

Original Article

Identification of Medicinal Plants Used to Enhance Appetite and Increase Weight in Aligudarz, Lorestan Province: An Ethnobotanical Study

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Abstract

Background and Aim: Anorexia is a disorder that can be annoying for patients in prolonged cases. It can lead to health-threatening problems. Today, different methods are used to increase appetite and weight. One of these methods is the use of medicinal plants. This study was conducted with the aim of investigating the medicinal plants used to increase appetite and weight in Aligudarz, Lorestan, Iran.

Materials and Methods: The present study is descriptive research. Sampling was carried out using the complete enumeration method, and 20 medicinal plant sellers took part in this study. Data were collected using a two-part questionnaire containing demographic characteristics form and characteristics of the medicinal plants used in the study.

Results: The results of the study indicated that 17 medicinal plants belonging to 11 plant families could strengthen appetite and increase weight. The most abundant plant recommended by the medicinal plant sellers was alfalfa (25.71%), followed by wheat (14.28%). In terms of the plant family, the most used plants were related to the Poaceae family (18%), followed by Asteraceae (17%) and Apiaceae (17%).

Conclusion: Iran is a rich country in the field of medicinal plants, it is recommended to identify plants related to appetite enhancement and weight gain through review studies and then conduct laboratory studies to confirm their effect so that consumers can use these plants with more scientific support.

Keywords: Plants, Medicinal, Anorexia, Thinness, Ethnobotany

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Introduction

Gaining and losing weight are two serious problems worldwide. Weight gain and obesity are more common in rich and developed countries, while malnutrition and weight loss are primarily observed in

developing countries (1). Appetite is a collective term which is usually used to refer to hunger, satiation and satiety, the sensations that cause a person to eat and then stop eating, and the length of time between meals (2). A poor appetite is highly effective on the reduction of energy intake associated with a lower diet quality and

less diet variety (3). Anorexia and low appetite are significant risk factors for malnutrition (4) connected to unfavorable clinical consequences and decreased quality of life as well as survival (3). Most people experience low appetite temporarily, which is usually not worrisome unless it lasts more than 1-2 days (5). Anorexia and weight loss caused by it can lead to several medical problems such as bone density reduction (6, 7), bradycardia, blood pressure drop, hypophosphatemia following re-establishment of nutrition, blood disorders, increased liver enzymes (8), hypothermia (9), weakened physical strength, weakened immune system in adults (10), and malnutrition (5).

Appetite stimulant drugs are used to help eliminate or strengthen anorexia. Examples of these drugs include cyproheptadine hydrochloride, megestrol acetate, cannabinoids, hydrazine sulfate, growth hormone, and anabolic hormones (5). One of these drugs, which has recently been widely used in the treatment of anorexia (5) is cyproheptadine hydrochloride (11). Researchers have conducted studies on this drug for more than 50 years to stimulate appetite and increase weight. The use of cyproheptadine hydrochloride is restricted due to its side effects such as drowsiness, irritability, nausea, confusion (11), hallucinations, imbalance in walking, tachycardia, muscle contraction, dryness of mucous surfaces, stomach pain, mydriasis, and facial redness (5). Ghrelin hormone can also be used to stimulate appetite, but this drug is an expensive peptide drug and is unstable at room temperature (10). The results of a study conducted at Tehran showed that most of synthetic medicines with herbal labels marketed to increase appetite and weight contain dangerous chemical compounds such as corticosteroids, cyproheptadine, and in some cases tramadol (12). In a case study, the use of one of these drugs called Fereshte obesity pill caused liver damage and portal vein thrombosis in the user (13). Today, herbal and traditional medicines have attracted the attention of researchers all over the world, and despite the progress of synthetic medicines, the demand for herbal medicines is increasing (14).

