

Ethnobotanical Study of Herbs Used on Toothache in Ilam City, West of Iran

Kourosh Saki¹, Mohammad Ezati², Naser Abbasi³, Damoun Razmjoue^{4,5}, Mohadeseh Pirhadi⁶, Behnaz Shojaei⁷, Mahmoud Bahmani^{8*}

¹Associate Professor of Psychiatry, Department of Psychiatry, School of Medicine, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Email: Kouroshsaki74@gmail.com

²Biotechnology and Medicinal Plants Research Center, Ilam University of Medical Sciences, Ilam, Iran

Email: mezati@ymail.com

³Biotechnology and Medicinal Plants Research Center, Ilam University of Medical Sciences, Ilam, Iran

Email: ilamfarma@gmail.com

⁴Medicinal Plants Research Center, Yasuj University of Medical Sciences, Yasuj, Iran

⁵Department of Pharmacognosy, Faculty of Pharmacy, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Email: d.razmjoue@gmail.com

⁶Department of Environmental Health Engineering, Food Safety Division, School of Public Health, Tehran University of Medical Sciences and Health Services, Tehran, Iran

Email: m.pirhadi371@gmail.com

⁷Midwifery Department, Faculty of Nursing and Midwifery, Kerman Branch, Islamic Azad University, Kerman, Iran

Email: bshojaei@gmail.com

⁸Biotechnology and Medicinal Plants Research Center, Ilam University of Medical Sciences, Ilam, Iran

*Corresponding Author: mahmood.bahmani@gmail.com

ABSTRACT

Teeth are one of the most important parts of the body. Toothache is one of the most important complaints that people go to the dentist with. Toothache can be debilitating. Chemical drugs used to treat toothache have side effects. Considering the high prevalence of toothache in the society and since various plants are used in the ethnobotanical knowledge of Ilam region in Iran to relieve toothache, this research was conducted with the aim of documenting the information of the ethnobotanical knowledge of Ilam about medicinal plants effective in reducing toothache. Became based on the obtained results, the plant family Rocaceae is the most plant family with anti-toothache effects in Ilam. Decoction with 45% is the most used form of traditional use and aerial parts with 37% are the most used plant parts to reduce toothache. Data analysis shows that 8 species of herbal plants from 7 families are used for toothache in Ilam city. Medicinal plants *Seidlitzia resmarinus*, *Melissa officinalis* L., *Dianthus orientalis* Adams, *Amygdalus Haussknechtii*, *Isatis raphanifolia*

Boiss., *Cannabis sativa L.*, *Cichorium intybus L.* and *Amygdalus lycioides* are among the anti-toothache plants of Ilam region. It is necessary to identify the effective ingredients of native medicinal plants of Ilam city that are used to reduce toothache and to study the remedy effects of their effective analgesic ingredients in order to produce natural and effective medicines and side effects for toothache.

Keywords: Pain, Tooth, Toothache, Ethnobotany, Medicinal plants

Mathematics Subject Classification: 62P20

Journal of Economic Literature (JEL) Classifications: Q10, Q1

1. INTRODUCTION

Toothache is one of the common and unbearable problems that many people suffer from. Toothache sometimes becomes very painful and unbearable (COHEN et al., 2009; Lewis, C., & Stout, 2010). Toothache occurs due to reasons such as tooth decay, tooth decay, gum problems or gum infection, not brushing or brushing incorrectly, wisdom tooth growth and pressure on the front teeth, and diseases other than the mouth and teeth such as sinusitis (Kakoei et al., 2013). Sometimes we have severe toothaches, but due to inappropriate time or place conditions, we cannot get to the clinic and dentist immediately. In this situation, some home remedies approved by traditional medicine experts may help reduce your pain (Kakoei et al., 2013). Pain relief has always been one of the concerns of mankind. For this reason, since ancient times, they began to identify herbal painkillers. The passage of history has brought many advances in the field of medicine and painkillers. However, drugs like ibuprofen are effective pain relievers, but long-term use can cause side effects. Prescription drugs can be addictive and even bring many side effects (Cooper et al., 1989). Toothache is one of the worst pains that can be experienced, but by using some simple solutions of traditional medicine, this pain can be treated immediately. Toothache treatment is very important for those who suffer from toothache caused by root infection, fracture, decay, gingivitis or any other cause. Usually, there are home methods, traditional and quick medicine to reduce toothache, which include using cold water compresses, smoke, salt water, using baking soda, there are many painkillers that reduce pain, but they are suitable for reducing toothache. For example, these drugs include Validol, Papaverin, and No-shpa (Kumar et al., 2021). Toothache relief drugs include ibuprofen, ibuprofen, indomethacin, aspirin and naproxen, caffeine, mefenamic acid, dexamethasone, diclofenac sodium and diclofenac potassium, ketoprofen and Ketanov (Cohen et al., 2009).

