

# Therapeutic significance and economic effectiveness of Monoflor honey from *Lavsonia inermis* L. In Azerbaijan

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**Abstract.** The presented article provides information on the introduction of henna (*Lavsonia Inermis* L.), one of the world's oldest cosmetic products, to Azerbaijan, its botanical description, its indoor cultivation, its use in medicine, cosmetology, and the purchase of monofloral honey. Researches were conducted in Baku, Absheron, Lankaran, Ganja regions of the Republic of Azerbaijan, as well as in Nakhchivan MR. All organs of the henna plant have a unique coloring property. Henna has been found to contain various oils, cellulose, ash, nitrogen, essential oil, and a dye containing lavson, which has given it world fame. As a result of many years of research, Tofiq Sadigov bought two new varieties of henna from *Lavsonia Inermis* L. species. The obtained Orkhan henna variety is used to buy leaf products. Another variety obtained from *Lavsonia Inermis* L. is the Sarkhan henna variety. Sarkhan henna blooms throughout the year, even in winter. The Sarkhan henna variety is mainly grown for use in the production of 100% monofloral honey. Monoflor honey gives positive results when used in gastrointestinal diseases. Studies on the production of monofloral honey from the flower of *Lavsonia Inermis* L. yielded positive results.

## 1 Introduction

*Lavsonia inermis* L. is a very valuable technical plant. The species *Lavsonia Inermis* L. belongs to the genus *Lavsonia* L. of the Aglarot family. For the first time, the henna plant was described by K. Linnaeus in 1753 [7,8].

Research works were conducted in different areas of Azerbaijan, as well as at the Institute of Dendrology, located in Absheron, under closed conditions on *Lavsonia Inermis* L. species. As a cosmetic treatment, henna powder is made from the ground leaves of *Lavsonia Inermis* L. species. It has a rich chemical composition [2]. The species contains astringent and antiseptic properties [3]. Due to these properties, it is widely used in skin diseases and wounds. they are used in the treatment of kidney diseases and headaches.

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Essential oil obtained by hydro distillation from henna leaves is widely used in medicine [12]. All organs of the henna plant have a unique coloring property.

## 2 Materials and Methods

Researches were conducted by T.Sadigov in Baku, Absheron, Lankaran, Ganja and Nakhchivan cities of the Republic of Azerbaijan for many years. Recently, studies have been conducted at the Institute of Dendrology on *Lavsonia Inermis* L. species indoors, and positive results have been obtained.

Phenological observations on the studied species were studied with reference to standard methods used in botanical gardens.

## 3 Results and Discussion

Since ancient times, henna has been used both as a cosmetic and in the treatment of many diseases. *Lavsonia Inermis* L., one of the oldest cosmetic products is a perennial bush plant belonging to the Lythraceae Jaume St. Hil. family and grows naturally in the deserts of Arabia. It is cultivated under cultural conditions in Egypt, India, Tunisia, Japan, Iran and the island of Ceylon and lives up to 30 years. The height of *Lavsonia Inermis* L. is from 1.5 m to 7.0 m. The henna plant cultivated in open conditions in Azerbaijan shows itself as an annual plant. Its height reaches from 0.5 m to 1.5 m. When cultivated in closed conditions, henna bushes show themselves as perennial plants and produce 2-3 times a year by completing the phenological development phases. In closed conditions henna bushes grow from 1.5 m up to 3 m in height and give high-quality product [4,9,10].

Egyptian henna is considered to be the best quality product [11]. In Egypt, both men and women have used henna as a cosmetic dye from ancient to modern times. Henna has been found to contain various oils, cellulose, ash, nitrogen, essential oil and the dye containing lavson, which has given it world fame. Henna dye is used for dyeing cotton, wool, and silk. Fabrics dyed with henna do not change their color for a long time. Henna powder, which is used as a medicinal, cosmetic and natural dye plant, is prepared by grinding the leaves after collecting them and drying them. Henna improves hair and prevents its loss [1,6,10].

The bark of a young henna's stem is light-colored, and as it grows, its color darkens. The branches are sometimes prickly. The leaves are oblong-oval and folded downwards. According to the color of henna flowers, it has white and red flowers. Henna flowers are pleasant. It kind of reminds me of the smell of a rose. A perfume is prepared from the mixture of its flowers with vegetable oils. Its whitish-red colored flowers are used in the preparation of fragrant soap (Fig. 1.).



**Fig. 1.** Flowering period of henna plant

The fruit of the henna plant is a 4-slotted box-shaped, round pea-sized, thin-skinned fruit. Each nest contains a large number of small pyramidal-shaped brown seeds. [5]

The chemical composition of henna leaves has been studied. As a result of the research, it was found that henna leaves do not contain alkaloids, glucosides, anthraglucosides and saponins. The presence of inoculating substances, lavson, sugary, fatty and resinous substances and organic acids in its leaves was detected and their amount was determined. The coloring matter (the amount of lavson) in the pomegranate powder was determined by the FEK method (Fig. 2).



**Fig. 2.** Seeds of the henna plant

The henna plant is spread from the coast of Eastern Australia to East, North Africa and Madagascar. Henna has been known since ancient times as a dye, decoration and medicinal plant. All organs of the henna plant have a unique coloring property. As a medicinal plant, henna has been highly valued by doctors since ancient times. In folk medicine, henna is used to treat skin diseases. Henna, which has a disinfecting effect, is used to treat wounds, as well as in the treatment of dermatological and bone diseases, headaches. Essential oil obtained by hydrodistillation from henna leaves is widely used in medicine.