The use of plants dates back to the beginning of human life on earth (15). Patients believe that natural products are safe and more effective than new drugs. Moreover, self-care, dissatisfaction with existing

standard treatments, longer shelf life of herbal medicines (16), less probability of side effects, and lower cost in comparison with chemical medicines (5) are among the reasons for using herbal medicines. According to WHO statements, about 88% or more of the world's population use plants to treat diseases and ailments (1). Along with therapeutic effects of herbs, there might be some side effects. Excessive or inadequate use of medicinal plants can cause severe health problems, particularly in children, the elderly, and pregnant women (16). Many animal studies have been conducted on the use of medicinal plants in laboratory environments to increase appetite and weight, which can be attributed to the effectiveness of plants such as coriander (5), cinnamon, cloves, and fennel (10), watercress (1). Moreover, in certain studies that have investigated medicinal plants available in medicinal plant sellers (*Attari*), the appetizing plants introduced in Dashtestan were fennel, tarragon, watercress, citron, and sorrel (17). There were plants such as oregano and barberry in Lorestan (18). With regard to Aliguderz, oregano has been mentioned (19). Aligudarz is one of the cities of Lorestan Province, which is located in the east of this province. This city is bordered to the north, east, west, and south by Markazi Province, Isfahan Province, Azna and Dourud cities, and Khuzestan Province, respectively (19). Aligudarz is one of the most important geographical regions in Iran due to its ancient history in traditional medicinal plants (19) (Figure 1). Among the plants that are used medicinally and industrially in this city, we can mention borage flower, flaxweed, thyme, greater plantain, licorice, yarrow, marshmallow flower, chicory, *Allium jesdianum*, astragalus, and tragacanth (18). Since only a few studies have been conducted on issues such as thinness and appetite in thin people, people's trust in medicinal plants and easier access to them, and the increase in counterfeit drugs with herbal labels, we decided to conduct a study to identify the medicinal plants used to increase appetite and weight in medicinal plants sellers (*Attaris*) of Aligudarz, Lorestan, in order to contribute to the correct use of healthy herbal medicines in this field.

Materials and Methods

The present descriptive study was conducted in

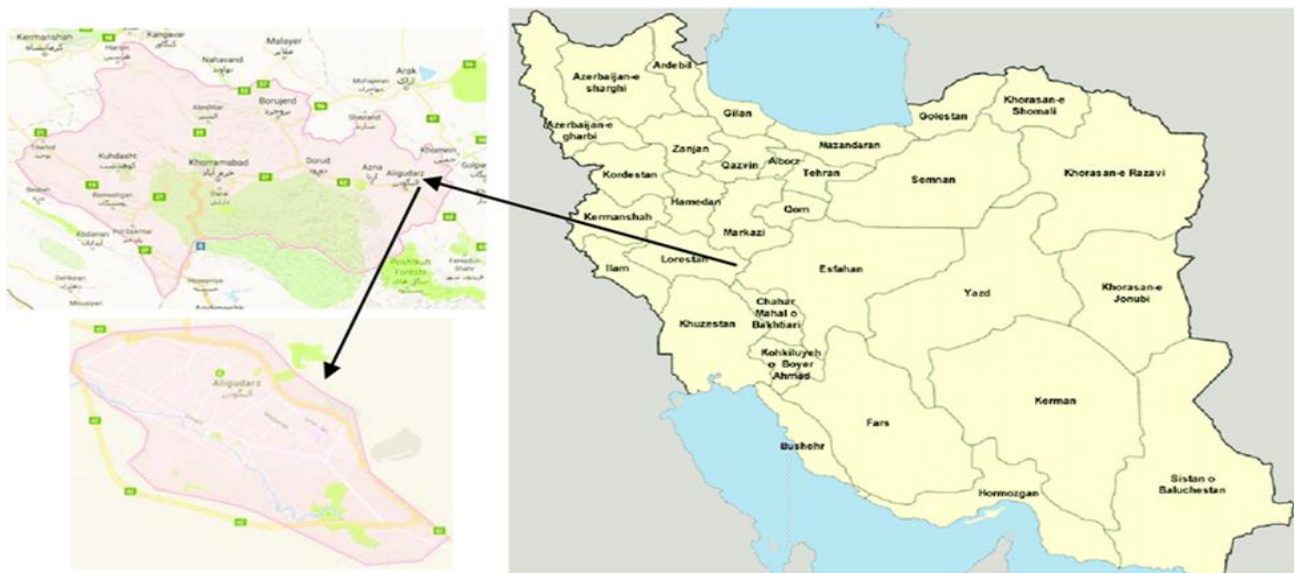


Figure 1. Aligudarz Region in Lorestan province, Iran.