Due to the compounds in their structure, some herbal medicines can relieve toothache to a great extent so that you can go to the dentist with enough time (Cruz Martínez et al., 2017). Health, illness and treatment are inseparable parts of human life and human societies. The studies of medical anthropology include different and wide areas, including popular behaviors and beliefs in the field of health and treatment. The study of popular beliefs about the use of plants for therapeutic purposes and the cultural contexts of using a specific drug in a specific region has created ethnomedical and ethnobotanical sciences (Gift & Atchison, 1995). Nowadays, many people are looking for natural methods to reduce the pain and inflammation of their teeth. Herbal medicines are widely used in dentistry. For hundreds

of years, people have been using herbs and alternative remedies as natural pain relievers (Megersa et al., 2019). In traditional Iranian medicine, it is usually medicinal plants such as mint, neem, basil, cinnamon, cloves, garlic, cinnamon, oregano, turmeric, olive, thyme, coriander, aloe vera, chamomile, onion and many other plants (Niroumand et al., 2018).

An essential part of treatment in traditional Iranian medicine (Kianbakht et al., 2016; Kiani et al., 2024; Ebrahimi et al., 2022; Peirzadeh et al., 2014; Amiri, 2024; Baharvand et al., 2023; Boostani et al., 2018) and others traditional medicine is with medicinal plants (Madurangee et al., 2021; T. Sharma, J. Chen, 2020). Meanwhile, the role of these drugs in dental treatments has been neglected. Ethnobotany is a type of academic research that seeks to observe, record and document information related to the traditional use of herbal plants by different strata and ethnicities of Iran in rural and nomadic areas (Yang & Walters, 1992). Considering the high prevalence of toothache in the society at different ages and since various herbs are used in traditional medicine in Iran to relieve toothache pain, this ethnobotanical research was conducted with the aim of documenting information on medicinal plants of Ilam city as one of the oldest human cultures regarding medicinal plants effective in reducing toothache.

2. MATERIALS AND METHODS

The cross-sectional ethnobotanical study is between May 1402 and July 1402 in Ilam city. Ilam city is the most populated and one of the cities of Ilam province in Iran.



Figure 1. Map of Ilam city

Collection of traditional therapeutic information about plants effective on back pain was done by ethnobotanical questionnaire. The questioner personally conducts an interview by referring to each and every perfumer in the city of Ilam. The questioner was asked based on standard questionnaires designed to collect traditional information about plants. The complete list of perfumeries in Ilam city is prepared by the DFDA. The criteria for entering people are their attar. The questionnaire will include personal information and the names of native plants, the organ used, how to use and the effect of traditional treatment.

Quantitative methods used in ethnobotanical studies allow researchers to use these formulas to select the most important species of medicinal plants for starting medicinal research during clinical studies. In order to analyze the data obtained from the interviews and in line with the objectives of this study, indicators such as the usage report index (UR), the quantitative index of the relative frequency of registration (RFC) and the informant consensus coefficient index (ICF) were reported. The Usage Report Index (UR) is the total number of usage reports for any item reported by informants. The quantitative index of relative frequency of registration (RFC) was calculated for the relative importance of species for local medicines of the region.

The RFC index is obtained by the following formula:

$$RFC = FC / N$$

The RFC index indicates the number of people who indicated the use of a particular species.

In the mentioned relationship, FC is equal to the number of informants and interviewees who mentioned a specific species and N is equal to the total number of people who were interviewed.

The RFC index varies from zero (when no local knowledgeable person has stated the application for the plant in question) to one (when all local knowledgeable persons have stated the medicinal use for the plant in question).

The Informant Consensus Factor (ICF) is used to show and prove the homogeneity of information and is calculated by the following formula:

$$ICF = Nur - Nt / Nur - 1$$

In this formula, Nur is the number of citations and disease group for each group, Nt (Number of taxa) is the number of medicinal species used. Disease group of each ICF index shows the degree of sharing between informants and interviewees regarding the value of using medicinal species to treat a specific disease group.

Ethical considerations

Obtaining written consent from interviewees participating in the study and keeping their personal information confidential.

3. RESULTS

Data analysis shows that 8 species of medicinal plants from 7 families are used for toothache in Ilam city. Medicinal plants *Seidlitzia resmarinus*, *Melissa officinalis* L., *Dianthus orientalis* Adams, *Amygdalus Haussknechtii*, *Isatis raphanifolia* Boiss., *Cannabis sativa* L., *Cichorium intybus* L. and *Amygdalus lycioides* are anti-toothache plants of Ilam.

