

Edible Medicinal Plants of Mediterranean Region and Consumer Behavior

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ABSTRACT

Bioavailability has an important place in human nutrition by creating healthy nutrition options, food assurance, and positive effects on human health. Plants that grow by themselves in nature have great importance on our nutritional culture. Also because the availability of edible plants in the wild is not related to the economic status of the person, they are very important for the nutrition of our society. Turkey, with its rich flora, is endowed with the greatest number of medicinal and aromatic plants in Europe, which are mostly found growing in the wild. Due to industrialization and urbanization, and the migration of Turkish people to cities from rural areas, traditional knowledge on these wild plants has started to vanish. This knowledge, which derives from the historical use of natural resources, is still being used by many food and drug industries. However, risks arising from the improper use of species that have not been medically studied and approved should not be overlooked. For this reason, multidisciplinary studies must be undertaken to document the medicinal benefits of these traditional plants.

The Biodiversity for Nutrition and Food (BFN) Project, carried out from 2012-2019, documented important information on the use of regional plants and wild species in the Mediterranean, Black Sea and Aegean regions of Turkey. In the Mediterranean Region, which this paper will focus on, of the 20 documented species, 17 were reported as being used both as medicinal and food plants while the remaining 2 species were only used for medicinal purposes. Consumers of these species use the plants for common health problems such as diabetes, gastrointestinal diseases, flu, kidney stones, cough, oral and dental diseases, and cardiovascular diseases. The scope of this study includes the evaluation of the traditional use and medicinal application of wild edible plants (WEP) of the Mediterranean region compared to the same plant species from different studies that have been conducted. The scope of this study also includes the present medicinal benefits of edible medicinal plants

and determining factors that affect the consumption and consumption habits of these plants.

According to results that have been obtained, the most commonly known plants out of the 20 plants that have been detected as edible medicinal species are Syrian Juniper (40%) and Elm Leaved Sumach (35%). Plants with the most commonly known medicinal benefits are also found to be Syrian Juniper and Elm Leaved Sumach and although they are not overall commonly known, when their benefits were known they were observed to be more likely to be consumed by the consumers. 6 factors are affecting the consumption of edible medicinal plants by consumers according to the factor analysis that has been done in the research. These are 1. Information and Availability, 2. Marketing, 3. Healthy Eating, 4. Taste and Benefit, 5. Brand and Awareness, 6. Cultivation Technique.

Keywords: Traditional knowledge, wild edibles plants, medicinal values, consumption habits, factor analysis

INTRODUCTION

According to the "Flora of Turkey and The East Aegean Islands", Turkey's is home to an astounding 1251 genera from 174 plant families, more than 12,000 species and taxon subspecies (subgenre and variety) (Davis 1985-1988, Güner et al. 2000) [1,2]. 234 of these taxa are of foreign origin and cultivars. The remaining species are endemic to Turkey (Ekim et al. 1989, Erik and Tarıkahya 2004) [3,4]. Considering the whole European continent has only about 12,000 plant taxa in total, it is greatly evident that Turkey is very rich in vegetation flora (Ekim et al. 2000) [5].

Although the exact number of medicinal plants in Turkey is not known, it has been estimated to be about 500. Also, it should be highlighted that about 200 medicinal and aromatic plants have exportation potential (Baytop 1999; Ekim et al. 2000,

Aydin 2004) [5-7], and most of these plant species are found in the Mediterranean region. It is thus crucial to understand the value of these plants, particularly in the Mediterranean region. This region has the highest endemism in Turkey.

The Mediterranean region has 20 important areas that are rich in plant biodiversity. The most important provinces are Konya housing 1396 taxa and 428 endemic species, İçel with 1724 taxa and 399 endemics, Karaman with 331 taxa and 150 endemics, and Antalya with 2126 taxa and 572 endemics (Anonymous 2023) [8].