Aligudarz, Lorestan. The statistical population includes the *attaris*, who have a license from the Health and Treatment Center of Aligudarz. Sampling was performed using the complete enumeration method, and 20 people out of 28 *Attaris* were included in the study. The participation and response percentage of the samples was 71.42%. The study inclusion criteria included having at least 12 months of work experience and over 18 years of age. First, the phone numbers and addresses of the shops selling medicinal plants were obtained from the Health and Treatment Center of Aligudarz (Professional Health Unit), and after receiving the code of ethics from Lorestan University of Medical Sciences (IR.LUMS.REC.1399.237), data collection was obtained through a questionnaire. We tried to visit these people in the early hours of the evening when it is quieter. After introducing the researcher and purpose of the research, the questionnaire was completed through interviews. The questionnaire consisted of two parts. The first part was related to demographic information such as age, gender, work experience, education level, field of study, and passing a course related to medicinal plants. The second part included information about medicinal plants (Persian name, scientific name, the family of the plant, the used part of the plant, the method of use, the amount of use and frequency of use per day). The questionnaire has already been used by Bahmani *et al.* in Urmia (20). Since the collection of information

related to medicinal plants in all ethnobotanical articles is limited to the scientific name, Persian name of the plant, parts that are used, method of use, and quantity as well as number of times used, the questionnaire does not need validity and reliability. After collecting the data, they were entered into Excel, and the frequencies as well as percentage were converted into graphs and tables. Only the medicinal plants that have the herbal form and are used to increase appetite and gain weight were registered. Synthetic medicines such as tablets, capsules, and powders were not included in these items, because the purpose of this study was to investigate only the drugs that exist in the form of natural plants, not synthetic substances that cannot be identified.

Results and Discussion

According to the list received from the professional health unit of the Health and Treatment Center of Aligudarz, 28 *attaris* are active in this city, 20 of which participated in the study. All the participants were over 18 years old, and their average age was 37.2 ± 10.99 . Most of the participants were male (70%), and their average work experience was 10.15 ± 9.32 . In terms of the field of study, only 5 people had received education related to medicinal plants and 15 people had unrelated education. Most of the participants had a bachelor's degree (45%) and 95% had completed courses related to medicinal plants. After collecting the questionnaire

