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The most important medicinal plants effective on constipation by the ethnobotanical documents in Iran: A review

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ABSTRACT

Constipation is a prevalent gastrointestinal disease in both children and adults. This disease which is associated with the inability to empty rectum completely is diagnosed when defecation is difficult and delayed for two weeks or more and obviously causes discomfort. The culture of Iran traditional medicine is full of the medicinal plants with purgative property which have the potential to be used for production of purgative drugs. Therefore, we reported the medicinal plants used to treat constipation in the cultures and customs of different regions of Iran. In this review article, the relevant articles, books, and documents of Iran traditional medicine were searched for with the key words including constipation, bowel disorders, rectal discharge, ethnobotany, Iran traditional medicine, medicinal plants, and natural components in the databases, WOS, PubMed, Scopus, Islamic World Science Citation Center, and Magiran. The findings indicated that in East Azarbaijan, West Azarbaijan, Isfahan, Ilam, Khouzestan, Sistan va Balouchestan, Kerman, Mazandaran, and Hormozgan, local people used 41 plant species to treat constipation.

Key words: Gastrointestinal disorders, Constipation, Medicinal plants, Ethnobotany, Iran

INTRODUCTION

Constipation is a prevalent gastrointestinal disorder in community that involves both children and adults and imposes stupendous costs on healthcare system [1-4]. Constipation is mainly a symptom rather than disease. A variety of factors could cause constipation, including genetic predisposition, socioeconomic status, intake of inadequate fiber, inadequate intake of liquids, and physical inactivity [5]. Constipation could be referred to as difficult and delayed defecation for two weeks or more, which cause obvious discomfort, and inability to empty rectum completely. Or it could be referred to as the number of bowel movements less than three times accompanied with dry and hard stool and occasionally painful defecation [6, 7]. Idiopathic chronic constipation is diagnosed based on the rejection of organic, metabolic, hormonal, neurological, drug, food, and anatomical reasons for constipation [8, 9].

Constipation is also a very prevalent disease in children which accounts for 5% of visiting pediatricians. The children with constipation have usually less appetite and receive high fiber foods less frequently [10]. The most prevalent type of constipation is functional constipation which is also referred to as idiopathic constipation. Functional constipation is caused by the conscious or unconscious suppression of defecation and leads to rectal dilatation and exacerbation of the disease as a vicious cycle. Functional constipation is mainly due to mental and psychological predispositions. Inadequate diet, drugs, metabolic and endocrine factors, uremia, hypothyroidism, myopathy, tissue disorders, and diabetes are some other reasons for constipation in children [11]. Studies have

shown that constipation is more prevalent in women than men and in the elderly than the youth [12-14]. The prevalence rate of constipation in western communities has been reported up to 20% [15].

Table 1. Effective medicinal plants effective on constipation in traditional medicine based on ethnobotanical documents in different regions of Iran

