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Review

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e-mail: [parisarahimi59@gmail.com](mailto:parisarahimi59@gmail.com)**Abstract**

**Background:** Constipation refers to difficult or delayed bowel emptying lasting 2 weeks or more and causing anxiety and distress in patients, and it is one of the most common problems in children. To treat constipation, therapeutic measures such as nutritional methods, feedback training, osmotic laxatives and stimulants, as well as stool volume enhancers, are used; however, each has its own problems and side effects. Medicinal plants have been shown to be effective in the treatment of many diseases, including constipation. Therefore, this review was conducted to report the medicinal plants effective for constipation. **Methods:** In the current review, eligible articles indexed from databases such as ISI (Web of Science), PubMed, Scopus, Islamic World Science Citation Center, Scientific Information Database, and Magiran were retrieved using the keywords 'constipation', 'children constipation', 'baby's and newborn constipation', 'medicinal plants', and 'traditional medicine'. **Results:** Available evidence showed that the medicinal plants *Olea europaea*, *Phaseolus vulgaris*, *Prunus armeniaca*, *Brassica oleracea var. italica*, *Malus domestica*, *Linum usitatissimum*, *Aloe vera*, *Vitis vinifera*, *Foeniculum vulgare*, *Ficus carica*, *Ricinus communis*, *Sesamum indicum*, and *Descurainia sophia* are some of the most important medicinal plants for the treatment of constipation in traditional medicine. **Conclusion:** Herbal plants are important for isolation/preparation of new drugs in the treatment of constipation in children. In future studies, it may be beneficial to further understand and classify herbal plants/remedies, based on their mechanisms, as laxatives in the treatment of constipation.

**Concise review: Herbal remedies and herbal plants for constipation in children**Marjan Vakili<sup>1</sup>, Shokoufeh Ahmadipour<sup>2,3</sup>  
and Parisa Rahmani<sup>3</sup><sup>1</sup>Fellow of Pediatric Nephrology, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran<sup>2</sup>Pediatric Department, Lorestan University of Medical Sciences, Khorramabad, Iran<sup>3</sup>Pediatric Gastroenterology and Hepatology Research Center, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran

## 1. Introduction

Constipation is a common gastrointestinal problem in the community, both in children and adults; in children, it accounts for about 5% of the pediatric visits [1]. Therefore, there are stupendous costs associated with it. Constipation refers to difficult or delayed bowel movement which can last a couple weeks more, and often causes anxiety and distress in the patient [2]. The prevalence of constipation in children has been reported to be 34.7% [3–6]. The most common type of constipation is functional constipation, also known as idiopathic constipation.

Functional constipation is the result of conscious or semi-conscious bowel emptying that leads to rectal dilatation and exacerbation of the disease as a vicious cycle, with mainly mental and psychological underlying causes [7]. Constipation, in most cases, is short-term and has few consequences, but sometimes lasts more than six months and is not treated by routine treatments. Other causes of chronic constipation in children include insufficient diet, the use of some medications, metabolic and endocrine causes, uremia, hypothyroidism, central nervous system tissue disorders, diabetes, and connective tissue diseases [8–12]. To treat constipation, therapeutic measures such as nutritional methods, feedback training, osmotic laxatives and stimulants, as well as stool volumizers, are used. However, each has its own problems and side effects [13].

Traditional medicine and phytomedicine have always been an important solution for the treatment and prevention of various diseases [14–18]. Medicinal plants and their therapeutic uses are very common in Iran and other parts of the world [19,20]. Nowadays, due to the importance of safety and desire for lowered costs, there is greater attention placed on herbal medicines as therapies [21–23]. Herbal medicines have been demonstrated to be consistently reliable in the treatment and prevention of various diseases [24–29]. They have also recently become a focus of researchers in the development and preparation of new drugs [30–35]. Notably, their active ingredients can have antioxidant activities and therapeutic effects [36–40]. Medicinal plants have been used in the treatment of many diseases, including and especially constipation. Therefore, this aim of this review was to investigate and report the medicinal plants affecting constipation.