Table 1. Additional information on toothache plants

The name of the plant	Scientific name	Plant family	Organ used	Traditional way of using	Traditional therapeutic effect
Acquaintance	Seidlitzia resmarinus	Amaranthaceae	aerial organs	Boiled	Reduces toothache
Lemongrass	Melissa officinalis L.	Lamiaceae	leaf	Boiled	Reduces toothache
Eastern cloves	Dianthus orientalis Adams	Caryophyllaceae	Dried buds, leaves and flowers	Plant poultice	Reduces toothache
Zagros almonds	Amygdalus Haussknechtii	Rosaceae	fruit, leaf	Oil	Reduces toothache
Isatis	Isatis raphanifolia Boiss.	Brassicaceae	aerial organs	Plant poultice, decoction	Reduces toothache
Cannabis	Cannabis sativa L.	Cannabaceae	seed	Plant poultice	Reduces toothache
Chicory	Cichorium intybus L.	Asteraceae	aerial organs	decoction	Reduces toothache
Amygdalus	Amygdalus lycioides spach	Rosaceae	aerial organs	Plant poultice	Reduces toothache

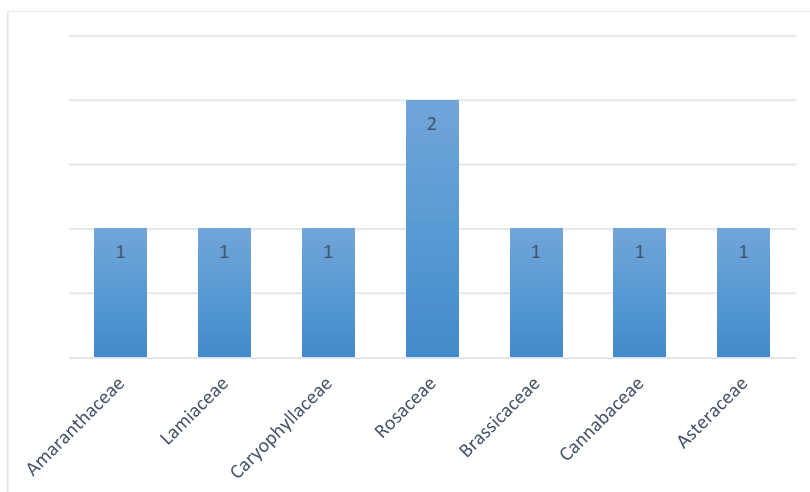


Figure 2. Plant organs used

Based on the obtained results, the plant family Rocaceae is the most plant family with anti-toothache effects in Ilam (Figure 2).

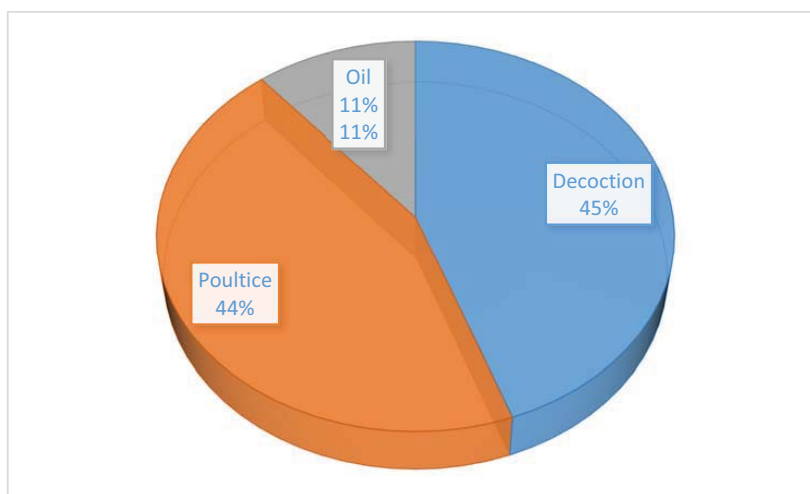


Figure 3. How to use it traditionally

The results showed that the decoction with 45% is the most traditional form of painkillers. After that, poultice with 44% and then oil with 11% include traditional uses (Figure 3).

