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Introduction and Review of the Most Important Native Medicinal Plants of ILAM Province in the West of Iran

Ehsan Zeidali[1*] **and Mohammad Mirzaei Heydari**[2]

[1]*Department of Agronomy and Plant Breeding, Ilam University, Ilam, Iran*

[2]*Department of Agricultural Science, Islamic Azad University, Isfahan, Iran*

Abstract

Today, the importance of medicinal plants and recognizing their vital role in advancing the goals of achieving health, drug self-sufficiency, creating employment and economic development is not hidden from anyone. Medicinal plants as reserves and genetic treasures can be considered the greatest national wealth for any country. Due to its high geographical, climatic and spatial diversity, Ilam province in west of Iran; benefits from a great variety of vegetation. This diversity is transferred to two main habitat areas, *i.e.* Iran-Turani and Gulf of Oman. About 1000 plant species have been identified in this province, of which about 30% have medicinal and edible properties. The native plants of Ilam are among the important and diverse plant resources that are known as valuable resources in the fields of medicine and therapy. Some of these plants such as *Crocus sativus*, *Scrophularia striata*, *Celtis tournefortii*, *Quercus brantii*, *Prosopis cineraria*, *Prosopis farcta*, *Rhus coriaria* L., *Hyssopus officinalis*, *Satureja khuzistanica*, *Thymus vulgaris* L., *Stachys lavandulifolia* and *Vitex agnus-castus* have many medicinal properties. For example, saffron is known for its anti-inflammatory, antioxidant and anti-cancer properties. Monkey flower has anti-inflammatory and antiseptic properties. Dagdaghan plant is used as a medicinal plant with anti-inflammatory and antimicrobial properties. Research in this field examines the details of the active compounds and secondary metabolites of these plants. It examines the importance of their medicinal properties in traditional and modern medical fields. Therefore, studying the properties of important medicinal plants of Ilam climate is the aim of this article.

Keywords: ILAM; Medicinal properties; Medicinal plant

Introduction

Iran has diverse climatic conditions for plant growth. Considering that any plant lives in a certain range of fluctuations of environmental characteristics, it has a unique ecological range and the range of this range is different in different geographical regions. Adaptability according to the vegetative elements of regions such as Sahara-Sindian, Iranian-Turanian, Mediterranean and European-Siberian bioform determines the composition and order of the presence of plants [1]. The spectrum of dominant bioforms in a climate represents how plants adapt to a particular climate. For example, in Ilam province in the west of Iran (Figure 1) the forests of Zagros, which includes the protected area of Dinar Koh, belong to the Iran-Turani vegetation zone. This area has a semi-arid climate with a cold climate. The height of most parts of this area is more than 1000 meters above sea level [2].

In general, based on plant species and ecological evidence, Ilam province can be divided into two major vegetation areas: A) Gulf and Omani vegetation areas in the west, south and southwest of the province with an area of 781354.75 hectares (39 percent province) and representative species such as *Capparis spinosa* L., *Alhagi persarum*, *Vitex agnus-castus*, *Prosopis farcta*, *Prosopis cineraria* and *Ziziphus spina-christi*. B) The vegetative area of dry and semi-arid forests of Zagros in the center and north of the province with an area of 1221439.9 hectares (61% of the province) and the indicator species of oak, Baneh, thyme, Oriental hackberry, sumac, etc. [3].

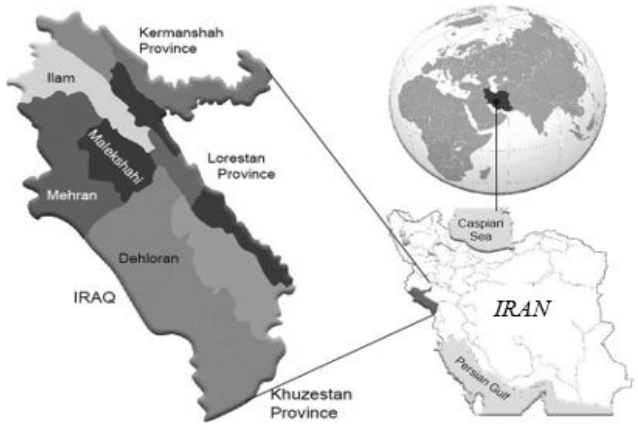

Figure 1: Ilam Province in the West of Iran.

