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The most important medicinal plants effective on migraine: A review of ethnobotanical studies in Iran

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ABSTRACT

Migraine is a disabling and very common health problem. This review article reported the plants used to treat migraine in traditional culture and ethnobotany of different regions of Iran. The key words such as ethnopharmacology, ethnobotany, ethnomedicine, phytopharmacology, traditional medicine, phytomedicine, and Iran, combined with migraine and headache, were used to search for relevant materials in Web of Science, PubMed, Scopus, Islamic World Science Citation Center, and Magiran. Twenty two medicinal plants from 16 families are used, according to Iranian traditional medicine, to treat migraine specifically. Most plants reported in this study were analgesic and anti-inflammatory, affecting the inflammation and cortical vascular contractile dysfunction. Because of common use of traditional medicinal plants and wide acceptance of herbal medicine and traditional medicine, more comprehensive studies should be done in pharmacy and pharmacology areas to inform pharmaceutical industries.

Keywords: Migraine, Medicinal plants, Ethnobotany, Iran.

INTRODUCTION

Headache is considered a main health problem due to high prevalence and associated disabilities [1,2]. Of different types of headaches, migraine, with 6% and 18% prevalence in men and women respectively, is considered the third leading disorder and the seventh leading cause of disability [5,6]. Migraine headache occurs as periodical attacks and may be manifested by nausea, vomiting, photophobia, and phonophobia [7]. Migraine is a main reason for absence from work [8,9], and therefore imposes heavy burden on individuals and communities because of disabling workforce [2,3,5,10].

Clinical heterogeneity of migraine arises from different genetic and environmental factors and lifestyle [11]. Therefore, many treatments have been adopted, including chemical drugs, psychotherapy, antiepileptics, antidepressants, acupuncture, and traditional medicine. However, some of these could not be used for all patients and have not been approved by specialists [3]. Furthermore, side effects are the main problem of certain pharmacotherapies [12].

Therefore, healthcare community is seeking to identify nature-based drugs with no side effects and with higher efficiency. Medicinal plants are valuable resources which have been used to treat different diseases since many years ago. Further, therapeutic effects of these plants have been reported for neurological [12-18] and fungal [19-33]

diseases, diabetes [34], respiratory diseases [35-37], children's diseases [38], hyperlipidemia and obesity [39-41], liver diseases [42,43], cardiovascular diseases [44], and other diseases [45-65].

These works have caused at least one-fourth of conventional drugs to contain at least one plant-derived component [66]. Ethnobotany is referred to the study of how people from an ethnicity, culture, or a region use the native plants of their region. The knowledge obtained from ethnobotanical studies could be highly valuable for researchers of other disciplines, particularly pharmacognosy, and indeed may assist in generating the native knowledge about use of plants, particularly as drug, to produce commercial products.

Therefore, gathering data of medicinal plants and the methods of using these in different regions is a valuable resource about old medicine at present time. This helps to discover new drugs and to advance pharmaceutical industry, as well [67].

Iran community with a history of several thousand years of cultural and ethnic diversity, climate and weather diversity and a richness of more than 8000 species is a proper case of ethonobotanical study. Therefore, this study is aimed to identify and report the plants that are used to relive and treat migraine in traditional culture and ethnobotany of Iran's different regions.

In this review article, the key words including ethnobotany, ethnopharmacology, ethnomedicine, phytopharmacology, phytomedicine, traditional medicine, and Iran combined with migraine and headache were searched for in Web of Science, PubMed, Scopus, International Science Citation Center, and Magiran. Duplicate articles and the articles with no accessible full text were excluded from analysis.

The present study indicated that Iran's people from different cultures and regions such as Lorestan, Saravan of Sistan and Baluchistan province, Alamut of Ghazvin Province, Turkmen Sahra of Golestan province, Kohgiluyeh va Boyer Ahmad province, Chaharmahal va Bakhtiari province, Hormozgan province, Arjan of Fars Province, Mashhad, Sardasht of West Azarbaijan province, and Kerman province use 22 medicinal plants from 16 families according to traditional medicine to treat migraine specifically.

Most of these plants were from *Apiaceae*, *Asteraceae*, *Hypericaceae*, *Lamiaceae* and *Rosaceae* families. Table 1 gives further data on the medicinal plants effective on migraine.

