



Classification and Evaluation of medicinal plant and medicinal properties of mastic

Bahman Fazeli-nasab^{1*}. Ziba Fooladvand¹

¹Faculty Scientific Member, Center of Agricultural biotechnology and Center of Agriculture Research, University of Zabol, Zabol, Iran

ABSTRACT

Mastic (Chatlanqosh or turpentine) is a valuable tree species in most parts of the country, particularly around the southern slopes of the Alborz and Zagros mountain range distributed. Wild Mastic tree is mainly due to the adaptability and hard rocky ground tree and needless to excessive irrigation, it doesn't usually crop. It is the mountain range of the plant, giving it less water. The soil around the tree is bitter (toxic), and to solve this problem, the plant always grows along with it (or the gardens grow), to eliminate the bitter soil. These economical production of resin (turpentine) and its use in the production of pharmaceuticals and health care, nutrition and forage production in fruit and foliage, In addition to its role in protecting the environment and preventing soil erosion, climate stylized regional groundwater supply and Important wildlife habitats as shelter and home to its high resistance and tolerance to drought and other unfavorable environmental conditions is of value and importance. A prerequisite for any improvement in the knowledge of such a comprehensive report of the status of forest genetic diversity of plant populations is this research is the result of a comprehensive study of botany, taxonomy, distribution and status of its medicinal properties and may help to breeders in order to have enough information on how to select the plant.

Key words: Pistachio, Mastic (Chatlanqosh), Medicinal Properties, Taxonomy

INTRODUCTION

The *Pistacia lentiscus* (L.) var. an shrub belonging to the family Anacardiaceae and uniquely cultivated in Iran, is known as Mastic. The resin of *Pistacia lentiscus* L. var. (mastic) has been used for more than 2500 years in traditional Greek medicine for treating several diseases such as gastralgia and peptic ulcers, while the actions of the gum are mentioned in the works of Herodotus, Dioscorides and Galen. Several Roman, Byzantine, Arab and European authors make extensive references to Mastic's healing properties. Modern scientific research has justified the beneficial action of Mastic to gastric diseases, by revealing it's in vivo and in vitro activity against *Helicobacter pylori*, which is considered as the main cause for gastric ulcers. Furthermore, studies of the antimicrobial, antifungal, antioxidant, hypolipidemic, anti-inflammatory, anti-Crohn and anticancer activities of Mastic have characterized it as a wide-range therapeutic agent and a potential source of nature-originated treatments (Mouhajir et al., 2001; Paraschos et al., 2007; Paraschos et al., 2012). Wild Mastic tree is mainly due to the adaptability and hard rocky ground tree and needless to excessive irrigation; it doesn't usually implant and from the mountain range is used if planting less water to do it. The Mastic tree is a rather resilient plant with minor demands that is why it grows well on