[*]**Corresponding author:** Ehsan Zeidali, Department of Agronomy and Plant Breeding, Ilam University, Ilam, Iran; E-mail: e.zeidali@ilam.ac.ir

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Therefore, the climatic diversity in Iran has created very favorable conditions for benefiting from a unique ecology. These conditions have provided unique opportunities for the growth and development of medicinal plants in the country and have placed Iran in the category of countries that are very capable for the cultivation and production of medicinal plants [4]. Ilam province is one of the prominent regions of Iran, which has much biodiversity due to its geographical and climatic features (the north and center are mountainous with a moderate and cold climate and the south is almost semi-desert and tropical). In this unique natural environment, key plants are known as valuable medicinal resources [5]. These plants, as many representatives of the plant wealth of Ilam province, have outstanding medicinal and therapeutic properties. The present research was conducted to introduce and investigate the properties of medicinal plants in Ilam province.

Today, due to climate changes and also the influx of dust in the west of Iran (caused by the deserts of Syria and Iraq), some plant species that were previously in a certain climate region; they have adapted in other climates and somehow these climate changes have changed the floristic borders. Like the five-fingered plant, which is specific to the southern regions of Ilam province, but as the weather warms, it can also be seen in the central and mountainous regions of Ilam province.

Medicinal plants have been used since ancient times as therapeutic agents for the management of health and treatment of diseases because they possess health-promoting effects and contain bioactive components [6]. According to the World Health Organization 80% of the world's populations rely mainly on traditional medicine. Therefore, there is increasing use and popularity of traditional medicine in both the developing and industrialized countries, demonstrating that the global market for traditional medicine continues to be strong. The international market for herbal medicines has hit over $60 billion yearly and it continues to increase gradually [7].

Finally, this research has been carried out to increase awareness about the medicinal plants of Ilam province in order to help improve scientific and practical knowledge in the fields of medicine and the pharmaceutical industry. The information obtained from this research can help to improve the sustainable use of natural resources and promote health in the local community and even in a wider way.

Literature Review

Gulf and Omani flora

Caper, Kalkom (*Capparis spinosa* L.): *Capparis spinosa* L. (*C. spinosa*) is one of the most popular edible herbs in *Capparidaceae* family. It grows naturally as a perennial shrub in rocky areas, mountains and numerous other soil types, adapting well to drought, high temperatures and salinity [8].

This plant also known as the caper bush, is a perennial winter deciduous species that bears rounded, fleshy leaves and large white to pinkish flowers [9].

This plant has a long root that penetrates deep into the soil. It is a useful, bushy and beautiful plant with a different grassy appearance or with wooden parts and rarely like a shrub or tree. For this reason, Bohas also mention them as a type of the last dark, belonging to warm areas. Its distribution is mostly in hot and temperate regions. Among these, there are also a few types that grow in temperate areas. All parts of the snake grass plant are used, such as the fruit, root, bark, leaf, bud and stem. This plant has several active chemical compounds, but one of the most important compounds is a type of flavonoid. Its roots and flower-producing buds contain pectin, saponin, a very small amount of essential oil, a resin substance, rhamnoglycoside and a substance called capari and glucocaparin. The seeds and leaves contain a volatile substance with the smell of garlic.

The major phytochemicals identified in Caper were flavonoids (rutin, quercetin and catechin), alkaloids (indoles and spermidines) and glucosinolates (glucocapparin). It also contains, in minor quantity, several beneficial compounds like spermidine, kaempferol, stigmasterol, campesterol, tocopherols and carotenoids. The plant contains moderate levels of vitamin C and carbohydrates, dietary fiber, protein and lipids).

The first record of using the caparis plant for medicinal purposes was by the Sumerians, and also the ancient Greeks and Romans used this plant for these purposes. Although they probably did not cultivate it, but collected it wildly from nature. Snake grass is traditionally used as a support, preserver and liver stimulant to improve liver function. This plant is used in cases of arteriosclerosis, reducing flatulence and as an anti-rheumatism.

Various plant parts are traditionally used as a tonic, astringent and diuretic. It is also used to treat many diseases such as kidney, liver, spleen, skin, anemia, nerves, gout, diabetes and rheumatism. In addition to that, it is used as a tonic, breast softener, anti-worm, laxative and pain reliever. It has also been shown that snake grass root extract has significant effects in reducing the size of wounds caused by Leishmania.

