

Full Length Research Paper

Medicinal benefits and usage of medlar (*Mespilus germanica*) in Gilan Province (Roudsar District), Iran

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Medicinal plants have been used in ancient centuries to this time and people have completed their uses in different centuries and different times that we can complete the knowledge of medicinal plant properties with surveying them in rural people of different countries and different areas in a country. In this research, medicinal properties of medlar (*Mespilus germanica*) have been studied by rural people in East part of Gilan Province (North Iran). *M. germanica*, known as the common medlar is a large shrub or small tree, and it is the name of the fruit of this tree. In this study, we conducted interviews, asked questions and studied the uses of this plant from 20 women and men that are above the age of 50, with two researchers (man and woman separately). Medlars have been used as medicinal plants, by means of leaves, fruits, bark and wood. The fruit seed of this plant is poisonous. Common usage and medicinal benefits and properties of this plant are conserves, cooking jams, diarrhea treatment, diuretic, elimination of oral abscess, elimination of stomach bloating, elimination of throat abscess, fattening, fever disposal, handle of knives and tools, hematopoietic, internal hemorrhage treatment, juice, regurgitation disposal cholera, stimulation treatment of throat, strengthen fine skin, strengthen nerves, treatment of intestinal inflammation, treatment of large intestine infection, treatment of menstrual irregularities, treatment of *Cutaneous leishmaniasis*, wand making and with cold and dry nature.

Key words: Medicinal plant, medlar, *Mespilus germanica*, Iran.

INTRODUCTION

As medicinal plants are suitable alternatives for synthetic and chemical drugs they are also considered to be full of secondary metabolites as essential oils, antibacterial, antifungal and other products (Bibalani and Mosazadeh-Sayadmahaleh, 2011; Habibi Bibalani and Mosazadeh-Sayadmahaleh, 2011; Joudi and Bibalani, 2010). Today according to the World Health Organization reports, as many as 80% of the world's people depend on traditional medicine for their primary health care needs. There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal spices for the treatment of various diseases (Azaizeh et al., 2003). Then, after the scientific revolution which leads to development of the pharmaceutical industry, the synthetic drugs dominated (Gilani and Atta-ur, 2005). Herbal drugs are prescribed widely because of their effectiveness, fewer side effects, and are relatively low in cost (Odhav

et al., 2010). The traditional culture worldwide is more or less endangered as a result of improving legislative and moral supports accorded to orthodox practice over native medicine (Idu and Osemwegie, 2007). Rural ethnobotanical investigation have been studied in national and international areas (El-Ghazali et al., 2010; Joudi and Bibalani, 2010). The aim of this study was to survey and identify the medicinal properties of sour orange (*Citrus aurantium*) by rural people in East part of Gilan Province (North Iran).

MATERIALS AND METHODS

Research area is located at Bibalan, Chaykonesar, Gilmelk, Selakjan, and Arbosara villages in NE Roudsar district in Gilan province, N Iran (Figure 1). This area is south of Caspian sea with rainy and humid climate with about 1100 mm precipitation and -10 to 200 m elevation (Habibi and Mosazadeh-Sayadmahaleh, 2011). *Mespilus germanica*, known as the common medlar, is a large shrub or small tree, and it is the name of the fruit of this tree (Table 1). Despite its Latin name, which means German or Germanic medlar, it is indigenous to southwest Asia and also southeastern