Our study that has been conducted in the Mediterranean region which is very rich in plant species diversity, we aimed to demonstrate the medicinal benefits of edible medicinal plants that have been detected in the scope of the study with research that has been done and determining factors that affecting consumption and consumption habits of these plants.

MATERIALS AND METHODS

In this study, a monographic research technique was used. Information was gathered by interviewing 484 wild plant gatherers and consumers from four provinces, 17 districts, and 31 villages including in the provinces of Antalya, Konya, İçel and Karaman (Table 1) (Figure 2). Documented wild species and regional plants were researched in detail, from production to consumption. Ethnobotanical information on the sustainable use of this diversity was also obtained via BFN. (Karabak 2017) [9].

Due to the increasing importance of these compounds on human health, polyphenols analysis and antioxidant activity evaluation were also carried out using 2,2- diphenyl-1-picrylhydrazyl radical scavenging effect (DPPH) and Trolox equivalent antioxidant capacity/ABTS radical cation decolorization assay method (TEAC) (Ayas et al. 2017) [10].

Table 1: Study area in the provinces of Antalya, Konya, Icel and Karaman and target species of the Mediterranean Region.

Province	ANTALYA	KONYA	İÇEL	KARAMAN
District	Gündoğmuş	Taşkent	Aslanköy (Erdemli)	Ermenek
	Akseki	Beyşehir	Mut	Ayrancı
	Korkuteli	Derebucak	Gülnar	
	Elmalı	Ereğli	Tarsus	
	Gazipaşa	Halkapınar	Çamliyayla	
Species	1. <i>Juniperus drupacea</i> Labill. (Andız, Pekmez ardıcı)	6. <i>Eremurus spectabilis</i> M. Bieb. (Çiriş)	14. <i>Gundelia tournefortii</i> L. (Kenger)	15. <i>Ferula elaeochytris</i> Korovin (Çakşır)
	2. <i>Pyrus serikensis</i> Güner & H. Duman (Serik Armudu)	7. <i>Nasturtium officinale</i> R. Br., Aiton (Su teresi)		16. <i>Scorzonera cana</i> (C.A. Mey.) Griseb (Dedem sakalı)
	3. <i>Dioscorea communis</i> (L.) Caddick & Wilkin (Kuşkonmaz)	8. <i>Lupinus albus</i> L. (Termiye, Tirmis)		17. <i>Gypsophila arrostii</i> subsp. <i>nebulosa</i> (Boiss. & Heldr.) Greuter & Burdet (Çöven)
	4. <i>Chondrilla juncea</i> L. (Gara gavruk)	9. <i>Acorus calamus</i> L. (Eğir)		18. <i>Rhus coriaria</i> L. (Sumak)
	5. <i>Colocasia esculenta</i> (L.) Schott (Gölevez)	10. <i>Capparis spinosa</i> L. (Kebere, Kapari)		19. <i>Tragopogon porrifolius</i> subsp. <i>longirostris</i> (Sch.Bip.) Greuter (Yemlik)
		11. <i>Eriolobus trilobatus</i> (Labill. ex Poir.) At Elması		20. <i>Cichorium intybus</i> L. (Güneyik, Karahindiba)
		12. <i>Ferulago trachycarpa</i> Boiss. (Çakşır, çasır)		
		13. <i>Berberis crataegina</i> DC. (Karamuk)		

**Figure:** The Four Provinve in The Mediterranean Region in the provinces of Antalya, Konya, Icel and Karaman.

The second stage of the study is to reveal consumer preferences for the plants identified within the scope of the project and the factors affecting these preferences. At this stage, the primary data of this study formed from information obtained from 200 surveys conducted by face-to-face interviews with families selected by sampling method in the city center of Antalya province. During the survey phase of the study, a pilot survey was prepared in order to determine the sufficient sample size for the study and to correct the shortcomings of the survey to be applied. These prepared surveys were applied to 10 randomly selected people. Based on the results obtained from the pilot survey, the survey form then was reviewed, adjustments were made and the main survey was finalized. The data obtained from the survey application was evaluated in the SPSS package program. During the data processing phase, averages, proportional values, and cross-relationships between important variables were explained.