Syrian mesquite, Kahoorak (*Prosopis farcta*): The Syrian mesquite plant (*Prosopis farcta*) is a valuable plant species that is known as an important source of effective medicinal substances. The Kahoorak plant is known as a perennial shrub (bushy plant) with 30 to 100 cm high, which is propagated by seeds and the flowering season of it from May to June. The leaves of this plant have a special shape with asymmetric edges and in terms of morphology, it is considered as a plant with great diversity in this field. The average length of the leaves is about 10 cm-20 cm. This plant is often found in hot and dry regions and has a wide distribution, from the dry regions of North Africa and Southwest Asia, to other regions. Among the properties of this plant, we can mention its anti-inflammatory, antimicrobial and antioxidant properties. Studies show that different extracts of this plant can be effective in treating some diseases and health problems. In addition to the above properties, the fruit of the kahoorak plant also has properties for healing wounds. The fruit extract of this plant is known as a natural disinfectant and effective pain reliever for wounds and can help speed up the healing process of skin wounds. Kahoorak has phytochemical compounds such as fatty acid, threo-methyl 9,10-dihydroxyoctadecanoate and also includes organic acids and their derivatives, flavonoids, anthraquinones and lignan derivatives. In desert areas, Kahoorak with its extensive root structure helps protect the soil against wind and water erosion. In addition, it is grown as underbrush in forestry in dry areas, while protecting the soil, it is suitable for creating green cover and landscape.

Chaste tree, five fingers, Kerf (*Vitex agnus-castus*): The genus *Vitex* includes 223 species, of which *Vitex agnus-castus* L. is the most important species in southwestern Iran. *Vitex agnus-castus*, belonging to the *Verbenaceae* family, is found in the environments of Central Asia, the Mediterranean region and Southern Europe and is also harvested in various regions. In Iran, this plant is found abundantly in Tehran, Karaj, Khorasan, Qom and most of the steppe areas of southern Iran, such as Ilam, southern Lorestan, northern Khuzestan, Gachsaran, Kahegiluyeh and Boyar Ahmad. The diameter of the leaves is 7 cm-10 cm and the leaves are like fingers containing 5-7 finger-like leaflets. The leaves are fragrant with gray-green color on top and their lower part is lighter. The flowers are in clusters, purple to blue to dark purple, fragrant, bloom from summer to early fall and the fruits are purple. This plant is considered a medicinal plant because its fruit and dry leaves have been used for medicinal purposes. In Iranian traditional medicine, the leaves and fruits of *V. agnus-castus* are suitable candidates for use in foods, as flavors and spices and berries as a substitute for pepper. *Vitex agnus-castus* is recommended as a hormonal medicine to reduce menstrual disorders and it is used in various ways as an anti-epileptic, aphrodisiac, energizing, sedative, anticonvulsant and treatment of digestive disorders. This plant is also effective in relieving menstrual pain, eye diseases, insufficient lactation, treating acne, snake and scorpion bites, stomach pain and as an antispasmodic. fruits contain various chemical substances including essential oils, flavonoids *V. agnus-castus*, iridoid glycosides and diterpenoids, isoflavonoids and phenolic compounds. The main active components in this plant are flavonoids, which contain casticin, apigenin, vitexin, isovitexin, luteolin, orientin, isoorientin, santin, 6 is caffeoylisoorientin and methyl 5 O is demethyltangeretin. In addition, isoflavonoid and phenolic compounds include agnucastoside C, agnuside, p-hydroxybenzoic and hydroxybenzoic acid and p-glucose ester. Linoleic acid is also a component of *V. agnus-castus* essential oil and has been detected in fruits. The main components of *V. agnus-castus* essential oil include 1,8-cineole, a-pinene, a-terpinyl acetate and (Z)-β-farnesene.