arid, rocky and poor soil. Its roots are spread on the surface of the soil and can survive in conditions of absolute drought. On the other hand be extremely sensitive to cold and frost. The preparation of the Mastic tree starts in winter with pruning the trees branches, thus giving the tree a shape suitable for getting under it. This fragrant tree is more than 15 meters tall and crowned with a large round thick trunk and a half meters in diameter, rough and dark, leaves small, rounded shoulders, a person with 2 to 5 pairs of leaflets, Oval to elongate and more or less marginal ciliated and each 5.2 to 8 inches long and 0.7 to 2 inches with leaflets are wide or more. It's flowering period in autumn, autumn and winter of May June and spent in sleep. There are two bases for fruit production in both male and female trees are needed. Inflorescence a cluster, without petals and nectar glands maker and do not attract bees and pollen is dispersed by wind. The fruit is a drupe, size 5 to 6 or 6 to 8 mm and oil. Rooting in the axial, vertical and lateral is root production at low power. Seedling stage and it was long before the age of five, trees, small fruit production and 10 to 12 years of complete and economical tree starts bearing (Mozaffarian, 2008; Adams & Wendel, 2005; Youngken, 1950; Budavari, 1989; Chevallier, 1996; Evans, 1996; Lawless, 1995). The tree of the Canary Islands and the Mediterranean coastal countries began to Asia Minor and Syria, the Caucasus, Iran (the Iranian plateau in many parts of West, North, Central, South, south, East and Northeast grow), Afghanistan and Pakistan are published. And the names of the Chatlanquish, Shatlanquish, turpentine, Mastic, van, rather, are the diversity of species. Resinous extract of the stem, which is used in paint and the varnish and gum. Mastic fresh fruit in a little hot and dry, and the rule is binding document. Mastic oil is hot and dry, and to strengthen the brain, nerves, smooth voice, and open the blocked artery stiffness, jaundice, diarrhea and treatment of canine vermin (tarantula) is used. Fruit of luggage to enhance sexual power, stomach bloating and gas for all the warm and helpful, grow hair, headache, anemia, smooth voice, jaundice, kidney, breast mixing, fat, lips cracking, softening of the bones, to escape Insect diuretic, tilt and burst nails, swelling and cracking of the skin, stomach tonic and useful. Oral administration of the fruit due to its high fat and Ashkaneh make sense of it. The resin and oil for the treatment of inflammatory skin diseases soften and edema and cleaning is used to treat paralysis and potential. The Mastic in preparing pickles, jam, halva and buttermilk are used (Zahedi *et al.* 2004 and 2007). Pistachio trees belonging to the Anacardiaceae family and genus of 11 species of the genus Pistachio that are all of turpentine (turpentine) are secreted. The most important species in the genus Pistachio include: P.Vera or ordinary nuts, P.Khinjuk or Khnjik or deductions, P.atlantica (Chatlanquish, turpentine, mastic, Noshkun and turpentine) (which also has three subspecies, namely Mutica, Kurdika and is Kabulica), P.terebinthus (which is also called Kabvlyka subspecies Atlantica Pistacia), P.shintesis (P.integerrima). Failure to provide the required cooling, causing a delay in flowering nut trees, flowering unevenly, reducing the number of leaf petiole, abnormal production of leaves. For maximum yield, relative humidity should be less than 35% (Zahedi *et al.* 2004 and 2007).

Mastic collection

Mastic collection starts usually mid-August, with the work starting again very early in the morning. The larger pieces are collected (along with dust, tree leaves and small stones) from the ground. They are spread in large wooden pans and taken in to the grower's house to be stored in a dry and cool place. The small pieces of mastic are collected Mid-September from the tree trunk and from the ground. The cleaning of mastic is a laborious task which starts November. Usually all the family participates and the cleaning process lasts throughout the winter period. Mastic is washed and then the larger pieces are manually cleaned one by one with a small pointed knife. The small pieces are cleaned in a different way.

Mastic properties

It is made of hundreds of components, among which only 80 are contained in identifiable quantities. Such multitude probably justifies the multiple properties and uses of mastic / mastic oil, in the fields of food industry, health and cosmetic care. Mastic is a tree. People use the sap (resin) from the trunk to make

medicine. Mastic is used for stomach and intestinal ulcers, breathing problems, muscle aches, and bacterial and fungal infections. It is also used to improve blood circulation. Some people apply mastic directly to the skin for cuts and as an insect repellent. In dentistry, mastic resin is used as a material for fillings. Chewing the resin releases substances that freshen the breath and tighten the gums. In manufacturing, mastic resin is used in the food and drink industries and in the production of chewing gum (Antonym, 2014).

Mastic uses

Mastic has many useful qualities and uses

- 1- It absorbs cholesterol ,
- 2- It has antibacterial properties ,
- 3- Acts as an oral antiseptic ,
- 4- Aids digestion, tightens the gums ,
- 5- Heals wounds and
- 6- Scientists recently discovered that when it is administrated even in small doses it cures stomach ulcers .

Antimicrobial action of Mastic oil (Chios masticha essential oil)

Significant research activity has been carried out regarding the antimicrobial action of mastic's essential oil – mastic oil. Researchers have studied in particular that when mastic oil has been incorporated in the growth medium, it can delay the growth rate, but also eliminate microbes, bacteria and pathogenic micro organisms .The results of such studies confirm the important antimicrobial and antifungal action of mastic oil, thus encouraging its further usage as a component of pharmaceutical and other protection and care products (Koutsoudaki et al., 2005; Aksoy et al., 2006; Antonym, 2014).