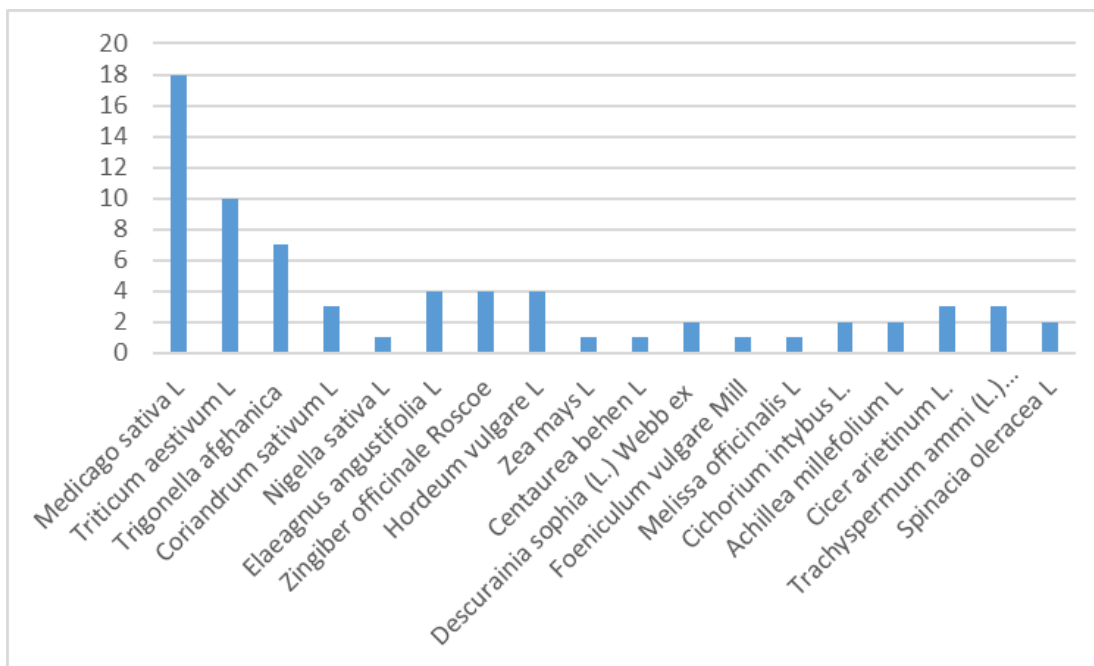


Figure 2. Abundance of Medicinal Plants Used for Anorexia and Weight Gain.

data, 17 medicinal plants belonging to 11 plant families were obtained which were effective in the enhancement of appetite and increasing the weight. The most abundant plant recommended by the participants was alfalfa (25.71%), followed by wheat (14.28%). Other recommended plants have been indicated in order of abundance in Figure 2. In terms of the plant family, the most used plants were related to the Poaceae family (18 %) followed by Asteraceae (17%) and Apiaceae (17%) (Figure 3). Data collection about the parts of the plant used, methods of use, and frequency of use have been shown in Table 1. The most frequently used plant organs were seeds (47%), leaves (35.29), and flowers (23.52), respectively. In terms of the method of consumption, the dried powder was the most abundant one, followed by brewed, boiled, and sprouted forms.

In this study, 17 types of plants from 11 families were used to enhance appetite and increase weight. We checked the number of plants that were the most abundant one. The most used plant and the most abundant plant family were alfalfa and Poaceae, respectively. In a study conducted by Mehrnia *et al.*, appetizer properties of some plants such as grass (from the Poaceae family), fennel, *Foeniculum subpinnata*, rosemary from the Apiaceae family, *Lepidium sativum* from the Brassicaceae family, and

garlic from the Amaryllidaceae family have been mentioned (21). Since Mehrnia *et al.* also conducted their study in Lorestan Province, the plants recommended for enhancement of appetite in the present study and the above-mentioned study were similar, that can be due to the similar plant diversity in the province and the abundance of the species mentioned above. Abbasi *et al.* reported that Lamiaceae, Apiaceae, Asteraceae, Fabaceae, Brassicaceae, and Amaryllidaceae families were among the most important families of medicinal plants used by people of Lorestan Province (22). These plants are not the same with those of the present study in terms of the frequency of the largest plant family. This inconsistency might be related to the type of study conducted by Abbasi *et al.* who examined the entire medicinal plants of Lorestan, whereas in the present study, only the plants that increase appetite and weight were studied.

Medicago Sativa L

Regarding the high abundance of the alfalfa plant in this study, it should be said that active biological compounds in the aerial parts of this plant include isoflavonoids with estrogenic activity, flavonoids, phenolic acids, sterols, and saponins (23). Alfalfa extract has a moderate anti-inflammatory effect and plays a role in the treatment of