Kahoor, Spunge tree (*Prosopis cineraria*): *Prosopis cineraria* is an important plant species native to arid and semi-arid regions of India and southwestern Iran. This plant from the legume family (*Fabaceae*) is known as small trees or shrubs with medium to tall height. The deciduous leaves of the mesquite tree give it a special and beautiful appearance. The *Prosopis cineraria* is known for its high resistance to drought conditions and is widely used in the formation of plains, deserts and low water areas. This plant has significant resistance characteristics in areas with high temperatures and water stress. In terms of medicinal properties, this plant has many values. In addition to the wood and leather of the Kahoor fruit being used as a source of wood and leather, its fruit also has many healing properties. Studies show that mesquite fruit contains phytochemical compounds such as flavonoids, tannins and polyphenolic compounds with anti-inflammatory, antioxidant and antimicrobial properties. Also, this plant is known as a rich source of minerals and vitamin C, which plays a role in strengthening the body's immune system. In general, mesquite plant has been studied and used as an important economic, environmental and health resource in arid and semi-arid regions of Iran. In addition, this plant has biologically active compounds such as heneicosanoic acid, methyl heptacosanoate, 4-hydroxy benzoic acid and methyl 2-methoxy-5-hydroxycinnamate (2-methoxy-5-hydroxycinnamate methyl), methyl 4-hydroxycinnamate (methyl 4-hydroxycinnamate) and O-Coumaroylglycrol (O-Coumaroylglycrol), which are responsible for many medicinal effects of this plant.

Christian thorn trees, Konar (*Ziziphus spina-christi*): *Zizyphus spina christi* (Christ's thorn) is in the family of *Rhamnaceae*. *Z. spina-christi* is a widespread drought-tolerant tree of the Middle East, northeastern Africa and northwestern India. More formally, its distribution is sub-Sudano-Decanian, with penetrations into the Saharo-Sindian and adjacent Afro-tropical regions. When fully grown, it is a stately tree with an oval, intricately branched crown providing shade, but under the effects of ill-management and excessive browsing, it often occurs as a shrub. Average life span is reported to be 50-75 years.

It has great medical importance that the ancient people knew, as it was used as food, as well as a medicine for many diseases. Konar is distinguished by its tree having a height of 5-10 meters and a trunk diameter of 45 cm. The bark changes color from whitish brown to pale gray. The leaves are simple and curly, the length ranges from 1 cm-9 cm and width 1-3.5 cm, the flowers are small greenish-white color found at the top of the leaves and are characterized by the presence of 5 sepals with a length of 2 mm, 3 petals with a length of 1.5 mm. The warp consists of 5 opposite petals surrounded by a flat lobed disk, the ovary has two lobes and the fruit is reddish brown in color and ranges in diameter to 1.5 cm and has a solid seed around it with a sweet-tasting pulp and these fruits thrive from October to April. In addition, the trees on the Konar on the creation of scattered natural forests, it causes erosion control these trees are resistant to drought and compatible with the regions they are tropical and subtropical. Ecological value of species different species on the one hand and edible properties and a lot of production fruit, medicinal and health properties of different parts of the plant, production various products from its products, bee breeding in the Konar gardens and valuable production with side taste and its medicinal properties on the other hand. It becomes an ecologically and economically suitable plant in the southern regions.

Z. spina-christi is an important food source because it contains many nutrients, as 100 grams of *Z. spina-christi* contains 314 calories. Fresh fruits contain 80% carbohydrates (glucose-fructose-glucose), 3 mg% iron, 0.9 g fat, 140 mg calcium, 0.04 mg of thiamin, 0.13 mg riboflavin, 3.7 mg niacin and 30 mg ascorbic acid and the concentration of ascorbic acid changes according to the degree of ripeness with respect to the fruit. The seeds contain 28.5% fat, 18.6% protein and these proteins are characterized by being rich in sulfur amino acids. The leaves contain many minerals such as calcium 1.270 mg%, iron 7.2 mg%, magnesium 169 mg%.

Christ's thorn leaves extract contain various beneficial ingredients, triterpenoidal saponin glycosides, betulic acid, ceanothic acid, christinin-A, B, C and D. There is some evidence which show *Zizyphus spina christi* leaves decrease the serum glucose level in control and diabetic rats. Hypoglycemic effect of ZSC is mediated by releasing insulin which block KAT P channels in pancreatic beta cell membranes. *Zizyphus spina christi* leaves may potentially be safe for use as an antidiabetic agent.