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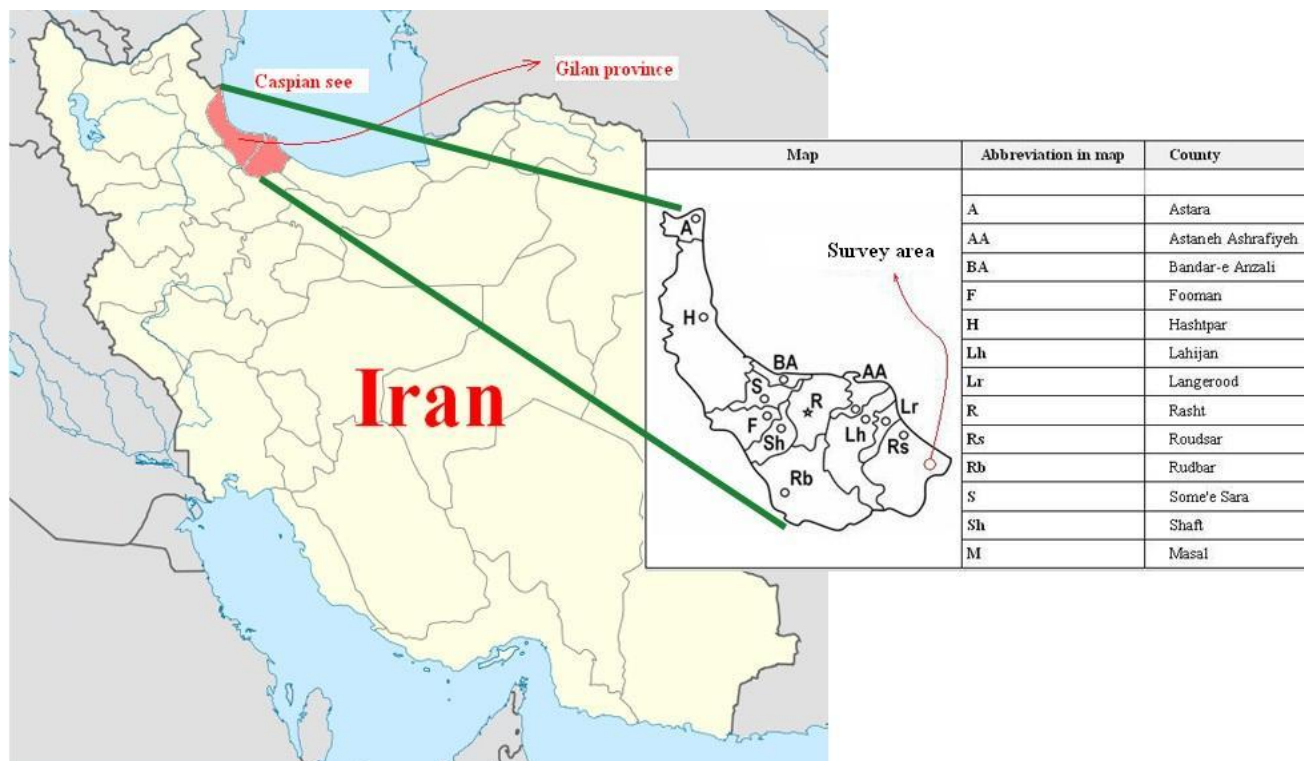


Figure 1. Survey area.

Table 1. Scientific name for *Mespilus germanica* classification report (USDA, 2011).

Kingdom	Plantae – Plants
Subkingdom	Tracheobionta – Vascular plants
Superdivision	Spermatophyta – Seed plants
Division	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Rosidae
Order	Rosales
Family	Rosaceae – Rose family
Genus	<i>Mespilus</i> L. – mespilus
Species	<i>Mespilus germanica</i> L. – medlar

Europe, mostly the Black Sea coasts of modern Turkey. It may have been cultivated for as long as 3000 years (Baird and Thieret, 1989; Wikipedia, 2011a).

Until recently, *M. germanica* was the only known species of medlar. However, in 1990 a new species was discovered in North America, now named *Mespilus canescens*. The Loquat, *Eriobotrya japonica*, is also related, and sometimes called the "Japanese medlar" (Wikipedia, 2011a).

The common Medlar (*M. germanica*) is a slow growing, large deciduous shrub or small tree growing up to 8 m tall. The leaves are dark green and 6 to 15 cm long and 3 to 4 cm wide (Hilary, 2007). The leaves turn a spectacular red when they fall, and the plant has beautiful white flowers in late spring. The fruit is a pome, and is about 1 inch (3 cm) in diameter, with wide-spreading persistent sepals giving a "hollow" appearance to the fruit

(Hilary, 2007). Medlars are hard to start from seed, so most varieties are grafted onto pear root stock. They are self-fertile so they do not need another tree for pollination and they produce fruit by the second year (Hilary, 2007). *M. germanica* requires warm summers and mild winters and prefers sunny, dry locations and slightly acidic soil. Under ideal circumstances, the deciduous plant grows up to 8 m tall. Generally, it is shorter and more shrub-like than tree-like. With a lifespan of 30 to 50 years, *M. germanica* is rather short-lived. *M. germanica* leaves are dark green and elliptic, 8 to 15 centimeters long and 3 to 4 cm wide. The leaves turn red in autumn before falling (Wikipedia, 2011a).

The five-petaled white flowers (Figure 2), produced in late spring, are hermaphrodite and pollinated by bees. The reddish-brown fruit is a pome, 2 to 3 cm diameter, with wide-spreading persistent sepals giving a 'hollow' appearance to the fruit (Wikipedia, 2011a).



Figure 2. The flower has long sepals that remain on the fruit (Wikipedia, 2011a).



Figure 3. Common Medlar foliage and fruit (Wikipedia, 2011a).

M. germanica fruit are very hard and acidic (Figure 3). They become edible after being softened, 'bletted', by frost, or naturally in storage given sufficient time. Once softening begins the skin rapidly takes a wrinkled texture and turns dark brown, and the inside reduces to the consistency and flavour reminiscent of apple sauce. This process can be a cause of confusion to new medlar consumers, as a softened fruit can give the appearance that it is spoilt (Wikipedia, 2011a).

