

Ethnobotanical usage of plants as aphrodisiac agents in Anatolian folk medicine

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Submitted: 24 June 2017 / Revised: 08 August 2017 / Accepted: 14 August 2017

ABSTRACT: Several plants have been used as aphrodisiac to treat sexual problems for centuries. Nowadays, despite the synthesis of chemicals, herbal medicines continue to maintain their importance. Turkey has a great tradition of folk medicine due to its rich flora and many plants have been used for the treatment of several disorders. This work presents aphrodisiac plants traditionally used in Turkey, with their local names, used parts, usage and administration route.

KEYWORDS: Aphrodisiac plants; folk medicine; ethnobotanical usage; aphrodisiacs

1. INTRODUCTION

The word aphrodisiac is originated from Aphrodite, The Greek Goddess of love and beauty [1]. With all respect to her duty she is responsible from the lovely ways of creating human relations. She is spreading love potions all over the humans and she has been decorating nature with colors with the help of trees and flowers. According to mythology, when Aphrodite born from seafoam and set foot on earth face, different types of flowers started to blossom under her foot and since that day, followers of Aphrodite have been able to use those flowers (which are called "Plants of Love") as aphrodisiac [2-4].

Since the beginning of humankind, sexuality has been really important in terms of continuation of the race and transfer of the culture to the offsprings. The usage of aphrodisiacs has been developed during centuries. Some of them provide psychological relief, while others affect physical system to treat sexual disorders [5-7].

Sexual relationship is very important in human life and it influences the social relationship between partners [1]. The cause of sexual disorders can be physical or psychological, and sometimes both. Today, both of them are lying under the majority of problems [8]. Nowadays, chronic disorders, antipsychotic and antidepressant therapeutic drugs, tobacco, stress, chronic alcohol abuse have increased these problems. The most common sexual problems in men are ejaculation disorders, erectile dysfunction, and loss of libido. In 25% to 63% of women, sexual dysfunction is also a serious problem [6-8].

By definition, aphrodisiacs are materials that are stimulating libido [9]. Regarding to different perspectives, their perception can be variable. During history, aphrodisiac agents have been used as stimulant of sexual intercourse, pleasure booster, flaming agents of libido and an agent to strip from shyness. Different countries from all around the world, have formed their own culture with various plants, according to the knowledge transferred from their ancestors. They adapted those plants into their traditional medicinal system [4]. There are different ways to use them, such as cigarette, tea, incense, pill, spice or meal, ointment and oil. In folkloric medicine of Chinese, Indian, Egyptian, Roman, Anatolian and Greek cultures, there are many different herbal and animal remedies [4-10]. The most common used plants or drugs are *Cannabis sativa*, opium, *Panax ginseng*, *Ginkgo biloba*, *Zingiber officinale*, *Epimedium sp.*, *Mucuna pruriens*, *Corynanthe yohimbe*, *Chelidonium majus*, *Tribulus terrestris*, *Crocus sativus*, *Phoenix dactylifera*, *Pegalum harmala*, *Catha edulis*, *Salvia haematodes*, *Lepidium meyenii*, *Asparagus racemosus*, *Glycyrrhiza glabra*. Various foods also have been used as aphrodisiac agent such as vegetables [artichokes, asparagus], spices (anise, basil, coriander, fennel, sage, ginger, garlic, and saffron), oysters, chocolate, and fruits [10-14].

How to cite this article: Tufan S, Gülsoy Toplan G, Mat A. Ethnobotanical usage of plants as aphrodisiac agents in Anatolian folk medicine. Marmara Pharm J. 2018; 22 (2): 142-151.

There are several ethnopharmacological reports on the medicinal uses of aphrodisiac plants of various cultures. Some of these plants or animal products were investigated for their aphrodisiac activity. The potential aphrodisiac properties were examined using *in vitro* assays, different animal models or clinical trials [11-14]. Although most studies demonstrated positive aphrodisiac activities, further studies are needed to reveal their mechanism of activity.