Discussion

Dry and semi-dry forests of Zagros flora

Thyme (*Thymus vulgaris* L.): Thyme, belonging to the mint family (*Lamiaceae*), is a shrub with a variable height of 30 cm-50 cm, native to the Mediterranean. The stems of this plant are wooden and wire in a narrow shape. The evergreen leaves are oval and small and

usually have a special fragrance. Thyme flowers appear terminally with an uneven calyx and two-edged flowers that are white, yellow or purple. The active components of *Thymus vulgaris* L. include thymus (5-methyl-1-2-isopropyl phenol) and carvacrol (5-isopropyl-2-methyl phenol). Thyme species are rich sources of secondary metabolites. The main examples include the phenolic monoterpenoids carvacrol and thymol, which have significant antimicrobial and inhibitory properties. These compounds effectively treat inflammatory diseases, cardiovascular diseases, arthritis and diabetes. It also has antispasmodic, diuretic, disinfectant, deodorizing, sedative, tonic and expectorant properties due to thymol and carvacrol. Thyme is very important due to the variety of different applications, including additives in foods, medicines and health products. Aromatic and specific leaves of thyme, fresh or dried, are commonly used in cooking a variety of foods, including soups, stews, sauces and herbal tea preparations. Thyme is an important medicinal plant that is recognized for its wide range of therapeutic properties of its chemical constituents, such as anti-rheumatic, anti-dermatophytic, antioxidant, antiseptic, anti-spasmodic, antimicrobial, cardiac, antiseptic, astringent, diuretic and expectorant properties. Has been this plant is also effective for treating coughs, colds, chest infections, diabetes and digestive disorders. Flavonoids, with good potential as antioxidants and antifungal properties, play an important role. In a study about different ecotypes of hydrangea collected in Ilam province, several different parameters were measured, including total soluble sugar content, total protein and proline. The results showed that with the increase in altitude and annual rainfall, the content of total soluble sugar, proline and total protein increased significantly. This increase was more in the samples collected from Mount Manshet than in other regions.

Hyssop (*Hyssopus officinalis*): Hyssop plant is an herbaceous and shrub plant with the scientific name *Hyssopus officinalis*, which belongs to the *Lamiaceae* family. This plant is found in temperate and dry regions from Europe to Asia. Hyssop has a low height and dark green linear leaves. The yellow, blue or purple hyssop flowers in colorful clusters give this plant a special appeal. Hyssop leaves are small and generally grow 2 cm-4 cm. This plant has four-cornered stems on top of which show its colorful flowers. Hyssop is an herbaceous plant resistant to dry and sunny conditions. The hyssop plant is also found in Iran and its main origin can be seen in different regions of the country, including the provinces of East Azerbaijan, Zanjan, Kurdistan, Gilan and Ilam. This plant is compatible with the climatic conditions and is widely found in the mountainous regions of Iran. Hyssop has very diverse medicinal properties. The extract and essential oil of this plant contain phenolic compounds such as thymol and carvacrol, which are known as antibacterial and antifungal. Also, hyssop is known as an anti-inflammatory and sedative herb in traditional and botanical uses. Some of the uses of this plant include treating digestive problems, asthma and even improving the body's immune system. Hyssop contains terpenes such as pinene and limonene, which contribute to the antibacterial and anti-inflammatory properties of this plant. Also, rosmarinic acid and flavonoids such as quercetin are found in the tissues of this plant, which have antioxidant properties. Hyssop has various compounds such as aromatic essential oils that add to the antibacterial, antiviral and antimicrobial properties of this plant.