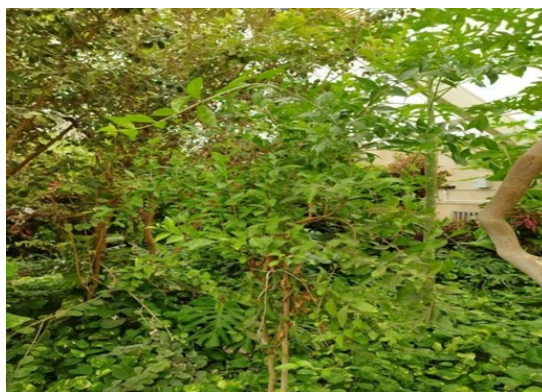
Scientific research on *Lavsonia Inermis* L. under closed conditions is still ongoing. In 1975, studies on henna seedlings and seeds brought to ANAS Nakhchivan Science Center were conducted by T.M. Sadigov and positive results were obtained. Based on the results of the conducted research, it was decided to build a henna plant in the city of Nakhchivan of the Republic of Azerbaijan to buy 100 tons of henna products (Decision No. 124 of the Council of Ministers of the Azerbaijan SSR dated 15.04.1986. Baku city 1986-1990 Technical conditions: T.Sh AZ 140155071 01.01.2016 It is applied for the first time. Validity date: 14.12.2016-14.12.2021)

The product of *Lavsonia inermis* L. grown in Nakhchivan, Shirvan and Absheron conditions, i.e. ground henna powder, was compared with henna products grown in Iran and India. For this purpose, analyzes were conducted in the laboratory of non-production and other types of household services of the Central Design, Constructor and Technological Bureau of the Ministry of Household Service of the RSFSR. As a result of the comparative study of the analyses, it was found that the quality of the product obtained from the henna plant grown in the climatic conditions of Nakhchivan MR is much better than the quality of the henna product grown in the countries of Iran and India in terms of color indicators and dyeing ability (Table 1.).

**Table 1.** Analysis of some quality indicators of the henna product

| Cultivated area | Pollen color and sexuality            | Amount of colorant (in %) |
|-----------------|---------------------------------------|---------------------------|
| Iran            | Dark brown                            | 1.14                      |
| India           | brown                                 | 0.46                      |
| Absheron        | Yellowish-green, slightly homogeneous | -                         |
| Shirvan         | Green, slightly heterogeneous         | -                         |
| Nakhchivan      | Emerald-green, homogeneous minor      | 1.50                      |

As a result of many years of research, T.M. Sadigov bought two new henna varieties from *Lavsonia Inermis* L. species. The obtained Orkhan henna variety is used to buy leaf products. Since the Orkhan henna variety has few flowers, its main product is leaves. A patent (Patent N00205, 20.02.2016), a hygienic certificate (hygienic certificate (henna) N AZ 031.1287. 07.07.2018) and a trademark (Trademark, Certificate N20140085. 15.01.2014) were obtained from the Orkhan henna variety (Fig. 3.).



**Fig. 3.** Orkhan henna variety in indoor conditions

Another variety obtained from *Lavsonia Inermis* L. is the Sarkhan henna variety. Sarkhan henna blooms throughout the year, even in winter (Fig. 4.).



**Fig. 4.** Sarkhan henna variety blooming all year round indoors

Sarkhan henna variety (Patent N0232. 28.02.2017) was bred mainly for use in the production of 100% monofloral honey. Monoflor honey gives positive results when used in gastrointestinal diseases. Studies on the production of monofloral honey from the flower of *Lavsonia Inermis* L. yielded positive results (Invention J2013.72.02.04.2012).

## 4 Conclusion

"Monoflor honey" obtained from *Lavsonia Inermis* L. is an indispensable tool in the treatment of cardiovascular, gastrointestinal, and liver diseases. It should be noted that 100 kg of "Monoflor honey" can be purchased from that henna area during the year by placing 5 families on 1000 m<sup>2</sup>. Based on the results of multi-year researches, it is possible to collect a quality henna crop under closed conditions, keep a family of bees in the henna-planted greenhouse, and buy "Monoflor honey" bought by Tofiq Sadigov for the first time in Azerbaijan, and earn up to 100,000 manats from that 1 hectare henna field. Cultivation of *Lavsonia Inermis* L. in the natural climatic conditions of Azerbaijan can satisfy the demand for this product in our country.

*Lavsonia Inermis* L. species is an evergreen shrub, it blooms continuously from June to the end of the year, it has fragrant flowers and beautiful colored fruits, it is appropriate to plant it in parks, gardens and enterprises of the republic, and this matter is recommended to the greening department.

Based on the results of many years of research, it is possible to get a high income by buying henna products and "Monoflor honey" for sale from the henna plant grown in indoor greenhouse conditions in Nakhchivan, Absheron, Shirvan and Ganja regions of Azerbaijan. It is recommended that companies and agrarian companies who want to buy henna products use the Orkhan henna variety, and those who want to buy monofloral honey use the Sarkhan henna variety.

## Authors' contribution

Methodology, Tofiq Sadigov; Investigation, Khayala Alibayli, Mehriban Gafarova; Resources, Zumrud Aliyeva; Writing – Original Draft Preparation, Tofiq Sadigov; Writing – Review & Editing, Tofiq Sadigov; Funding Acquisition, Tofiq Sadigov, Khayala Alibayli.

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