Ambrein and *Panax ginseng* have been shown to relax corpus cavernous smooth muscle or other smooth muscles in animal models, *in vitro* assays [15-16]. Hydro-alcoholic and aqueous extracts of *Asparagus racemosus* (400 mg/kg body weight) have showed aphrodisiac properties on male wistar albino rats and these extracts have increased number of mounts and mating performance, and lower dose (200mg/kg body weight) of hydro-alcoholic extract have shown moderate activity. In addition, 200 mg/kg body weight of milk decoction of *A. racemosus* roots has shown significant aphrodisiac effect. It increased mount frequency and caused decrease in mount latency, post ejaculatory latency and ejaculation latency [17]. There is one study showing that aqueous extract of *Glycyrrhiza glabra* roots and rhizomes have significant decreasing effects on mount latency and intromission latency when 150 mg/kg & 300 mg/kg body weight/day administrated orally by gavage for 28 days on sexually active male rats [18]. *Tribulus terrestris*, also known as "ghokhru" and its extracts have been used as medicine traditionally in both Asia and India and also in Turkey to treat urinary, cardiovascular and gastrointestinal disorders. It is also, used by humankind to stimulate sexual desires due to its steroidal saponin protodioscin [11-19]. *T. terrestris* has been shown to increase erection quality in animals by observing an increased intracavernous pressure, while yohimbine, ginseng, and saffron increased erection quality in humans [11-20]. Saffron is one of the most expensive and highly valued spices in the world. The effect of *Crocus sativus* (saffron) on male erectile dysfunction was studied for 10 days, researchers followed up 20 male patients with erectile dysfunction whereby they were administered a tablet containing 200 mg of saffron every morning. The selected patients were subjected to the nocturnal penile tumescence (NPT) test and the international index of erectile function questionnaire (IIEF-15) at the beginning and the end of the 10 days treatment. The results showed a statistically significant improvement after 10 days of taking saffron [21-22]. *Passiflora incarnata* has been used as anxiolytic, sedative, anticonvulsant all around the world. According to Dhawan et al. studies, the methanolic extract of *Passiflora incarnata* leaves showed strong aphrodisiac effects [23].

Besides, some of plants are usually used as aphrodisiac agents due to their strong antioxidant activities. Oxidative stress or excessive production of free radicals can damage sexual hormones and also decreased libido. This damage can cause infertility and decrease libido in both women and men. Recently, the studies revealed that lipid peroxidation plays significant role at infertility especially affecting sexual hormones, sperm motility and viability. In order to understand the relation between antioxidant and aphrodisiac activities, the effects of many plant extracts were examined by several researchers. According to these studies, there is a strong correlation between plants antioxidant properties and aphrodisiac activities [24].

Several plants have been used traditionally for centuries in Turkey for the treatment of various sexual disorders. Most of the remedies are prepared from a mixture of several species while there are some strong remedies with only one component.

The most popular traditional aphrodisiac is '*Mesir Macunu*' (Mesir Paste). It is a traditional Turkish gum like candy produced in Manisa (Aegean region of Turkey). The original Mesir paste, prepared from 41 different spices, sugar and honey, is a tradition in Anatolia since 16th century [25]. The majority of historians claims its similarities with theriac. The preparation of *mesir macunu* and its ceremonial distribution are still alive in Manisa [26, 27]. Today the content of mesir paste, given in Table 1, has minor differences from the original one. When the Mesir Paste is examined, it is clearly seen that has high antioxidant activity [18-28-29-30-31-32]. The consist of Mesir paste includes many plants which possess strong antioxidant activity There are several studies on these plants antioxidant activities. Some these studies are given in Table 1.

Table 1. Mesir paste.