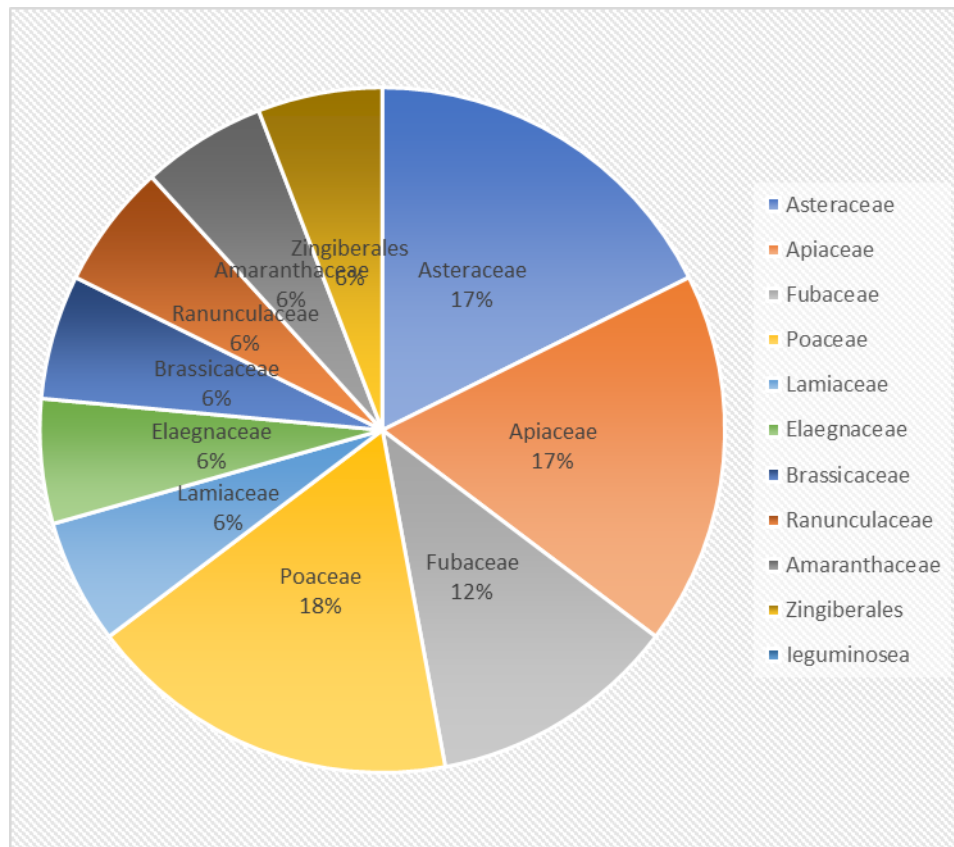


Figure 3. The Number of Species from Every Botanical Family Used in the Treatment of Appetite Disorders and Weight Gain in Aligudarz.

hypercholesterolemia and the relief of central nervous system disorders (23). It is also used to increase appetite, digest food, improve malnutrition, reduce stomach acid secretion, treat stomach ulcers, intestinal problems and vitamin C deficiency, increase the speed of tissue healing, and reduce swelling (23). Alfalfa contains significant amounts of mineral elements such as magnesium, potassium, sodium, and calcium, and rare elements such as zinc, iron, copper, nickel, and selenium (24), vitamins A, K, and C, amino acids lysine, phenylalanine, asparagine and cysteine (25). Given the compounds in this plant, it can be said that its use can increase the activity of amylase and protease enzymes in the intestine and hepatopancreas and improve the conditions of digestion. Moreover, its amino acids form complexes that are important and necessary for muscle tissue and enzymes and increase weight and feed efficiency (25). Sabzi Noja Deh *et al.* conducted a study in Golestan Province. They stated that the alfalfa plant could be an appetite enhancer (26), while in the studies conducted in Lorestan

Province, alfalfa was not mentioned as a medicinal plant (21, 27).

Coriandrum Sativum L

The second most widely used plant is coriander, which is scientifically called *Coriandrum Sativum Linn* (28). Various chemical compounds have been identified in each part of the plant, including roots, leaves, fruits, and seeds, which have a wide range of uses (29). Phytochemical screening results of coriander seeds showed that the seeds have various secondary metabolites, including steroids, flavonoids, saponins, tannins, coumarin, and volatile compounds, and coriander leaves contain phenolic acid, polyphenols, glycosides, saponins, flavonoids, and tannins (29). Moreover, coriander seeds have high amounts of vitamin C, some important fatty acids such as linoleic acid (omega 6), and the minerals magnesium, iron, calcium, zinc, potassium (30), protein, fiber, and carbohydrates (31). Different medicinal and nutritional properties of this plant have made it suitable to be used in various regions of the world. This plant has been used

Table 1: The Medicinal Plants Used in the Treatment of Appetite Disorders in Aligudarz.