In the study, factor analysis, which is among the multivariate analysis techniques, was used to determine the factors affecting the consumption preferences of edible medicinal plants in order to reduce the number of variables expressed as sub-variables and make them more easily understandable. Factor analysis aims to find factors among observed variables. If there are too many variables, this analysis is applied to reduce the number of variables and make them easier to interpret (Hair et al., 1992) [11].

The factor analysis was applied using the SPSS package program. Factor analysis can be summarized in three stages.

1. A correlation matrix is created for all variables.
2. Factors are extracted from the correlation matrix based on the correlation coefficients of the variables.
3. Factors are subjected to rotation to maximize the relationship between some of the factors and variables.

In our study, reliability measurements were made for the variables used in factor analysis. Reliability refers to the consistency of a measurement. It is a measurement that should be taken into consideration, especially in studies where behavioral evaluations are made. It is not desirable for the reliability value in behavioral studies to fall below 80%. Reliability can be measured in different ways. These measurements can be listed as follows (Oppenheim, 1992) [12];

- Test-Retest reliability

- internal consistency
- Split-half method
- Parallel form method

Cronbach's alpha coefficient, which is among the internal consistency methods, is the most commonly used reliability coefficient. This coefficient enables the series of variables to be measured in one dimension. Cronbach alpha should be low when the data has a multidimensional structure. Cronbach alpha is not a statistical test but a reliability or consistency coefficient.

Cronbach alpha can be written as a function of the number of variables to be tested and the correlation between variables.

$$\alpha = \frac{N\bar{r}}{1 + (N - 1)\bar{r}}$$

In the formula;

N: Number of variables

\bar{r} : Shows the average of correlation between variables.

Cronbach alpha coefficient can be interpreted as a correlation coefficient. This coefficient takes values between 0 and 1. Negative values indicate that there is no positive relationship between the factors. In such a case, the reliability model is invalid. If the coefficient found is approaching 1, it means that the model is quite reliable. On the other hand, as its value approaches 0, reliability decreases.

The general purpose of factor analysis is to express the information present in a large number of main variables in a smaller number of dimensions (in factor variables) and to reveal the factor structure represented by the variables. As a result of factor analysis in the study, the factor structure of consumption preferences of edible medicinal plants was revealed.

Study Findings

In the study, 20 plant species were found to be used both in traditional medicine and for food. Ethnobotanical data about these species were compiled and their medicinal value evaluated in the light of the obtained information.

Calamus - Eğir otu (*Acorus calamus L.*)

In Turkish traditional medicine, it is used as a gas pain reliever, appetite stimulator and anti-coagulant. It is also used to

cure nausea, digestive disorders and in tooth extraction procedures. The plant's rhizomes have many ethnomedical and ethnobotanical uses. It is not consumed for food. In Indian and Chinese medicine, it is known as rattan and is used to aid memory, improve learning performance, prevent lipid peroxidation and anti-aging effects as well as an appetite stimulator and digestion-supporter. Also, it has healing properties for fever and stomach cramps. Its rhizomes can be used unprocessed, chewed for tooth pain and by processing it to powder and drinking it for throat ache (Palani et al. 2009) [13]. Essential oil extracted from the leaves, rhizomes, and the plant itself has antispasmodic and antifatulent effects. Its rhizomes are used for epilepsy, mental disorders, chronic diarrhea, dysentery, intermittent fever, bronchitis, cold, throat ache and tumortreatment (Devi et al. 2011) [14]. It also has antifungal, antibacterial, and insecticidal properties (Rupali et al. 2011) [15]. This plant is utilized because of its sedative, anti-diarrheal, anti-dyslipidemic, neuroprotective, antioxidant, anticholinesterase, spasmolytic and vasculomodulator activities (Mehrotra et al. 2003) [16]. It has been detected that the plant's rhizomes and leaves have mitogenic and anticarcinogenic effects on human lymphocytes (Palani et al. 2009) [13]. As a result of our questionnaire and project studies, the most common regional use of Calamus in Turkey is for indigestion.