Table 1. Iran's medicinal plants effective on migraine

No.	Scientific name	Family	Local name	Used organs	Province	Ref.
1	*Matricaria recutita*	Compositae	Gole bayeneh	Petal	Lorestan provincen	68
2	*Paliurus spina*	Rhamnaceae	Sipa	Leaf, stem	Lorestan province	68
3	*Papaver rhoeasa*	Papaveraceae	Khashkhash	Sap	Lorestan province	68
4	*Violo tricolor*	Umbelliferae	Gole banoushe	Flower, branches	Lorestan province	68
5	*Fumaria asepala*	Fumariaceae	Shatare	Aerial parts	Alamut mountainous in Ghazvin Province	69
6	*Heracleum persicum*	Apiaceae	Golpar	Flowers, seeds	Alamut mountainous in Ghazvin Province	69
7	*Viola odorata*	Violaceae	Banafshe	Flowers	Alamut mountainous in Ghazvin Province	69
8	*Portulaca oleracea L*	Portulacaceae	*Khorfeh*	*Seed, leaf*	Saravan region in Sistan and Baluchistan province	70
9	*Chrysanthemum coronarium L.*	*Asteraceae*	*Babuney-e Sheytani*	*Aerial part*	Kohghiluyeh va Boyer Ahmad province	71
10	*Pyrus syriaca Boiss.*	Rosaceae	Anjik or Anjichak	Seeds	Kohghiluyeh va Boyer Ahmad province	74
11	*Ferula oopoda* Boiss	*Apiaceae*	*Ejek-ghamaghi*	Seed, latex	Turkmen Sahra in north of Iran	72
12	*Tanacetum polycephalum*	*Asteraceae*	Mokhaleseh	leaves, flowers	Chaharmahal va Bakhtiyary province	73
13	*Withania somnifera* L.	*Solanaceae*	*Mayepanir*	*Fruit*	hormozgan province	74
14	*Crataegus aronia L.*	Rosaceae	Kiial	*Fruit*	Arjan in Fars Province	75
15	*Nardostachys jatamansi*	Caprifoliaceae	Sonboletib	Root	Mashhad province	76
16	*Hypericum scabrum L*	Hypericaceae	Hufarighun	Flower	Mashhad province	76
17	*Lawsonia inermis L.*	Lathyraceae	Khana	Leaves	Sardasht in Western Azerbaijan province	77
18	*Althaea officinalis L.*	Malvaceae	Hero	Flowers, roots, leaves	Sardasht in Western Azerbaijan province	77
19	*Hypericum perforatum L*	Hypericaceae	Gole raei	Flowers	Kerman province	78
20	*Lavandula vera L.*	Lamiaceae	ostokhoddoos	aerial parts	Kerman province	78
21	*Rosmarinus officinalis L.*	Lamiaceae	Aklile kohi	leaves, flowers	Kerman province	78
22	*Potentilla elvendensis* Boiss.	Rosaceae	Panjeh bargalvandy	leaves, flowers	Natanz in Isfahan Province	79

In this review article to report the effective medicinal plants on migraine in traditional culture and ethnobotany of different regions across Iran, the findings indicated that 22 medicinal plants are specifically used to treat migraine. This represents the high richness of Iran's traditional medicine, which has long considered use of natural resources to treat different diseases such as headache and migraine.

Pharmaceutical companies of Iran are currently producing herbal drugs that are effective on migraine and the associated symptoms such as depression, so that herbal drugs may be used as alternatives to chemical drugs. Various anti-migraine herbal drugs are being produced in Iran, including tanamigrain, antimigraine drop, and hypiran drop. All of these herbal drugs have been derived from Iran traditional medicine and have recently become commercially available. However, many of the medicinal plants identified in this study have not been sufficiently investigated for anti-migraine effects in clinical trials.

From pathophysiological perspective, migraine is the final outcome of interaction of different factors such as genetic predisposition, susceptible central nervous system, hormonal factors, and sequence of neurovascular events due to release of pain-causing inflammatory substances around vessels and nerves, with varying significance in different people. Neurological events of migraine, are caused by cerebrovascular spasm, and the migraine pain is due to the subsequent dilation of extracranial arteries [80].

As many of the plants reported in this study are analgesic and anti-inflammatory and contain effective analgesic, anti-inflammatory compounds, their effects in treating migraine may be due to their analgesic, anti-inflammatory property [81-83]. Most of these plants were from Apiaceae, Asteraceae, Hypericaceae, Lamiaceae and Rosaceae families which contain phenolic compounds and can exert great anti-inflammatory effects [84,85].

CONCLUSION

Focusing on the plants used to treat migraine in Iran's traditional medicine, researchers should conduct studies on the plants from these families whose therapeutic effects on migraine have not been investigated to date, and perform clinical trials to develop anti-migraine herbal drugs and make them commercially available.

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