Khuzistan Savory (*Satureja khuzistanica*): *Satureja khuzistanica* is a species of mint family (*Lamiaceae*). This plant is mainly found in the northern temperate and tropical regions of the Mediterranean region. The flowers of this plant have different colors from red, pink to purple. This plant grows mainly in pastures and mountainous areas and its height usually reaches 60 cm. The leaves are small with serrated edges. The flowers of this plant are produced in compound clusters and due to their color and pleasant taste, the flowers of Azbueh are considered as a popular aromatic and spice plant. Savory is also found in Iran and is especially widespread in mountainous and high areas such as north of khuzistan, Gilan, Mazandaran, Kermanshah and East Azarbaijan provinces. This plant is compatible with the moderate to cold weather conditions of these regions. Also, it is found wild in Ilam province and this region is known as one of the main origins of this plant in Iran. Savory contains essential terpenes such as thymol and carvacrol, which are known as effective substances in the essential oil of this plant. Also, phenolic compounds are found in Savory, which have antioxidant and antibacterial properties. The compounds in Savory, especially thymol and carvacrol, have antibacterial and anti-inflammatory properties and are used as herbal medicines to treat infections and inflammations. Because it contains antioxidant compounds and nutrients, Azboeh can help strengthen the body's immune system and play a role in the prevention and treatment of Alzheimer's, cancer, infection, cardiovascular diseases, diabetes and cholesterol. Azbueh leaves are rich in total phenolic compounds (rosmarinic acid and flavonoids) that have a strong antioxidant effect. Rosmarinic acid (α-O-caffeoyl-3,4-dihydroxy-phenyl lactic) has been identified as a main component in Savory. According to phytochemical research, tannins, volatile oils, sterols, acids, gums, pyrocatechol, phenolic compounds, mucilage and pyrocatechol are the primary compounds of Satureja species. The Savory extract shows an inhibitory effect on lipid peroxidation. Savory also has properties of reducing iron (III) and inhibiting free radicals and contains minerals and vitamins. The leaves and stems of this plant are used in the food, feed and pharmaceutical industries due to their antioxidant properties and significant nutritional content.

Pink cotton Lamb's ear, Mountain tea, Kolkena (*Stachys lavandulifolia*): Mountain tea, a plant that grows in the mountains of Iran, is a member of the *Lamiaceae* family and the Lamiale order and contains about 200 genera and 3000 species. This plant is herbaceous and perennial, with short bushes 65 cm-50 cm high and hairy stems. The fragrant flowers of this plant are in the form of spikes of tiny pinkish-red flowers, which are compact and woolly at the end of the stem, among the light green, silvery sepals. The oval leaves of this plant have prominent veins that are long and toothed, with long petiole ends. Its fragrant flowers, purple pink and yellowish white, are located at the end of the stem in the form of wool. This plant can be seen at altitudes of 1,900 to 3,300 meters above sea level, scattered or sometimes as dense spots on low vegetation levels. This species is especially abundant in low-slope areas and ridges of mountainous regions. The mountain tea plant is widely found in different regions of Iran such as Gorgan, Mazandaran, Azarbaijan, Hamadan, Isfahan, Arak, Khorramabad, Bakhtiari, Fars, Khorasan, central regions of Iran, Alborz highlands and around Tehran, Gilan, Damash and other regions. The basic compounds of this plant include ethanoid glycoside, phenolic (flavonoid), phenyl acid, monoterpene, sesquiterpene, diterpene and triterpene saponin. In addition, compounds such as α pinene, 1, 8-cineol, sabinene, γ terpinene, p cymene are also found in this plant. This plant is used as a treatment for digestive disorders, inflammation and anxiety, as well as a sedative. Research has shown that the essential oil and the main component of this plant have analgesic and anti-inflammatory properties. The people of Ilam province also use this plant as a

carminative, sedative, heart tonic, for rheumatic pain, indigestion and headache.

Saffron (*Crocus sativus*): Saffron (*Crocus sativus* L.) is a perennial, herbaceous and ornamental plant of the lily family that usually flowers in early autumn or spring. This plant has round, firm, fleshy and thick underground stems covered with brown fibrous shells. Single saffron flowers have six petals with purple colors to beautiful and arranged images and three stamens and a red-orange stigma, which is used as the main product of saffron. The main origin of saffron is in Iran (90 percent) and the west of Iran and this plant has been quickly planted and noticed in other parts of the world. The main components of saffron include carotenoid pigments, picrocrocin glucoside, aspartic acid, glutamic acid, cysteine, serine and glycine. These compounds greatly affect the characteristics of saffron, including its color, aroma and medicinal properties, saffron is known as a medicinal plant. This plant is known as an anti-infective, anti-oxidant, increasing blood circulation in the blood system. Anti-pain properties, improvement of sleep patterns, reduction of energy, strengthening of heart health, energy expenditure, boosters and improvement of immune system function have also been attributed to saffron. Due to these plant properties, saffron is used as a multi-purpose plant with importance in various spice industries, traditional medicine and public health. Saffron is highly irritating and due to its significant properties, it is widely used in perfumery and cosmetics and health and skin cancer treatment products. Saffron is used in a variety of sunscreens and lotions as an ultraviolet ray absorbing agent, thus protecting the skin from the harmful rays of the sun. Saffron mixed with basil leaves is traditionally used to treat skin diseases such as acne. Saffron extract together with olive oil or coconut oil helps to improve blood circulation in the facial skin. Saffron extract can also be used to treat acne or redness.