Elm Leaved Sumach-Sumak (*Rhus coriaria L.*)

It is used both as a spice that adds flavor to food and in traditional medicine. Dried sumach fruits are ground, separated from the seeds and used as a popular spice in the Middle East. With its sour taste and red color, it adds flavor in cooking and creates an impressive colour in dishes. Sumach is used in dishes such as stuffed grape leaves/peppers, sauces, olives olive pastes etc. The product that is obtained from the decoction of Sumach stem and leaves is used for gastrointestinal infections while the product the decoction of ripe fruits is used for expelling kidney stones. Chewing of sumach fruits, like gum, is also known to be used for treating mouth wounds and stomach cramps (Güner 2012, Tuzlacı 2006, Tuzlacı 2011) [2,17,18]. Sumach is used in the treatment of dysentery, conjunctivitis, liver diseases and anorexia as well as in burn and dermatitis-like skin disorders treatment (Ali Shtayeh et al. 2013) [19]. The results of a study showed that high consumption of sumach might have a protective effect against atherosclerosis, oxidative stress, and liver enzymes, due to high-fat food stress (Setorki et al. 2012) [20]. In a study undertaken in Azerbaijan it was shown that the fruits have a

laxative effect and are also used for hypertension and diabetes (Hasanova 2000) [21].

Ferula-Çağ (*Ferula elaeochytris Korovin*)

Ferula root and above-ground parts are known to be used for their aphrodisiac effect and in the treatment of prostatic disease, while the root is used for the treatment of infertility and diabetes (Akan 2015, Kocabaş and Gedik 2016) [22,23]. In regional farmers' markets, Plant root extracts are reported to have positive effects in slowing down the development of age-related erectile dysfunction (a serious public health problem with a high prevalence and adverse effects on the quality of life in elderly men) (Eser et al. 2020) [24]. Honey made from *Ferula elaeochytris* flowers is used to increase sexual desire. Ferula is also used as a pain reliever, as a sedative, and to aid digestion as well as for the treatment of gynecological diseases, digestive disorders and respiratory disorders in traditional medicine (Akbulut 2015) [25]. It has been found that excessive ingestion of the plant causes allergy in cattle (Sargin and Büyükgebiz 2019) [26]. Its root can be boiled and used as a tea for medicinal purposes.

Kuzukemirdi (*Ferulago trachycarpa Boiss.*)

Traditionally used for its medicinal properties as well as food in salads and as a spice (Akalın and Alpınar 1994) [27]. It is used as a nervous system sedative, carminative, aphrodisiac, dewormer, antidepressant and for the treatment of gastrointestinal diseases and hemorrhoids (Özhatay and Akalın 1998) [28]. As a food item, that can be pickled to be eaten later or used as a preservative and aromatizer for milk products like cheese (Şatır 2006) [29].

Common chicory - Hindiba (*Cichorium intybus L.*)

It can be used both as a medicinal plant and as food. The whole plant contains important medical compounds such as inulin, esculin, and volatile compounds (monoterpenes and sesquiterpenes), coumarins, flavonoids and vitamins. Also, processed common chicory powder is used commercially to produce several raw food materials such as chicory powder, agglomerated powder, flour, roasted cubes, chocolate flavoring and liquid extract. It has been detected in studies that the root extract of this plant has anticarcinogenic, antitumor and immunomodulator properties (Angelina et al. 1999, Hazra 2002) [30,31]. Common Chicory is used as an additive in coffee to relieve gastritis (Bremness 1998) [32]. Also, sesquiterpene lactones such as lactusin and lactucopicrin present in the plant are used for their antibacterial, antimalarial (Bischoff

et al. 2004) [33] and antifungal activities (Monde et al. 1990; Nishmura et al. 1999) [34,35]. Dried common chicory root is used for its diuretic properties as well as for the treatment of stomach, liver, and spleen enlargement; gout, fever, rheumatic complaints, vomiting and diarrhea in tonic form (Kokate 2006, Chopra 2002) [36,37]. While its leaves are used in salads, its dried and ground roots are used as a coffee alternative.