No	Persian name	Scientific name	family	Consumable part	Method of Use	Frequency of use
1	Younjeh	Medicago sativa L	Leguminose	All parts	decoction - extract	daily
2	Geshniz	Coriandrum Sativum L	Apiaceae	leaf -seed	powder - brewed	three times a day
3	Gandom	Triticum Aestivum L	Poaceae	germ	Powder- raw	three times a day
4	Shanbalileh	Trigonella afghanica Vassilcz	Leguminosea	seed -flower- leaf	powder - extract	Daily
5	Zanjabil	Zingiber officinale Roscoe	Zingiberaceae	root	Powder-brewed	three times a day
6	Senjed	Elaeagnus angustifolia L	Elaeagnaceae	fruit	powder	three times a day
7	Jo	Hordeum vulgare L.	Poaceae	Seed	Germ -Malta	three times a day
8	Nokhod	Cicer arietinum L.	Leguminosea	Seed	powder	two times a day
9	Zenyan	Trachyspermum ammi (L.) Sprague	Apiaceae	Seed	powder-extract	three times a day
10	Boomadaran	Achillea millefolium L	Asteraceae	flower -leaf	powder-extract	three times a day
11	Kasni	Cichorium intybus L.	Asteraceae	Root- flower	extract	Daily
12	Khakshir	Descurainia sophia (L.) Webb ex Prantl	Brassicaceae	Seed	with liquids	three times a day
13	Razianeh	Foeniculum vulgare Mill	Apiaceae	Seed-leaf	Powder-extract	Daily
14	Bahman sorkh	Centaurea behen L	Asteraceae	root	powder	Two times a day
15	Siah daneh	Nigella sativa L	Ranunculaceae	seed	brewed	Daily
16	Sphenaj	Spinacia oleracea L	Amaranthaceae	Leaf- stem -seed	brewed - puree	Two times a day
17	Badranjooyeh	Melissa officinalis L	Laminaceae	Leaf- flower	Extract-brewed	Three times a day

to treat anorexia and stimulate appetite in countries such as Morocco, Iran, India, and Turkey (28). Naderi *et al.* reported that the use of coriander extract in the diet of rainbow trout increased the specific growth rate and final weight. This effect might be associated with distinct factors, including the protection of nutrients in the intestine because of the antibacterial effects of coriander extract, increased levels of digestive enzymes and cellular respiration, and better absorption of nutrients that raise the number of red blood cells. (30). On the other hand, linalool that present in the plant has an appetizer effect and causes stimulating effects on the digestive process, and increases food consumption (32).

Triticum Aestivum L

Wheat germ contains a variety of vitamins such as vitamin E, thiamin, riboflavin, pyridoxine, niacin, and pentonic acid. It is also rich in essential amino acids such as methionine, lysine, and threonine, which makes it a valuable food supplement (33). Perhaps due to the presence of these compounds, it could be used as an appetite and weight enhancer. Mehrnia *et al.* have mentioned the appetizer effect of wheat in their study (21).

Trigonella foenum graecum L

The next plant suggested as an appetizer and weight gainer is fenugreek with the scientific name *Trigonella*

foenum graecum L. The most consumed parts of this plant are its seeds and leaves. Since high levels of phytochemicals, alkaloids, carbohydrates, steroidal saponins, amino acids, fiber, and minerals are found in fenugreek, it can be used for nutritional, food, medicinal, and therapeutic purposes (34). Various medicinal effects such as antiviral, antimicrobial, antifatulence, anti-cholesterol, antipyretic, restorative, laxative, expectorant, uterine strengthening, anti-cancer, anti-inflammatory, antioxidant, blood pressure lowering properties have been attributed to this plant (35). Moreover, fenugreek seeds are used in traditional medicine to treat diabetes and anorexia, and stimulate stomach (35). Hassan Ali et al. (2021) used fenugreek seeds in their study to increase weight and food consumption in broiler chickens. The results indicated that the amount of food consumption and weight increased in groups receiving fenugreek seeds. The cause of weight gain could be related to the presence of significant fatty acids and high-quality proteins in the plant. Fenugreek is a natural food additive that improves the taste of food. Moreover, its carbohydrates and other main components, namely galactomannan, stimulate the appetite and digestive process. Compounds such as Norin, trimethylamine, and biotin found in fenugreek help stimulate appetite through their effects on the nervous system (36). In a study conducted by Abbasi and Avesta, the appetizing and fattening effects of the fenugreek plant have been mentioned, which can justify the results of the present research according to the place of the study (22).