Teshna-Dari (*Scrophularia striata*): *Scrophularia striata* is an Iranian herbaceous and perennial plant from the *Scrophulariaceae* family, which has 220 genera and 3000 species. This plant has thin and long stems (70 cm-90 cm), serrated leaves (2 cm-7.5 cm) and small flowers with various colors. The *Scrophularia striata* grows in dry areas and is easily adapted to the specific environmental conditions in which it lives. The main origin of *Scrophularia striata* is in warm temperate regions to warm semi-arid regions of Iran and Central Asia. This plant is introduced as one of the plants adapted to dry conditions. *Scrophularia striata* is traditionally used as a medicinal plant and has many therapeutic properties and is known as Teshna-Dari in the flora of Ilam. Studies show that marigold has phytochemical compounds such as cinnamic acid, flavonoids such as quercetin, isorhamnetin-3-O-rutinoside, nepitrinandan and phenylpropanoid glycoside acetonide. Which are known by phytochemical analysis of this plant. The local population uses this plant to treat various problems, including burns, infected wounds, the common cold, inflammation and eye and ear infections, as well as a stimulant and lotion. Also, irritation of the digestive system, eye and ear infections, skin burns, hemorrhoids, colds, respiratory diseases and inflammation of the gums and mouth, to treat infectious disorders of the urinary tract, especially in women, are all treated using this plant. In a research conducted on three populations of *Scrophularia striata* in Ilam province (Dara-Shahr, Badre and Dehlran), the results showed that this plant has antioxidant properties and high phenolic content.

Persian oak (*Quercus brantii*): Iranian oak (*Quercus brantii*) is one of the prominent species in the *Fagaceae* family, which is found in arid and semi-arid regions of Iran. This plant has dull green leaves and irregular edges and its main origin is located in the south and southwest of Iran, Afghanistan and Iraq. Iranian oak is a large tree with a height of 20 meters with a large spherical crown and its leaves are generally uniform and egg-shaped with toothed edges, which have star-shaped and dense hairs on the leaves and soft and yellow hairs. It covers its back. Its fruit is elongated, oval and conical. The oak fruit, called Acorn, is inside a cup called Gland. The fruit has different amounts of oily substances, various sugars, starch, a small amount of quercite, pentosan and tannin. Research showed that Iranian oak is known as a rich source of phytochemical compounds and it is used as a medicinal plant in traditional medicine. Research indicates that Iranian oak leaves and coffee contain compounds such as tannins, flavonoids and various sugars. These phytochemical compounds play an important role in creating anti-inflammatory and antibacterial effects of Iranian oak. Also, based on recent research, the consumption of Iranian oak has been proven as an effective herbal treatment for digestive problems, infections and improving the immune system. Tannin is an important phytochemical compound in Iranian oak known as an antioxidant and anti-inflammatory. Also, research suggests that Iranian oak extract can help improve cough and asthma symptoms.

Baneh, Koleng (*Pistacia atlantica*): The genus *Pistacia* belongs to the *Anacardiaceae*, a cosmopolitan family that comprise about 70 genera and over 600 species. The species of the genus *Pistacia* are evergreen or deciduous resin-bearing shrubs and trees which are characterized as xerophytic trees and growing to 8 m-10 m tall. Bane, including species it is a wild pistachio that is spread from the Canary Islands and other countries. It starts from the coast of the Mediterranean Sea and reaches Asia Minor, Syria, the Caucasus, it extends to Iran, Afghanistan and Pakistan. Even in Iran at a distance the provinces of Fars and Kurdistan are seen in mass and scattered in the rest of the country.

Baneh trees cover more than one million and two hundred thousand hectares of forests in Iran. Three subspecies have been identified for Bane, which are: Mutica, Kurdica and Cabulica, which is the most common subspecies of Bane in Iran, Mutica. The Kurdica subspecies is widely found around the Zagros mountain range in the west and north of Iran, east and north of Iraq, south of Turkey and north of Syria in the region called Kurdistan and it shows a non-uniform distribution in these areas and at the same time, the plant composition these areas are considered important. This subspecies is an important source of gum. This gum is called "saqez" and is used traditionally as well as industrially for food (such as chewing gum) and medicine.