M. germanica was already being cultivated about three thousand years ago in the Caspian Sea region of northern Iran. It was introduced to Greece around 700 BC and to Rome about 200 BC. It was an important fruit plant during Roman and medieval times. By the 17th and 18th century, however, it had been superseded by other fruits, and is very rarely cultivated today. *M. germanica* pomes are one of the few fruits that become edible in winter, and an important tree for gardeners who wish to try to have fruit available all year round. There are several cultivars, including 'Royal', 'Nottingham', and 'Dutch', which bears the largest fruit. *M. germanica* plants can be grafted on to the rootstock of another species, for example the pear, to improve their performance in different soils.

Once bletted, the fruit can be eaten raw, and are often consumed with cheese as a dessert, although they are also used to make medlar jelly. Another dish is "medlar cheese", which is similar to lemon curd, being made with the fruit pulp, eggs, and butter (Wikipedia, 2011a).

They are slow growing, like full sun, but need a temperate climate, well-drained soil, and shelter from any strong winds. They do not like to dry out, but kept moist. They are hardy to USDA Zone: 4 to 9 which means -30 to -20°F and -34.2 to 28.9°C (Hilary, 2007).

Cultivars of *M. germanica* that are grown for their fruit include 'Hollandia', 'Nottingham' and 'Russian', (Phipps et al., 2003) 'Dutch' (also known as 'Giant' or 'Monstrous'), 'Royal', 'Breda giant', and 'Large Russian' (Glowinski, 1991).

Kounos is locally name of this plant in Gilan province in North of Iran.

We interview and ask uses of this plant from 20 women and men elder than 50 years old (that have been known locally for their information and knowledge about medicinal plant usage) with two researchers (man and woman), separately in East part of Gilan Province, North Iran.

RESULTS AND DISCUSSION

Medlars have been used as medicinal plants by means of leaves, fruits, bark and wood. Fruit seed of this plant is poisonous. Common usage and medicinal benefits and properties of this plant are conserve, cooking jams, diarrhea treatment, diuretic, elimination of oral abscess, elimination of stomach bloating, elimination of throat abscess, fattening, fever disposal, handle of knives and tools, hematopoietic, internal hemorrhage treatment, juice, regurgitation disposal cholera, stimulation treatment throat, strengthen fine skin, strengthen nerves, treatment intestinal inflammation, treatment of large intestine infection, treatment of menstrual irregularities, treatment of Cutaneous leishmaniasis, wand making and with cold and dry nature (Tables 2, 3, 4, 5 and 6).

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Table 2. Medicinal benefits and usage of Leaves of medlar.

Part of plant	Medicinal benefits	Usage as
Leaves	Hematopoietic	
	Treatment of large intestine infection	
	Diarrhea treatment	
	Internal hemorrhage treatment	
	Treatment of Cutaneous leishmaniasis	Sodden
	Strengthen fine skin	Sodden
	Elimination of throat abscess	Gargle with sodden of leaves
	With cold and dry nature	
Stimulation treatment throat	Sodden	
Elimination of oral abscess		

Table 3. Medicinal benefits and usage of fruits of medlar.

Part of plant	Medicinal benefits	Usage as
Fruits	Hematopoietic	
	Treatment of large intestine infection	
	Juice	
	Conserve	When the medlar fruit is still firm and unripe, it is picked and put in a container coming into pickles. It is then put into a pot of water and little salt is added to it to fill it in, while it is kept in a cool place. It is locally named "Abdan Konus". It is eaten with <i>Heracleum persicum</i> seed powder and salt in winter (in Yalda Night). Yalda, Yalda Night / Shab-e Yaldâ, or Shab-e Chelleh is the Persian Winter Solstice Celebration which has been popular since ancient times. Yalda is celebrated on the Northern Hemisphere's longest night of the year, that is, on the eve of the Winter Solstice. Depending on the shift of the calendar, Yalda is celebrated on or around December 20 or 21 each year (Wikipedia, 2011b).
	Diarrhea treatment	
	Cooking jams	
	Internal hemorrhage treatment	
	Treatment intestinal inflammation	Medlar can be used in a little milk after removing skin and seeds
	Regurgitation disposal cholera	Sodden
	Strengthen nerves	
Elimination of stomach bloating		
With cold and dry nature		
Fattening		
Diuretic		
Treatment of menstrual irregularities		

Table 4. Medicinal benefits and usage of seed of medlar.

Part of plant	Medicinal benefits	Usage as
Seed	Poisonous	With hydrogen cyanide

Table 5. Medicinal benefits and usage of bark of medlar.

Part of plant	Medicinal benefits	Usage as
Bark	Hematopoietic	Dry powder dissolved in alcohol (as washing the feet)
	Treatment of large intestine infection	
	Diarrhea treatment	
	Internal hemorrhage treatment	
	Diuretic	
	Fever disposal	

Table 6. Medicinal benefits and usage of wood of medlar.

Part of plant	Medicinal benefits	Usage as
Wood	Fever disposal	Dry powder dissolved in alcohol (as washing the feet)
	Wand making	
	Handle of knives and tools	

of this plant in this research area. This study was supported by Shabestar Branch, Islamic Azad University.

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