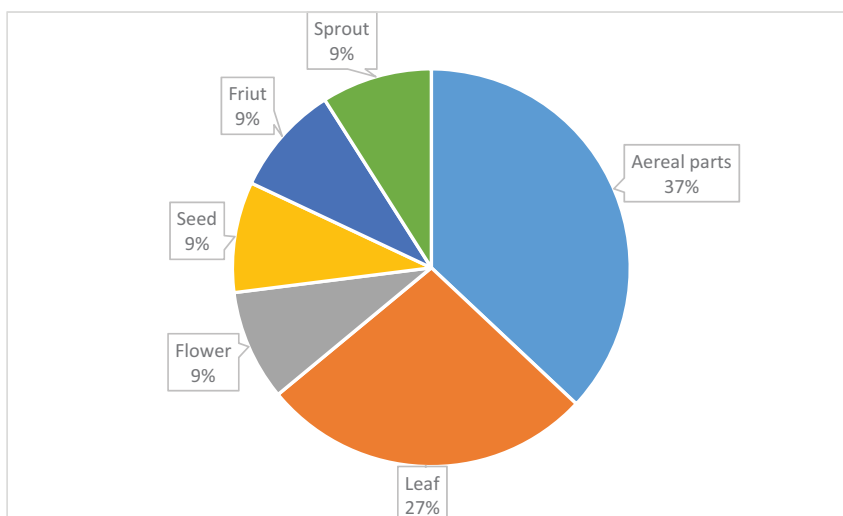


Figure 4. Plant organs used

The results of this research determined that aerial parts with 37% are the most used plant parts to reduce toothache. After that leaf is included with 27% of cases. Additional information in this regard is given in figure 4.

The qualitative results of the analysis of the use of herbal plants effective on toothache are specified in Table No. 2.

Table 2. Qualitative results of the analysis of herbal plants effective on toothache

The name of the herb	Percentage of frequency of use (PFU)	UR	RCF
<i>Seidlitzia resmarinus</i>	26.9 %	0.61	8
<i>Melissa officinalis</i> L.	15.3 %	0.59	7
<i>Dianthus orientalis</i> Adams	19.2 %	0.54	4
<i>Amygdalus Haussknechtii</i>	57.6 %	0.55	5
<i>Isatis raphanifolia</i> Boiss	42.3 %	0.69	12
<i>Cannabis sativa</i> L.	34.6 %	0.58	6
<i>Cichorium intybus</i> L.	38.4 %	0.62	9
<i>Amygdalus lycioides</i> spach	34.6 %	0.54	4

4. DISCUSSION AND CONCLUSION

Innumerable side effects of synthetic and chemical drugs have caused attention and tendency to use medicinal plants in recent decades as a source of new drugs (Gurney et al., 2014; Loeser & Melzack,

1999). In the research, herbal plants that are used in Ilam region for reducing toothache have been investigated.

In this study, the medicinal plants *Seidlitzia resmarinus*, *Melissa officinalis* L., *Dianthus orientalis* Adams, *Amygdalus Haussknechtii*, *Isatis raphanifolia* Boiss., *Cannabis sativa* L., *Cichorium intybus* L. and *Amygdalus lycioides* are used in Ilam region for toothache. A number of specific or general ethnobotanical studies of medicinal plants in different regions of Iran have been conducted for the treatment of toothache. In the northwestern regions of Iran (Arsbaran region), medicinal plants such as *Origanum vulgare*, *Papaver orientale*, and *Hyoscyamus niger* are used in cases of toothache (Zulfiqari et al., 2013). In the east of Iran (Sistan and Baluchistan region), *Solanum nigrum* L. plant is used as herbal medicine against toothache (Arbabi et al., 2023). In the traditional knowledge of Kashan city (central Iran), *Dianthus crinitus* is a plant with anti-toothache application (Abbasi et al., 2013). In Sirjan city in eastern Iran, the plants *Dianthus crinitus*, *Dianthus orientalis*, *Faba vulgaris* and *Sanguisorba minor* relieve toothache (Sharififar et al., 2010). Ethnobotany of Mobarake city of Isfahan shows that *Allium cepa* L., *Peganum harmala* L. and *Astragalus verus* Oliv plants are used to reduce toothache (Mardani Nejad et al., 2013).

In the traditional herbal medicine knowledge of Dehhran and Abdanan cities in western Iran, *A. biebersteinii*, *C. spinosa* L., *D. orientalis*, *P. harmala* L. are medicinal plants that reduce toothache (Ghasemi Pirbalouti et al., 2012). In the ethnobotany of Lorestan province (southwest of Iran), plants such as *P. atlantica*, *D. mucronata*, *V. vinifera*, *P. khinjuk*, *M. longifolia*, *P. rhoeasa*, *P. harmala*, *T. parthenium*, *J. excelsa*, *S. hydrange*, *S. multicaulis*, *C. monogyna* and *G. glabra* Dandan They treat pain (Delfan et al., 2015). In traditional Iranian medicine, a series of medicinal plants are generally used to treat toothache. Medicinal plants are cloves, ginger, garlic, lime, onion, lavender, chamomile, turmeric, cabbage, thyme, yarrow and mint (Zargari, 1997). The results of our study showed that Acquaintance, Lemongrass, Eastern cloves, Zagros almonds, Isatis, Cannabis, Chicory and *Amygdalus* are used in Ilam city to treat toothache.

According to the results, the studied medicinal plants showed beneficial effects in reducing toothache. Therefore, more studies about the active substances of these plants and the biological role of the active substances in these medicinal plants can increase the acceptance of using these plants and produce powerful and effective herbal medicines.

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