## 2. Methods

In the current review, the articles meeting the inclusion criteria and indexed in certain databases, such as ISI (Web of Science), PubMed, Scopus, Islamic World Science Citation Center, Scientific Information Database, and Magiran, were retrieved using the search terms ‘constipation’, ‘children constipation’, ‘baby’s and newborn constipation’, ‘medicinal plants’, and ‘traditional medicine’.

## 3. Results

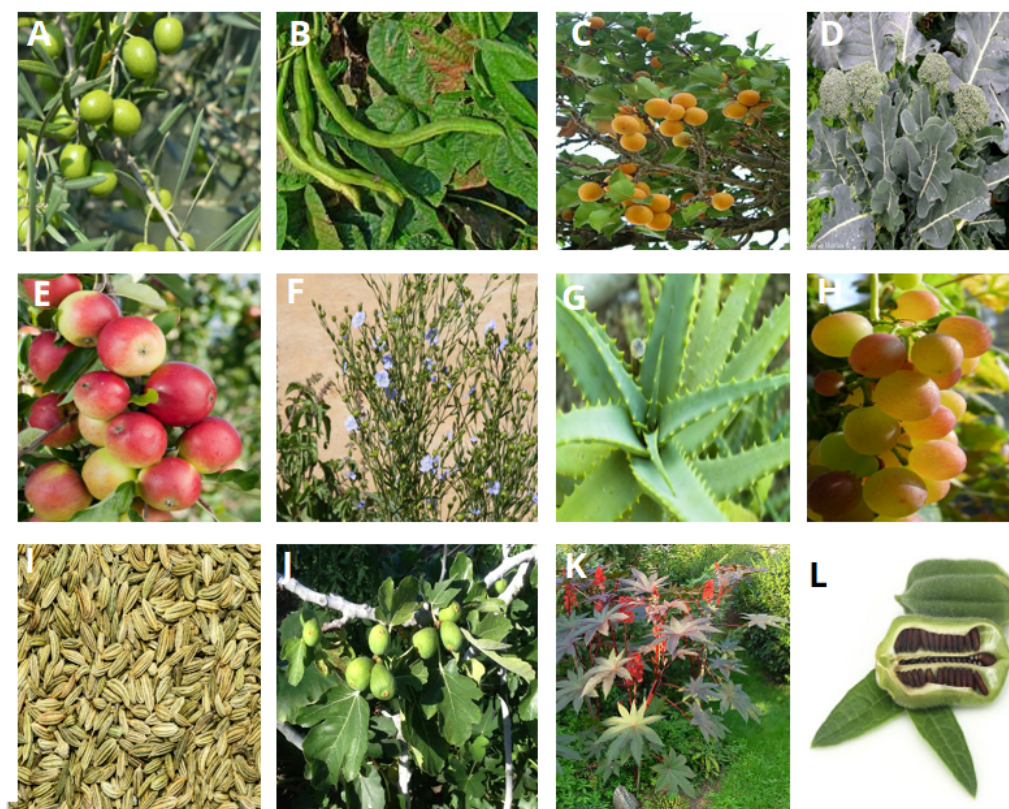
Based on available evidence, medicinal plants *Olea europaea*, *Phaseolus vulgaris*, *Prunus armeniaca*, *Brassica oleracea var. italica*, *Malus domestica*, *Linum usitatissimum*, *Aloe vera*, *Vitis vinifera*, *Foeniculum vulgare*, *Ficus carica*, *Ricinus communis*, *Sesamum indicum*, and *Descurainia sophia* are some of the most important medicinal plants used for the treatment of constipation in traditional medicine. Further information on traditional treatments of constipation in children is presented in Table 1 Figure 1.

## 4. Discussion

The present review was conducted to report the medicinal plants effective on constipation. Constipation is one of the primary factors for various diseases, including intestinal colic, and is known as the mother of diseases. As with other diseases, for completion of treatment, constipation requires removing the primary causal factors. The first step, therefore, might be to change patient

Table 1. Summary of natural treatments and medicinal plants effective on constipation

