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## Medicinal plants used for liver disorders based on the Ethnobotanical documents of Iran: A Review

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**Abstract :** Liver diseases, still a global health problem, are classified as acute or chronic hepatitis, hepatosis and cirrhosis. A number of medicinal combinations in Iranian traditional medicine are commonly used as tonic for liver. This review article reported the plants used to treat liver diseases according to ethnobotany and traditional culture of different regions of Iran. This review article introduced the plants used to treat liver diseases in ethnobotany and traditional culture of different regions of Iran. The key words consisting of traditional medicine, ethnobotany, ethnomedicine, ethnopharmacology, phytopharmacology, phytomedicine, and Iran, accompanied with liver diseases, liver ailments, liver disorders, antihepatotoxic and hepatitis were used to search for relevant publications in PubMed, Web of Science, Scopus, Islamic World Science Citation Center, and Magiran. Overall, 26 medicinal plants from 19 families are used to treat liver diseases specifically in Iranian traditional medicine. The most of presented medicinal plants were from Asteraceae family. Because of the extensive use of traditional medicinal plants and wide acceptance of herbal drugs and traditional medicine, large studies are recommended in pharmacy-and pharmacology-related fields to inform pharmaceutical industries.

**Keywords:** Liver ailments, Medicinal plants, Traditional culture, Iran.

### Introduction

Liver is the largest organ inside the body. Liver helps to save energy and eliminate toxins. Besides that, liver plays a very important role in digestive process and system and metabolism, helps to convert vital micronutrients into usable forms for the body, and fulfills over 500 different functions. Liver diseases are a wide spectrum of disorders and failures that cause damage to liver tissue or function. Liver tissue is mainly inflamed by contact with viruses or toxins. These diseases are widely various. The most widely known liver diseases are hepatitis, liver cirrhosis, fatty liver, and bile duct obstruction. Hepatitis is prevalent worldwide, and unfortunately continues to increase in prevalence day-to-day. This disease is widely diagnosed in Iran, as well. Literally, hepatitis means inflammation of liver. This disease may be developed by various agents, including a large number of drugs, different viruses, autoimmune diseases, and genetic disorders, and cause dysfunction of liver and other organs of the body. Moreover, hepatic diseases can be limiting or lead to fibroids, cirrhosis, or hepatocarcinoma. Cirrhosis is a chronic liver disease that leads to the destruction of liver natural structure

because of increased fibrous tissue. Cirrhosis can be due to liver diseases such as hepatitis B, alcoholic liver disease (a diseases due to excessive use of alcohol), and autoimmune diseases. Fatty liver is another prevalent liver disease which is usually developed because of inappropriate eating habits and physical inactivity. If left untreated, fatty liver causes many health-related problems. Fatty liver is the most prevalent liver disease worldwide. At least 30% of Iran's population are suffering from fatty liver [1-3]. Bile duct obstruction is one of the diseases that prevents bile from entering into bowel. In patients with bile duct obstruction, the active substance of bile, bilirubin, accumulates in blood instead of transporting in bile duct. An investigation of causes of mortality worldwide indicates that mortality from liver diseases continue to increase compared to other reasons for mortality. As with other countries, liver diseases are becoming more and more frequent in Iran [4,5]. There are many debates about treatments of choice for liver diseases because conventional or synthetic drugs used to treat these diseases lead occasionally to serious side effects [6].

Since ancient times, human beings have used plants in the treatment of various ailments because they seem to be less toxic and hence less likely to cause side effects [7]. Many of the available drugs have been directly or indirectly derived from medicinal plants. Recent interest in natural therapies and alternative medicines has made researchers consider traditional herbal medicine [8-16]. In the past decade, attention has been focused on scientific investigation of traditional, plant-based drugs for the treatment of various diseases [17-23, 83-112]. Because of effectiveness, presumably minimal side effects, and relatively low costs, herbal drugs are widely recommended, even when their biologically active compounds have not been fully identified [5, 83-95]. In this regard, ethnobotany is referred to the science of how people from a culture, ethnicity, or a region use the native plants of their regions. The findings of ethnobotanical studies can be highly useful in other disciplines, particularly pharmacognosy, and may help to draw native people's knowledge about the use of plants to produce commercial products [20-25]. Therefore, gathering data on medicinal plants and the methods of using these plants in different areas is a valuable medical resource at present time, helping to discover new drugs [26-33].