Local Name	Plant	Family	Part Used	References	Antioxidant
Anason	<i>Pimpinella anisum</i> L.	Umbelliferae	Ripe Fruits	[11-33-34]	[28-35]
Çivitotu	<i>Isatis tinctoria</i> L.	Fabaceae	Leaves	[33]	[29-36]
Çöpçini / Çin Saparması	<i>Smilax china</i> L.	Liliaceae	Roots	[33]	[37-38]
Çörekotu	<i>Nigella sativa</i> L.	Ranunculaceae	Sun Dried Seeds	[33]	[39-40]
Darifülfül	<i>Piper longum</i> L.	Piperaceae	Bitter Fruits	[33]	[41-42]
Defne	<i>Laurus nobilis</i> L.	Lauraceae	Leaves	[33]	[43-44]
Galanya / Kalanga / Büyük Havlican	<i>Alpinia galangal</i> L.	Zingiberaceae	Rhizomes	[33]	[45-46]
Hindistan Cevizi/Kopra	<i>Cocus nucifera</i> L.	Arecaceae	Dried Seeds	[33-47]	[48]
Hindistan Çiçeği	<i>Myristica fragrans</i> Houutt.	Myristicaceae	Flowers	[12-14-33-49]	[50-51]
Hıyarşenbe	<i>Cassia fistula</i> L.	Fabaceae	Ripe Fruits	[33]	[52-53]
Kakule	<i>Elettaria cardamomum</i> L.	Zingiberaceae	Dried Unripe Fruits	[33]	[54-55]
Kara Halile	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruits	[33]	[56-67]
Karabiber	<i>Piper nigrum</i> L.	Piperaceae	Dried Unripe Fruits	[33]	[58-59]
Karanfil	<i>Syzygium aromaticum</i> L.	Myrtaceae	Flowers	[11-12-33-49]	[60-61]
Kebabiyi / Kebabe / Kübabe	<i>Piper cubeba</i> L.	Piperaceae	Dried Unripe Fruits	[33]	[30]
Kimyon	<i>Cuminum cyminum</i> L.	Umbelliferae	Dried Ripe Fruits	[33]	[62-63]
Kışniş	<i>Coriandrum sativum</i> L.	Umbelliferae	Fruits	[11-33-34]	[64-65]
Küçük Havlican	<i>Galanga officinalis</i> (L.) Wild.	Zingiberaceae	Dried Rhizomes	[33]	[-]
Mercanköşk	<i>Origanum majorana</i> L.	Labiatae	Aerial parts	[33]	[66-67]
Meyan	<i>Glycyrrhiza glabra</i> L.	Leguminosae	Condensed Root Extract	[33]	[31-68]
Mirsafi	<i>Commiphora myrrha</i> (Nees) Engl.	Burceraceae	Usare	[33]	[32-69]
Portakal	<i>Citrus aurantium</i> var. <i>dulce</i> L.	Rutaceae	Pericarpium	[33]	[-]
Ravent	<i>Rheum officinale</i> L.	Polygonaceae	Rhizomes	[33]	[70]
Rezene	<i>Foeniculum vulgare</i> Mill.	Umbelliferae	Dried Ripe Fruits	[11-33]	[71-72]
Safran	<i>Crocus sativus</i> L.	Iridaceae	Stigma	[11-12-14-33]	[73-74]
Sakız	<i>Pistacia lentiscus</i> L.	Anacardiaceae	Resin	[33]	[75-76]
Sarı Halile	<i>Terminalia citrina</i> (Gaertn.) Roxb. ex Fleming	Combretaceae	Fruits	[33]	[77]
Sinameki	<i>Cassia acutifolia</i> Mill.	Leguminosae	Dried Leaves	[33]	[78]
Siyah Hardal	<i>Brassica nigra</i> L.	Cruciferae	Seeds	[33]	[79]
Tarçın	<i>Cinnamomum cassia</i> (L.) J.Presl.	Lauraceae	Cortex	[33]	[80-81]
Tarçın Çiçeği	<i>Cinnamomum zeylanicum</i> L.	Lauraceae	Flowers	[33]	[82]
Teke mersini	<i>Vaccinium myrtillus</i> L.	Ericaceae	Fruits	[33]	[83]
Topalak	<i>Cyclamen coum</i> Miller	Primulaceae	Tubers	[33]	[-]
Udülkahr / Nezeleotu	<i>Anacyclus pyrethrum</i> L.	Asteraceae	Dried Roots	[33]	[-]
Vanilya	<i>Vanilla planifolia</i> Andr.	Orchidaceae	Fermented Fruit	[33]	[84-85]
Yenibahar	<i>Pimenta officinalis</i> L.	Myrtaceae	Dried Unripe Fruits	[33]	[-]
Zencefil	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Rhizomes	[11-33]	[86-87]
Zerdeçal / Hintsafra / Sarıboya	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizomes	[33]	[88-89]
Zulumba	<i>Curcuma zedoaria</i> Rosc.	Zingiberaceae	Rhizomes	[33]	[90]