Botanical name	Family name	Effect
Olea europaea	Oleaceae	In Japan, Olea europaea is used to treat constipation [41]. Its leaf and fruit are laxative.
Phaseolus vulgaris	Fabaceae	Phaseolus vulgaris, with high fiber, is used for constipation [42-45].
Prunus armeniaca	Rosaceae	Prunus armeniaca Apricot is a fiber source that can treat constipation [46]
Brassica oleracea var. italica	Brassicaceae	Brassica oleracea var. italica has been reported to be effective in treating gastrointestinal diseases such as constipation, and it can also improve this disease due to high fiber [47].
Malus domestica	Rosaceae	Malus domestica and its skin contain dietary fiber and a variety of nutrients, and its dietary fiber swells in the intestines and becomes sticky. This fiber of M. domestica provides the main part with feces and helps stool move along easily and without force [48]
Linum usitatissimum	Linaceae	Linum usitatissimum is a plant with constipation-relieving effect, from which certain drugs are also produced [48,49]
Aloe vera	Asphodelaceae	Aloe vera can also be used as a natural remedy for constipation [50]
Vitis vinifera	Vitaceae	Vitis vinifera is used for constipation [51]
Foeniculum vulgare	Apiaceae	Dried Vitis vinifera (raisin) is used to treat constipation. Foeniculum vulgare and its active ingredients have a laxative effect and can improve constipation [52].
Ficus carica	Moraceae	Ficus carica and its fruit are used to treat chronic constipation [53].
Ricinus communis	Euphorbiaceae	Ricinus communis is laxative and is used to treat constipation [54] R. communis oil is used to treat constipation as well.
Sesamum indicum	Pedaliaceae	Sesamum indicum is laxative and is used to treat constipation [55,56].
Descurainia Sophia	Brassicaceae	Descurainia sophia was reported to be effective on chronic idiopathic constipation [57].



**Figure 1. Somenatural treatments and medicinal plants effective on constipation. (a)** *Olea europaea*, **(b)** *Phaseolus vulgaris*, **(c)** *Prunus armeniaca*, **(d)** *Brassica oleracea* var. *italica*, **(e)** *Malus domestica*, **(f)** *Linum usitatissimum*, **(g)** *Aloe vera*, **(h)** *Vitis vinifera*, **(i)** *Foeniculum vulgare*, **(j)** *Ficus carica*, **(k)** *Ricinus communis*, **(l)** *Sesamum indicum*

lifestyle. The second step might be to incorporate the use of home remedies. Simple changes in the patient's diet can relieve or reduce the constipation [58].

A high-fiber diet rich in fruits, vegetables, beans, and whole grains can help alleviate the constipation. The recommended dose is 14 g of dietary fiber for every 1,000 calories in the child's diet. For younger children, the recommended intake is 20 g of dietary fiber a day, for female adolescents it is 29 g a day, and for male adolescents and young men the recommended dose is 38 g a day. Medicinal plants whose components act as anti-constipation agents also have high fiber and are thus more beneficial. Moreover, the use of plentiful fluids increases the softness of the child's stool.

Another important issue is giving adequate time for bowel movements. The parents should encourage their children to sit on the toilet at least for 5-10 minutes after each meal. Giving small rewards to children for bowel movement attempts can be effective. Children should not be punished if they soil their underwear. Other than changes in the child's diet, alternative approaches, such as massage of the child's abdomen or use of medicinal plants, can help relieve constipation [59].

It should be noted that constipation, in some cases, has psychological or neurological basis. In these cases, plants might be effective for these problems [60–63]. The plants presented in this article **Table 1** can be used for treatment or prevention of constipation. As aforementioned, the

use of laxatives/medications should be based on the main causes of constipation. Investigations in this field may lead to isolation and preparation of new drugs. An important issue in the use of medicinal plants is their possible toxicities [64,65]. Fortunately, most of these plants are not only safe but they also reduce the toxicity of other toxic agents. The plants highlighted in **Table 1**, in most cases, can relieve constipation as well as other diseases [66,67].

## 5. Conclusion

This review article presents important medicinal plants for the treatment and prevention of constipation. These plants can be used for preparation of new drugs; their active ingredients may also be used in the treatment of constipation. In future studies, it is better to focus on classification of herbal laxatives, based on their mechanisms for treating constipation.

## 6. Open Access

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## 7. List of abbreviations

Not to be applied

## 8. Ethics approval and consent to participate

Not to be applied

## 9. Competing interests

The authors declare that they have no conflict of interest.

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## 11. Authors' contributions

All authors reviewed, commented and approved the final manuscript.

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