In recent years, university researchers have provided the scientific evidence for the medicinal properties of mastic (Antonym, 2014).

A 1985 study by the University of Thessaloniki discovered that mastic can reduce bacterial plaque in the mouth by 41.5 percent .

A 1998 study by the University of Athens found that mastic oil has antibacterial and anti-fungal properties .

A 1998 study, by Nottingham University, published in the New England Journal of Medicine found that mastic heals peptic ulcers.

In a medical conversion, in 1999, it was announced that mastic cures the stomach ulcer .

In USA and Japan, they produce medicine with mastic, which cures stomach ulcer and relieves stomach ache.

The Greek Word mastiha is often translated in English as Mastic, masticha, mastiha, mastika, mastix etc

Mastic as a protective agent against atherosclerosis

Recently there has been an intense scientific interest regarding the use of natural antioxidant agents as protective means against the atherosclerosis disease. Because of their composition, these substances offer protection against the formation of atheromatous plaques, thus preventing the risk of atherosclerosis and heart diseases. The presence of phenolic molecules, triterpenic compounds as well as phytosterols among Chios mastic's components is particularly important because of their action against the oxidation of low density lipoprotein (LDL) and that is a significant evidence for its potential antioxidant effect. Research activity in that field is still in an experimental stage. In any case, the results that have been published up to now are particularly encouraging and indicate that strong possibility of using mastic as a natural antioxidant agent (Antonym, 2014).

Chios Mastic in relation to oral hygiene and dental research.

Scientific studies have proved that chewing natural mastic gum is very helpful for gum exercise, along with all its relevant beneficial effects in dental health. It has been further confirmed that natural mastic, unlike ordinary chewing gums, induces greater salivation due to its particular taste and its relative hardness, something that gives a greater feel of mouth freshness and cleanness, while it has been also proved to be relieving for people suffering from dry mouth, a disorder especially common among elderly persons. In addition, researchers have carried out numerous scientific and clinical studies regarding mastic chewing gum's action in decreasing microbial plaque formation and eliminating bacterial growth inside the oral cavity (Antonym, 2014).

Chios natural Masticha's action in terms of prevention and treatment of peptic system diseases.

The results of recent scientific studies related to mastic's therapeutic action with regard to disorders of the peptic system are especially worth-mentioning. Ever since antiquity, it had been known that Chios mastic had a strong positive effect in stomach comfort, e.g. relieving from gastrointestinal disorders, dyspepsia, stomach ache, peptic ulcers, etc. In our times, scientific, laboratory and clinical studies have confirmed the previously significant action of Chios mastic. The first research efforts were carried out in university foundations and clinics of the Arab world, areas where the use of Chios mastic was and still is widespread even in practical medicine concoctions (Antonym, 2014).

Use of mastic as a component of wound healing bandages and as a skin regeneration agent.

Relevant publications have revealed that mastic presents excellent wound healing and suturing properties, while at the same time it does not bring undesirable side effects to the skin (such as dermatitis, skin decoloration, etc), like other common healing products do. This unique natural resin is already used very often as a component of bandages, adhesive plasters, compresses and other healing agents applied for the protection and healing of wounds or post-surgical incisions (Antonym, 2014).

Use in Dentistry and Orthodontics

In dentistry, mastiha is used as a component of dental fillings and tooth moulds. Chewing mastiha assists in mouth disinfection, in reducing the frequency of orthodontic problems and in gum strengthening. Moreover, it humidifies the oral cavity, thanks to salivation, thus cleaning and perfuming the mouth. Chewing mastiha systematically eliminates or inhibits significantly the formation of microbial plaques. Therefore, it helps preventing caries and periodontal troubles. Finally, eugenol contained in mastiha oil is used today in dentistry as an antiseptic and soothing substance. Mastiha is used as a toothpaste and mouth wash ingredient for cleanness and disinfection of the oral cavity (Antonym, 2014).

Medicinal – pharmaceutical use

Mastiha fights helicobacter Pylori according to recent studies carried out by Nottingham University and published in the reliable medical journal The New England Journal of Medicine. Furthermore, universities in Greece and abroad currently study mastiha's action in relation to diabetes mellitus, cholesterol and triglycerides. It is also worth mentioning mastiha's effect on liver function by stimulating its detoxifying activity. Today, products such as mastiha powder, mastiha capsules and many more are widely on sale and are actually used by many people for dealing with the above health problems. Mastiha is also used in ointments against burns, frostbites, skin troubles as well as in adhesive plasters (Antonym, 2014).