2. MATERIALS AND METHODS

Ethnobotanical studies and thesis about Anatolian folk medicine were reviewed and plants used as aphrodisiac were selected. Information about them were reported. Among all studies, the plants used as aphrodisiac agent in more than one publication have been selected and added to the Table 2.

Table 2. The list of Turkish aphrodisiac plants.

Plant	Local Name	Family	Part Used	Preparation	Dosage	References
<i>Prangos ferulacea</i> L.	Çağsır, köfteotu, kürdanotu, melekotu, pıtrak	Apiaceae	Roots	Mixed with sweets		[91]
<i>Prangos meliocarpoides</i> Boiss. var. <i>meliocarpoides</i>	Çarsır, hiltıl, sultan teresi	Apiaceae	Roots	Mixed with sweets		[91]
<i>Morina persica</i> L.	Boğa dikeneni	Morinaceae	Aerial parts, Roots	Eaten raw		[91]
<i>Hippophae rhamnoides</i> L. subsp. <i>caucasica</i>	Pişot	Elaeagnaceae	Fruits	Eaten raw		[92]
<i>Brassica oleracea</i> L. var. <i>capitata</i> L.	Başlı lahana	Cruciferae	Seeds			[93]
<i>Corylus avellana</i> L. var. <i>avellana</i> <i>Corylus colurna</i> L. <i>Corylus maxima</i> Miller	Fındık	Corylaceae	Seeds	1 kg of hazelnut, butter, honey, raisins and 0.5 kg of garlic are pounded and mixed.	Mixture eaten every morning on empty stomach.	[93-94]
<i>Junierus drupacea</i> L.	Andız	Cupressaceae	Cortex	Decoction, Powder		[95]
<i>Orchis spp.</i> L.	Salep	Orchidaceae	Tubers	Powder		[95]
<i>Cerasus mahaleb</i> L.	Mahlep	Rosaceae	Seeds	Powder, Infusion		[95-96]
<i>Capparis spinosa</i> L. var. <i>spinosa</i>	Gebere	Capparaceae	Seeds	Crushed Extract		[97]
<i>Matricaria chamomilla</i> L.	Papatya, deli papatya, tellipapatya	Asteraceae	Capitulum	Infusion		[97]
<i>Rosa canina</i> L.	Kuşburnu, itburnu	Rosaceae	Fruits, Roots, Seeds	Decoction, Fruits (eaten by chewing), Raw, Mixture (jam etc.)	Herbal tea with hibiscus 1-2 glass per day for 2-3 weeks. Paste prepared from fresh fruits (2-3 kg) and paste mixed with honey in the ratio of 1:3. Consumed on empty stomach.	[98-99-100-101-102-103]
<i>Ceratonia siliqua</i> L.	Keçiboynuzu, Harnup	Fabaceae	Fruits	Mixture (jam etc.), Fruits (eaten by chewing), Raw, Decoction, Fruit powder, Spice	2-3 pieces or 2-3 tablespoons are eaten before breakfast for 2-3 weeks.	[98]

Table 3 (Continued). The list of Turkish aphrodisiac plants.