Bane kernel contains more than 65% of the bane fruit, the oil content of which is 60%. About the characteristics of kernels, limited studies have been done. They examined the fatty acid structure of kernel oil of the Mutica variety, which was oleic acid (50.4 percent) and linoleic acid (30/8). Percent), the predominant fatty acids in cerebrospinal oil were recognized. Also, the predominant saturated fatty acid of this oil was palmitic acid (12.2 percent). The fruit of this plant is consumed as a healthy food due to its impressive composition of essential nutrients, including proteins, fatty acids and fibers. Also, its essential oil contains significant amounts of tocopherol, sterols, antioxidant polyphenols, essential fatty acids, essential and non-essential amino acids and minerals such as iron, sodium, copper and zinc. The most important fatty acids found in wild pistachio are omega-3, -6 and -9, oleic acid, palmitic acid, linoleic acid and arachidonic acid. Of these, omega-3 and arachidonic acid are converted into prostaglandins and it seems that prostaglandins as a

group of endogenous acidic lipids have an important role in many reproductive processes.

Generally various industrial and traditional uses are mentioned for the main parts of wild pistachio (resin and fruit) including in foods and medicine. Recent research investigates the wide pharmacological properties from various parts of P. *atlantica*, such as antimicrobial, antioxidant, antidiabetic, antitumor and antihyperlipidemic activities.

Oriental hackberry, Toei (*Celtis tournefortii*): Oriental hackberry plant (*Celtis tournefortii*) is a species of *Ulmaceae* plant family. It is an herbaceous or perennial plant with simple, heart-shaped leaves. Colorless and paired flowers appear in the axils of the leaves and its fruit is a fleshy fruit with dry skin. The main origin of *Celtis tournefortii* is in the southern and western regions of Asia, including Iran and the Arabian Peninsula, the Caucasus and Central Asia. This plant grows in tropical and semi-arid regions and is known as a drought-resistant species. *Celtis tournefortii* plant is one of the native plants and vegetation species in Ilam region. Ilam is known as one of the western provinces of Iran with special climatic conditions, suitable soil and suitable nutrition for the growth of this plant. The origin of this plant in this region may be on the slopes of mountains or near rivers and humid areas. Oriental hackberry plant has been used in traditional medicine and some medicinal properties have been attributed to it. Some researchers have shown that the extract of this plant can have anti-inflammatory, antibacterial and even anti-cancer properties. Also, the use of this plant in some chronic diseases such as diabetes and cardiovascular diseases has also been studied. *Celtis tournefortii* plant contains secondary metabolites that may have specific physiological and photochemical properties in this species. Some of the secondary metabolites reported in this plant include phenolic compounds, alkaloids, terpenoids and other active compounds.

Sumac (*Rhus coriaria* L.): Sumac tree and shrub (*Rhus coriaria* L.) is an important species in the field of botany and medicine. This plant, with its unique morphology, diverse origins and numerous medicinal properties, has attracted extensive research attention. The sumac plant is an evergreen plant native to the Mediterranean region. The leaves of this plant are claw-shaped with serrated edges and their shell texture is of particular importance in the production of aromatic and flavoring substances for some foods. The sumac plant originates mainly in the southern and Mediterranean regions and grows well in hot and dry climates. This plant is distributed on the eastern and western coasts of the Mediterranean, North Africa and Southern Europe. Studies have shown that the sumac plant has antibacterial, anti-inflammatory and antioxidant properties. Extracts and secondary metabolites present in this plant, such as tannins and flavonoids, play an important role in strengthening health and treating some diseases. The sumac plant has many tannins, which, in addition to antioxidant effects, also have antibacterial and anti-inflammatory properties.

Conclusion

This plant has various flavonoids such as quercetin and rutin that act as antioxidant and anti-inflammatory substances. Phenolic metabolites such as gallic acid and vanillic acid found in sumac plant are effective as antioxidants and anti-inflammatory substances. It also has terpenoids such as limonene and pinene, which are known for their antibacterial and antifungal properties. Sumac plant is used as a popular spice in cooking and in the preparation of various dishes, especially in Kebab and fast food. Also, as a medicine in traditional medicine, in the treatment of some digestive problems, various inflammations, and even some heart diseases and treating heartburn, this plant is also among the uses of this plant.

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