Industrial use

As mastiha is partially dissoluble in alcohol and fully dissoluble in ether, terpentine and other organic solvents, it is widely used in industry. Mastiha oil is used as a perfume but also as a perfume stabilizer. In textile and cotton industry it is used as a colour stabilizer for textile starching, especially for silk. In tanning industry, in elastics and plastics industry, in the production of colours, glues and glutinous

substances, in camphor production and in colour printing, mastiha is used as a colour stabilizer (Antonym, 2014).

The use of natural mastic in cooking, baking, sweet making.

Chios mastic is one of the oldest known spices in the Mediterranean and lends its distinctive aroma in many foodstuffs. Mastic has been traditionally used as flavouring for festive breads, brioches and biscuits. In certain areas of Greece, mostly of the Aegean Sea, mastic is often used as flavouring for Easter sweets. Mastic is also used in confectionery, mostly for mastic-flavoured desserts and for a delicious ice-cream known as kaimaki, which has an unusual a bit chewy and stringy texture thanks to the addition of Chios mastic as a thickening agent. But Modern Greek chefs have proved that this spice with its unique aromatic, wood- and pine-like, and exotic taste can go along with a lot of foods even with chocolate (Antonym, 2014).

Taxonomy Pistachio sex and wild relatives near

Botanical four genera in the botanical range "Iran" means cardinal larger old Jaynam (including current Iran, Afghanistan, part of West Pakistan, northern Iraq, Azerbaijan and Turkmenistan) have been introduced as follows: ((Zahedi *et al.* 2004 and 2007):

1) Pistacia Atlantica, the names Chatlanqush, turpentine, mastic, Noshkun, Benesht, Gonaushk, Qlen, van, nine, Guan and Gavan of the famous and popular sites such as Pakistan, Afghanistan, Iran, the Caucasus, Asia Minor, Syria, regions Mediterranean coast and the ghanary islands are. The latest studies of biological, species of Atlantica has three subspecies:

A) Pistacia Atlantica Mutica: general habitat Iran, Iraq, Iran, the Caucasus and Asia Minor, and in places like Azerbaijan, Kermanshah, Lorestan, Ilam, Arak, Bakhtiari, southern slopes of Alborz, Fars, Kerman, Yazd, Baluchistan, Khorasan is.

B) Pistacia Atlantica Kurdica, general habitat, Iran, Armenia, Iraq, Asia Minor and Syria, and in Iran, where such Kermanshah, Kurdistan, Lorestan, Ilam, Fars, Kerman, Baluchistan is.

C) Pistacia Kabulica Atlantica, the general habitat in southern Iran, Pakistan, Afghanistan and Iran in areas such as asserting, Kerman and Taftan is. Some of these resources are called subspecies of the same species Pistacia trbintus.

2) Pistacia Khenjuk; habitat in areas of Kashmir, Punjab, Chitral, Balochistan, Afghanistan, Iran and northern Syria and the Zagros Mountains of Iran, Baluchistan, south-east of Khorasan. Afghan Persian scientific name of this species and its local names, local names Khenjuk been in Iran, as are fractions and Kulkhung. Such a "compact" (Variety) has the scientific name Populyfolia, that "the canon Dynavar between Kermanshah and songhor, and Tabas," has been reported.

3) Pistacia Shynnsys (verbal, "chinian Pistacia"), a subspecies of it, integrymia, in places like Afghanistan, Pakistan and Baluchistan (Makran) grows. The subspecies of the species formerly independent Pistacia knew integrymia.

4) Pistacia Vera (verbal, "true pistacia"); tree to a height of 3 to 8 and sometimes 10 meters of the vehicle based on the "north-eastern Iran, northern Afghanistan, Turkmenistan, Uzbekistan, Tajikistan, Bukhara and Tian Shan" was is. In Iran, the thinning of forests or community "in northeastern Khorasan Mountain, north-west to south-east, ferns, chitter, eunuchs, and Maraveh Amnd Hill" has dissipated. Pistachio trees for economic exploitation in different parts of the fruit (especially in Damghan, Qazvin and Rafsanjan) and also in the world is grown in the Mediterranean region.