Plant	Local Name	Family	Part Used	Preparation	Dosage	References
<i>Ferula elaeochytris</i> Korovin	Çarşır, çaaşır, çarşır otu, çakşır, çarşır göbeği	Apiaceae	Roots, Flowers, Seeds, Fruits	Spice, Rhizome juice, Fruits (eaten by chewing), Powdered roots	Drunken 1 teacup twice a day for 2-3 weeks. Peeled roots were dried, pulverized and mixed with honey.	[96-98-104]
<i>Gundelia tournefortii</i> L. var. <i>tournefortii</i> L.	Kenger, Hüznbol	Asteraceae	Latex, Roots	A piece of latex is eaten, Decoction		[100-103-105]
<i>Zea mays</i> L.	Mısır	Poaceae	Style	Decoction, Infusion		[100-105-106]
<i>Ferula communis</i> L.	Çarşır, çarşır otu, çakşır, çarşır göbeği	Apiaceae	Roots	Mash	1 teaspoon twice a day for 1-2 weeks	[107]
<i>Opuntia ficus- indica</i> L.	Kaynana dili, Frenk inciri	Cactaceae	Fruits	Peeled and eaten raw		[105]
<i>Elaeagnus angustifolia</i> L.	İğde	Elaeagnaceae	Flowers	Scent		[105]
<i>Calicotome villosa</i> (Poir.) Link	Azgan	Fabaceae	Flowers, Essential oil	Scent		[105]
<i>Sideritis syriaca</i> L. subsp. <i>Nusairiensis</i>	Adaçayı	Lamiaceae	Aerial parts	Decoction		[105]
<i>Sesamum indicum</i> L.	Susam	Pedaliaceae	Seeds	Eaten raw		[105]
<i>Pinus pinea</i> L.	Çam fıstığı	Pinaceae	Seeds, Fruits	Eaten raw		[103-108]
<i>Arceuthos drupacea</i> Ant. et Kotschy.	Andız	Cupressacaceae	Grape molasses			[108]
<i>Urtica dioica</i> L.	Isırgan	Urticaceae	Aerial parts, Seeds, Leaves	Infusion, Crushed, Leaves mixed with sweets		[91]
<i>Melilotus officinalis</i> L.	Kokulu yonca	Fabaceae	Aerial parts	Decoction		[92]
<i>Punica granatum</i> L.	Nar	Punicaceae	Seeds	Eaten raw		[109]

3. RESULTS AND DISCUSSION

According to ethnobotanical studies, 27 medicinal plants are listed as aphrodisiacs in Turkish traditional medicine. These plants are given in Table 2. The most popular plant is *Rosa canina* which is widely used through all Anatolia. The majority of the plants are prepared in the form of infusion or decoction from freshly collected plant parts.

Mesir paste is remarkably the famous traditional aphrodisiac since centuries.

While comparing usage methods of aphrodisiacs in Turkey and other countries, similarities and differences were observed. For example, *Rosa canina* fruits mixed with honey are used in Turkey while in other countries its essential oil is reputed as aphrodisiac. The flowers of *Elaeagnus angustifolia* are recognized as aphrodisiac in Turkish ethnobotanical studies in Iran its fruits are used as female aphrodisiac. *Sesamum indicum* seeds are used against impotency in both Turkey and India. Turkish people prefer eating raw seeds for treatment. Ayurvedic system suggests a mixture of seeds with honey once a day, before meal. *Urtica dioica*, a component of Swiss love potion, is also used in sweet mixtures in Turkey for the same purpose. *Brassica oleracea*, *Corylus avellana*, *Capparis spinosa* have similar aphrodisiac usage in different countries. Although *Lepidium meyenii* is quite popular as aphrodisiac plants in other countries, *Lepidium sativum* have been used as aphrodisiac agent only in Capadocia region from Turkey [110].

The adverse effects and expensive price of synthetic drugs orient the humankind to natural treatment. Natural products have been used for centuries and investigations proved the effectiveness of some of them.

Author contributions: Concept – S.T.,G.G.T.; Design – S.T.,G.G.T., A.M.; Supervision – A.M.; Resource – S.T., G.G.T.; Materials – S.T., G.G.T.; Data Collection and/or Processing S.T.,G.G.T.; Analysis and/or Interpretation – S.T.,G.G.T.,A.M.; Literature Search – S.T.,G.G.T.; Writing – S.T.,G.G.T. A.M.; Critical Reviews – S.T.,G.G.T., A.M.

Conflict of interest statement: The authors declared no conflict of interest.

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