Iranians have been using herbal medicines to treat some common diseases. Many studies have been conducted to recommend new wildy occurring medicinal plants in different regions of Iran and other countries [34-42]. Furthermore, in previous studies, we have investigated the therapeutic effects of these plants on liver [43, 44], cardiovascular [45, 46] and neurological [47] diseases, infertility [48, 49], hyperlipidemia [50], cancer [51, 52], and some other disorders [53-65]. Iran with long cultural, ethnic, climatic and weather diversity is an exemplary case of ethonobotanical investigations. Therefore, this study was conducted to report the plants that are used to relieve and treat liver diseases in traditional culture and ethnobotany of Iran's different regions.

For this study, the key words including ethnobotany, phytomedicine, ethnomedicine, phytopharmacology, ethnopharmacology, traditional medicine, and Iran combined with liver diseases, liver ailments, liver disorders, antihepatotoxic and hepatitis were searched for in Web of Science, PubMed, Scopus, ISC, 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 Turkmen Sahra region, Kerman, Fars, Hormozgan, Razavi Khorasan and Isfahan province use 26 medicinal plants from 19 families according to traditional medicine to treat or protect liver diseases specifically. Most of these plants were from Asteraceae families (figure1). Table 1 gives further data on the medicinal plants effective on liver diseases.

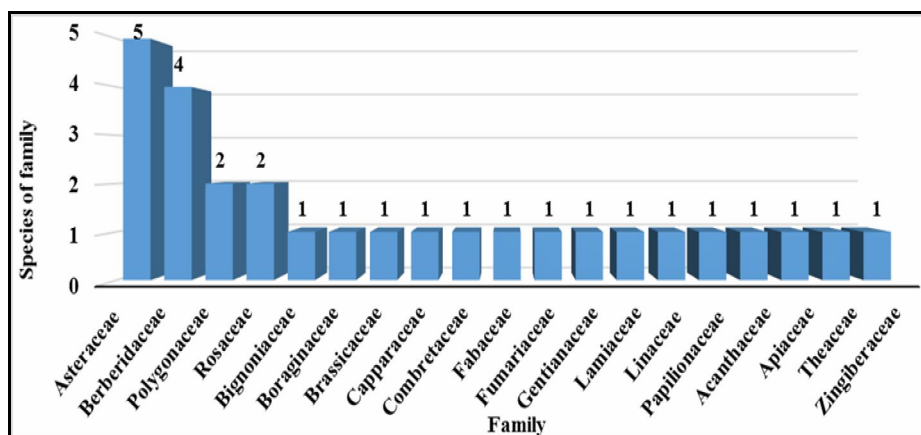


Figure 1: The number of medicinal species effective on liver diseases in each family

Table 1: Medicinal plants effective on liver diseases in different subcultures and regions of Iran