Zingiber officinale Roscoe

Ebrahimzadeh Attari and et al. (2018) have mentioned the impact of *Zingiber officinale Roscoe* on the rise of food consumption and weight (37). This plant may act through a modulatory effect on intestinal 5-HT receptors (5-HT₃ may act as an appetite suppressant) that increases the peristalsis of the gastrointestinal tract and decreases food transit time (38). Ginger root contains substances such as starch, fiber, protein, water, saccharide, cellulose, and minerals such as calcium, iron, magnesium, manganese, phosphorus, potassium, sodium, and zinc (38), which can be good sources of food for people. Moreover, the study conducted by Tewari et al. (2018) showed that ginger did not affect the rise of food consumption and weight

in broiler chickens (35). In Qur'an, the ginger plant has also been mentioned as an appetite enhancer (39). In the study conducted by Saadati et al., the weight gaining and appetite-stimulating effects of ginger have also been reported (40). The reason for the contradiction of studies might be related to the type of study. Shahrajabian et al. conducted a review study about birds in which they reported the effect of increasing appetite and weight. In the study conducted by Tewari et al., ginger was added to the diet of chickens. In contrast, Saadati's study expresses Attaran's view on the effects of herbs without having been tested in a real environment (35, 38, 40).

Elaeagnus angustifolia L

Senjed with the scientific name *Elaeagnus angustifolia L* is from the Elaeagnaceae family. This plant is a rich source of nutrients such as fatty acids, minerals, vitamins, and bioactive compounds (41). The anti-inflammatory, analgesic, antibacterial, and antioxidant effects of *Elaeagnus angustifolia L* extract and fruit on controlling diabetes, retinopathy, rheumatoid arthritis, and skin diseases, and also on the improvement of osteoporosis have been reported (42). Hosseini et al. (2021) conducted a study on red fish in which they showed that this plant had no effect on the growth of fish and the efficiency of their feed (43). Heydari et al. (2021) also showed that the use of elderberry powder could increase the satiety index and thus reduce food consumption (42). The reason for this decrease in appetite can be the presence of fiber and phenolic compounds in *Elaeagnus angustifolia L*. The results of the above-mentioned studies conflict with those of the present study. It can be said that since these studies were conducted in the form of clinical trials, the results obtained from them are more valid than the results of the present study. Moreover, given the compounds found in the elderberry fruit, participants have found it suitable for increasing weight and appetite. Furthermore, we could not find a study in the same direction as our study.

Descurainia Sophia

Sophia with the scientific name *Descurainia Sophia* belongs to the Brassicaceae family. The aerial part and seeds of *Descurainia Sophia* have also been found to contain several such bioactive compounds. Many studies addressed the effect of *Descurainia Sophia* in cancer, respiratory system, gastrointestinal system, and

inflammatory diseases (44). In some studies, that have been conducted using ethnobotanical method, the appetizing properties of sophia have also been mentioned (45, 21), which is are line with the results of this study.

Since most of the studies conducted on medicinal plants are ethnobotanical studies that investigate the general properties of these plants, this study is the first research that specifically investigates the appetite-stimulating and weight-increasing effects of medicinal plants. Limitations of this study included small sample size and the small study environment. Thus, similar studies with a larger sample size and vaster environments are required.

Conclusion

Considering the variety of medicinal plants in Iran, it is suggested to carry out review studies on the plants used to enhance appetite and weight and evaluate the effects of the recommended plants by conducting clinical trials so that more reliable data can be obtained. The available knowledge concerning medicinal plant sellers and consumers is raised with the publication of such information. Since gaining weight naturally takes time, some people may be inclined towards drugs that increase weight faster. These drugs have the risk of low quality, and may be problematic for a person's health. Thus, conducting such studies can guide people to choose healthy medicines. Moreover, ceremony-preparing courses related to medicinal plants and giving overhauled data taken from related articles for sellers of medicinal plants can assist customers with these items.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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