, only Tragacanth was mentioned to have nutritional aspects other than pharmacological properties. It was widely administered as a weight gain agent while accompanying with sugar and almond seeds.⁽¹⁰⁾

As it is remarked by current experimental investigations, some of the mentioned applications for gummy exudates may have potentials for further studies. The anti-inflammatory and analgesic activities of the oleoresin part of *Atlas mastic* and *Terebinth* have been proved in

animal models.⁽²⁰⁻²¹⁾ The in vivo analgesic effects of the different extracts of Gum myrrh as well as the anti-inflammatory effect of Guggal petroleum extract have been evaluated and supported the traditional reports.⁽²²⁻²³⁾ The anti-influenza effect of Asafoetida may support the similar report from traditional manuscripts.⁽²⁴⁾ The thrombin inhibitory effect of Dragon's Blood has been proved⁽²⁵⁾ and corresponds to the traditional findings. Although some bioscientific data exist and confirm the validity of therapeutic pathway of traditional knowledge, there is much information from ancient and medieval period that needs a rational proof.

Conclusion

The current paper offers a brief historical approach from the traditional medical manuscripts of Persia and partly highlights some

conceptual subjects regarding such work. Application of ethnobotanical findings on simple remedies offers rational criteria to estimate the potential therapeutic properties of medicinal plant. Although some ethnopharmacological studies have reported that the use of medicinal herbs exudates in contemporary medicine are being decreased⁽¹⁷⁾ scientific researchers have revealed that a large portion of exudates' clinical and pharmacological potentialities have yet not been studied. Therefore, more comprehensive and effective investigations should be carried out on such traditional heritages.

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