No.	Scientific name	Family	Local name	Used organs	Regions	Ref.
1	<i>Apium graveolens</i> L.	Apiaceae	Karafs	Seed	Turkmen Sahra, north of Iran	66
2	<i>Caccinia macranthera</i> (Banks & Sol.)	Boraginaceae	Ghara-dnden Zendan-ghara	Root	Turkmen Sahra, north of Iran	66
3	<i>Rosa canina</i> L.	Rosaceae	Eit-butni	Fruit	Turkmen Sahra, north of Iran	66
4	<i>Berberis integerrima</i> Bunge	Berberidaceae	Zereshk	Fruit	Kerman Province and Razavi Khorasan province	67, 68
5	<i>Fumaria parviflora</i> Lam.	Fumariaceae	Shatare gholriz	Whole plant	Kerman Province	67
6	<i>Berberis vulgaris</i> L.	Berberidaceae	Zereshk	Fruit	Arjan, Fars Province	69
7	<i>Blepharis persica</i> (Burm.) O. Kuntze	Acanthaceae	Joojadoo, kisedokhtan	Leaves, seeds, root	Hormozgan province	70
8	<i>Centaurium tenuifolium</i> Fritsch	Gentianaceae	Ghontorion	Flower, leaves	Hormozgan province	70
9	<i>Tecomella undulate</i> (Roxb.) G. Don.	Bignoniaceae	Anare sheytani, anare aboojahl	Whole plant	Hormozgan province	70
10	<i>Cynara scolymus</i> L.	Asteraceae	Kangar Farangi	Aerial parts	Mashhad, Razavi Khorasan province	68
11	<i>Gundelia tournefortii</i> L.	Asteraceae	Kangar	Aerial parts	Mashhad, Razavi Khorasan province	68
12	<i>Silybum marianum</i> (L.) Gaertn	Asteraceae	Khare Maryam	Seed	Mashhad, Razavi Khorasan province	68
13	<i>Berberis sp.</i>	Berberidaceae	Zereshk	Fruit	Mashhad, Razavi Khorasan province	68
14	<i>Descurainia sophia</i> (L.) Webb ex Prantl	Brassicaceae	Khakshir	Seed	Mashhad, Razavi Khorasan province	68
15	<i>Capparis spinosa</i> L.	Capparaceae	Kavar	Fruit- Root	Mashhad, Razavi Khorasan province	68
16	<i>Terminalia chebula</i> Retz.	Combretaceae	Halileh Siah	Fruit	Mashhad, Razavi Khorasan province	68
17	<i>Lupinus luteus</i> L.	Fabaceae	Baghelaye Mesri	Seed	Mashhad, Razavi Khorasan province	68
18	<i>Marrubium vulgare</i> L.	Lamiaceae	Ferasion	Aerial parts	Mashhad, Razavi Khorasan province	68
19	<i>Rheum palmatum</i> L.	Polygonaceae	Rivand Chini	Root	Mashhad, Razavi Khorasan province	68
20	<i>Rheum ribes</i> L.	Polygonaceae	Rivas	Fruit- Petiole	Mashhad, Razavi Khorasan province	68
21	<i>Curcuma zedoaria</i> (Christm.) Roscoe	Zingiberaceae	Zorombad	Root	Mashhad, Razavi Khorasan province	68
22	<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	Chai Sabz	Leaves	Mashhad, Razavi Khorasan province	68
23	<i>Cichorium intybus</i> L.	Asteraceae	Casni	Root, leaf, apical parts	Mobarakeh region, Isfahan province and Arjan, Fars Province	69, 71
24	<i>Cotoneaster nummularium</i>	Rosaceae	Shir khesht	whole plant	Mobarakeh region, Isfahan province	71
25	<i>Linum usitatissimum</i>	Linaceae	Katan, Barzak	Seeds	Mobarakeh region,	71

					Isfahan province	
26	<i>Melilotus officinalis</i> (L.) Pall.	Papilionaceae	Yonjeh zard, Aklyolmolk	Apical parts	Mobarakeh region, Isfahan province	71

In this review article which was conducted to report the plants that are used to relieve and treat liver diseases in traditional culture and ethnobotany of Iran's different regions, twenty seven medicinal plants from 19 families were reported to specifically treat liver diseases in different regions of Iran. This indicates the richness of Iran's traditional medicine, which has long considered the use of nature-based resources to treat different diseases including liver diseases.

Most of the plants presented in this study are from Asteraceae families which contain phenolic compounds and have considerable antioxidant effects. Phenolic compounds such as flavonoids can protect cells against reduced glutathione via increasing antioxidant enzymes' capability (such as glutathione peroxidase). These compounds, with antioxidant properties, can counteract free radicals in the environment and hence prevent their destructive effects. Flavonoids, as antioxidant, free radical- scavenging and antilipoperoxidant agents, are helpful for hepatoprotection.

Since many of these plants contain antioxidant activity, their effects in treating liver diseases can be explained by their antioxidant property. In addition to protecting liver, antioxidants have preventive effects on a wide variety of diseases [72-82]. Therefore, they might be beneficial for patients with other diseases, as well.

## Conclusion

Despite encouraging data on possibility of discovering new drugs in the near future, evidence is insufficient on treatment of chronic liver diseases by means of herbal medications. Therefore, herbal medications should be recommended after conduction of more finely-designed clinical trials. Efficient training of patients and physicians about herbal preparations seems necessary.

## Conflicts of Interests

There is no any conflict of interest.

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