No.	Scientific name	Family	Persian name	Used organs	Effects	Region
1	<i>Beta vulgaris</i> L.	Chenopodiaceae	Cjoqondar	Leaves	Constipation	Sardasht (62)
2	<i>Sambucus ebulus</i>	Caprifoliaceae	Aghti	Fruits, Flowers, and roots	Laxative for constipation	Arasbaran (63)
3	<i>Evonymus latifolia</i>	Celastereae	Goushvarak	Leaves and fruit	Laxative for constipation	Arasbaran (63)
4	<i>Cichorium intybus</i>	Asteraceae	Kasni	Leaves and root	Laxative for constipation	Arasbaran (63)
5	<i>Ribes orientale</i>	Grossulariaceae	Angour sharghi	Fruits	Laxative for constipation	Arasbaran (63)
6	<i>Rumex acetosa</i>	Polygonaceae	Torshak	Fruits	Laxative for constipation	Arasbaran (63)
7	<i>Prunus spinosa</i> L.	Rosaceae	Gojeye vahshi	Fruits	Laxative for constipation	Arasbaran (63)
8	<i>Sorbus boissieri</i> C.	Rosaceae	Tis	Fruits	Laxative for constipation	Arasbaran (63)
9	<i>Taxus baccata</i> L.	Taxaceae	Sorkhdar	Leaves	Increasing peristaltic movements and recovering from constipation	Arasbaran (63)
10	<i>Urtica dioica</i> L.	Urticaceae	Gazaneh	Leaves	Increasing peristaltic movements and recovering from constipation	Arasbaran (63)
11	<i>Alyssum minus</i> (L.) Rothm.	Brassicaceae	Ghodoumeh	Fruits	Laxative for constipation	Dehloran and Abdanan (64)
12	<i>Rhamnus pallasii</i> Fisch. & C. A. Mey	Rhamnaceae	Siah tangars	Fruits	Laxative for constipation	Dehloran and Abdanan (64)
13	<i>Artemisia scoparia</i> Waldst. & Kit.	Asteraceae	Jarouye mashhadi	Shoot	Laxative for constipation	Dehloran and Abdanan (64)
14	<i>Cotoneaster lurestanica</i> Klotz.	Rosaceae	Shirkhesht lorestani	Resin	Laxative for constipation	Dehloran and Abdanan (64)
15	<i>Morus alba</i>	Moraceae	Toute sefid	Leaves and fruit	Constipation	Sirjan (65)
16	<i>Rosa damascene</i>	Rosaceae	Gole Mohammadi	Flowers	Constipation	Sirjan (65)
17	<i>Cordia myxa</i>	Boraginaceae	Sepestan	Fruits	Constipation	Sirjan (65)
18	<i>Descurania sophia</i>	Brassicaceae	Khakeshir Irani	Seeds	Constipation	Sirjan (65)
19	<i>Erucaria hispanica</i> Druce	Brassicaceae	Mandabi	Aerial parts	Constipation	Persian Gulf (66)
20	<i>Citrullus colocynthis</i>	Cucurbitaceae	Hendavaneye aboujahl	Seeds	Constipation	Persian Gulf (66)
21	<i>Malva sylvestris</i> L.	Malvaceae	Panirake germez	Aerial parts	Constipation	Persian Gulf (66)
22	<i>Plantago psyllium</i> Decne.	Plantaginaceae	Esfarzeh	Seeds	Constipation	Persian Gulf (66)
23	<i>Ziziphus jujuba</i>	Rhamnaceae	Anab	Fruits	Constipation	Persian Gulf (66)
24	<i>Beta vulgaris</i> L.	Amaranthaceae	Choqondar	Leaves	Constipation	Khuzistan (67)
25	<i>Daucus carota</i> L.	Apiaceae	Havich	Fruits	Constipation	Khuzistan (67)
26	<i>Helianthus annus</i> L.	Asteraceae	Aftabgardan	Stem and leaves	Constipation	Khuzistan (67)
27	<i>Sinaps alba</i> L.	Brassicaceae	Khardal sefid	Seeds	Constipation	Khuzistan (67)
28	<i>Sinaps nigra</i> L.	Brassicaceae	Khardal siah	Seeds	Constipation	Khuzistan (67)
29	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Pichak	All organs	Constipation	Khuzistan (67)
30	<i>Linum usitatissimum</i> L.	Linaceae	Katan	Seeds	Constipation	Khuzistan (67)
31	<i>Ficus carica</i> L.	Moraceae	Anjir	Fruits	Constipation	Khuzistan (67)
32	<i>Astragalus gossypinus</i> Fisch.	Fabaceae	Katira	Gum	Laxative for constipation	Khuzistan (67)
33	<i>Cotoneaster persicus</i> Pojark.	Rosaceae	Shirkhesht	-	Laxative	Khuzistan (67)
34	<i>Rosa canina</i> L.	Rosaceae	Nastarane kouhi	Fruits	Constipation	Khuzistan (67)
35	<i>Rubia tinctorum</i> L.	Rubiaceae	Ronas	Roots	Constipation	Khuzistan (67)
36	<i>Rubia tinctorum</i> L.	Rubiaceae	Ronas	Roots	Constipation	Sistan (68)
37	<i>Ziziphus jujube</i> Mill.	Rhamnaceae	Anab	Fruits	Constipation	Sistan (68)
38	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Pichake sahraei	-	Constipation	North of Iran (69)
39	<i>Ziziphus jujuba</i> (L) H.Karst	Rhamnaceae	Anab	Fruits	Constipation	Mobarakeh (70)
40	<i>Cichorium intybus</i> L.	Asteraceae	Kasni	-	Constipation	Mobarakeh (70)
41	<i>Alcea arbelensis</i> Beiss	Malvaceae	Khatmi	Flowers	Constipation	Mobarakeh (70)
42	<i>Matricaria recutita</i> L.	Asteraceae	Babouneh	Flowers	Constipation	Mobarakeh (70)
43	<i>Sisymbrium irio</i> L.	Brassicaceae	Khakeshir	Aerial parts	Constipation	Mobarakeh (70)
44	<i>Senna alexandrina</i> Mill	Fabaceae	Sana	Leaves	Constipation	Mobarakeh (70)
45	<i>Ferula ovina</i> Boiss.	Apiaceae	Coma	Stem	Constipation	Natanz (71)