CONCLUSION

Genetic transformation of yeast and move as a way for all those who, genetically modified organisms or actually deal with is very important. Well as Plant breeding practical knowledge of art and science in this field of activity and sustainability performance is influenced by genetic variation in the species gene pool must be considered. Natural plant to survive in the wild and garden varieties in comparison with familiar

wild species effectively deal with environmental challenges are very vulnerable. Advances in plant breeding nut like any other, are the three basic requirements: First, new sources of variation for providing favorable alleles for genetic improvement; Second, the diversity and recombination of technologies for the production of new genotypes, and third, to identify technologies and phenotypes associated with gene selection for matching sets production, genotyping and screening for genetic sources of useful genes (character mapping germplasm), respectively. The first step in this direction, sustainable use of the Pistacia germplasm country. At least that shelters wild gene kit (Pistacia Atlantica) in the scientific conservation and management should be identified.

REFERENCES

- Antonyne. 2014. Chios Mastic gum information. Taken from: http://www.mastic.gr/contents/en-us/d13_mastic_gum_mastiha_info_mastixa.html
- Adams, K. and Wendel, J. 2005. Polyploidy and genome evolution in plants. *Current Opinion in Plant Biology*. 8:135–141.
- Akso, A., Duran, N., Koksall, F. 2006. "In vitro and in vivo antimicrobial effects of mastic chewing gum against *Streptococcus mutans* and *mutans streptococci*". *Archives of Oral Biology* 51(6): 476–481. doi:10.1016/j.archoralbio.2005.11.003. PMID 16343417.
- Budavari S. 1989. The Merck Index. 11th ed. Rahway, NJ: Merck & Co, Inc, pp92
- Chevallier A. 1996. The Encyclopedia of Medicinal Plants. New York, NY: DK Publishing; pp249.
- Evans W. 1996. Trease and Evans' Pharmacognosy. 14th ed. Philadelphia, PA: WB Saunders Company Ltd; pp290-291.
- Koutsoudaki C, Krsek M, Rodger A. 2005. "Chemical composition and antibacterial activity of the essential oil and the gum of *Pistacia lentiscus* Var. chia". *Journal of Agricultural and Food Chemistry* 53 (20): 7681–7685. Doi: 10.1021/jf050639s. PMID 16190616.
- Lawless J. 1995. The Illustrated Encyclopedia of Essential Oils. Rockport, MA: Element Books; pp203.
- Mouhadjir, F., Hudson, J.B., Rejdali, M., Towers, G.H.N. 2001. Multiple antiviral activities of endemic medicinal plants used by Berber peoples of Morocco. *Pharmaceut Biol* 39(5):364-374.
- Mozaffarian, V. 2008. *ilam flora*. Publication contemporary culture. Page 936
- Paraschos, S., Mitakou, S., Skaltsounis, A.L. 2012. Chios gum mastic: A review of its biological activities. *Curr Med Chem*. 19(14):2292-302.
- Paraschos S, Magiatis P, Mitakou S. 2007. "In vitro and in vivo activities of Chios mastic gum extracts and constituents against *Helicobacter pylori*". *Antimicrobial Agents and Chemotherapy* 51 (2): 551–9. doi:10.1128/AAC.00642-06. PMC 1797732. PMID 17116667.
- Youngken H. A. 1950. Text Book of Pharmacognosy. 6th ed. Philadelphia, PA: P. Blakiston's Son & Co; pp535-536.
- Zahedi Pour, H., Fattahi, M., Mirdavoudian Akhavan, H.R. 2007. Qualitative and quantitative distribution and characteristics of turpentine in the central province of habitats: mountain region, turpentine, Tafresh city. *Journal of Biology*, Vol 20 (2): 199-191.

Zahedi Pour, H. Fattahi, M. Mirdavodian Akhavan, HR. Azdo, Z. 2004. Study Of the distribution, ecology and phenology in the central province of turpentine, a case study: Mount preferred habitat - Saveh city. Research and development Issue 64: 97-103.

Archive of SID