The common drugs that are used to treat constipation include edible fibers (psyllium, polycarbophil, methylcellulose), osmotic laxatives (sodium phosphate, magnesium citrate, and magnesium hydroxide), non-absorbable sugars (mannitol, sorbitol, and lactose), enema or suppository (phosphate enema, mineral-oil-retention enema, water tab enema, and glycerin/bisacodyl/enema), stimulant laxatives (bisacodyl), colinergic components (bethanechol, misoprestol, and colchicine), prokinetic components (tegaserod and cisapride), and new drugs such as prucapride, lubiprostone, and linaclotide [16].

In the past, the chemical drugs were not publicly available, or the people lived in the settlement where chemical drugs could not be supplied conveniently. As a result, therapists prescribed the medicinal plants to relieve pains and treat diseases with reference to ethnobotany and empirically [17-20]. Furthermore, the medicinal plants have been widely welcome during the past two decades [21-25] because they are natural and efficacious and cause fewer side effects than chemical drugs [26-33]. Indeed, the medicinal plants can exert a variety of therapeutic effects including antimicrobial, antiparasitic, antidiabetic, antihypertensive, and analgesic because of containing effective components

[34-46]. In addition, they help to treat skin, gastrointestinal, cardiovascular, cancer, and other types of diseases [47-61].

Given that constipation is very common in all communities and causes pain and specific complications, we in this review article seek to report the medicinal plants used to treat constipation in the cultures and customs of different regions of Iran.

In this review article, the articles were searched for with the key words, constipation, bowel disorders, and rectal discharge accompanied by ethnobotany, Iran traditional medicine, medicinal plants, and natural components in international and Iranian databases such as Information Sciences Institute, Scopus, Islamic World Science Citation Center, and Magiran. Further, the materials relevant to constipation treatment were gathered from the books and documents on Iran traditional medicine.

The findings of the studies conducted in East Azarbaijan, West Azarbaijan, Isfahan, Ilam, Khouzesan, Sistan va Balouchestan, Kerman, Mazandaran, and Hormozgan demonstrated that the local people used 41 species from 27 plant families to treat constipation. Four species including *Beta vulgaris* L., *Cichorium intybus*, *Convolvulus arvensis* L., and *Rubia tinctorum* L. were jointly used in some regions. Most plants with purgative properties were from Asteraceae, Brassicaceae, and Rosaceae families. Table 1 shows further data

DISCUSSION

Constipation is the most prevalent and the most important gastrointestinal disorder in industrial countries [72]. By traditional medicine, the foods that are left for some time and those with preservatives intensify constipation and weaken stomach. In this review article aimed at reporting the most important medicinal plants effective on constipation based on the ethnobotanical documents in Iran, 41 medicinal plants from 27 families were reported to be used for treating constipation in different regions of Iran. The medicinal plants reported in this study are useful for constipation, hard stool, and bowel movement due to increasing peristaltic, laxative, and purgative movements. With to attention to necessity of prevention [73-84], control [85-92] and remedy of disorders and diseases (93-100); So, bioactive compound of herbal plants can be a source for herbal drugs [101-119]. The mechanism by which these plants can reduce constipation is not clear. Phenolic compounds, especially the tannins have these properties. There are a lot of other plants which have these compounds and may have the same effects [120-144]

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