Rush skeletonweed - Karakavuk (*Chondrilla juncea* L.)

It is used in traditional medicine and cooking. Gum can be produced from the sap that exudes from cutting the bottom part of its trunk. This gum is chewed to prevent tooth decay as well as for treating stomachaches. When condensed, the sap can be used as hair removal wax (Senkardes 2014) [38]. Extracts of rush skeletonweed are used for stomach aches while its leaves are used for healing wounds (Çakiloğlu and Türkoğlu 2009) [39]. The bottom leaves of the plant are used in traditional dishes (Uzun 2015) [40]. Raw leaves of the plant can be added to salads (Deniz vd. 2010) [41].

Salsify - Teke Sakalı (*Scorzonera cana* (C.A.Mey.) Griseb)

It is used both as a medicinal plant and as food. The genus is used in traditional medicine in Turkey, Europe, China and Mongolia for different purposes (Tsevegsuren et al. 2007, Baytop 1999, Zidorn et al. 2000) [42-44]. In Turkish folk medicine salsify species are used to treat arteriosclerosis, kidney diseases, hypertension, diabetes mellitus, rheumatism and for pain relief as well as wound healing (Baytop 1999, Sezik 1997) [43,45]. Studies on the *Scorzonera* genus reveal the antinociceptive, anti-inflammatory and wound healing properties of some species that have been evaluated and promising results have been obtained for further studies (Bahadır 2009, Siintar et al. 2012) [46,47]. Many species are edible. Both their roots and green buds are edible (Baytop 1999, Turan et al. 2003) [43,48].

Purple Salsify - Helevan (*Tragopogon porrifolius* subsp. *longirostris* (Sch.Bip.) Greuter)

In Turkey this genus is represented by 21 members (Davis 1975, Güner et al. 2000) [1,2]. The genera is used in traditional medicine. *T. porrifolius* is used, in European folk medicine, for its antibilious, diuretic, and laxative effects and in Lebanese folk medicine for treating cancer (Formisano et al. 2010; Tenkerian 2011) [49,50]. In Turkish folk medicine, the aerial parts of *T. coloratus*, *T. dubius*, *T. pratensis* ssp. *orientalis*, *T. pterocarpus* and *T. reticulatus* are used in the treatment of stomachache. The use of the latex and leaves of *T.*

buphtalmoides var. *buphtalmoides* and the use of the stem and leaves of *T. longirostris* to cure intestinal disorders as well as antihelminthic activities of some *Tragopogon* species have been recorded (Uğur et al. 2009, Altundağ and Öztürk 2011) [51,52]. The anticancer, antioxidant and hepatoprotective activities of *T. porrifolius* have also been recently reported (Tenkerian 2011) [50]. The plant has bioactive compounds that prevent cancer or other free radical-associated illnesses. The nutritional value of this plant is derived from monounsaturated and essential fatty acids, polyphenols, vitamins, and fructo-oligosaccharides, having probiotic effects on the intestinal microflora (Formisano 2010, Konopiński 2009) [49]. Among them, *Tragopogon porrifolius* L., known as white salsify, is used as a vegetable in Europe as well as in Turkey (Formisano et al. 2010, Baytop 1999) [43,49]. It cultivated for its ornamental flowers and edible root. The root and the young shoots of *T. porrifolius* can be eaten (after being boiled) and are used as vegetables (Zidorn 2010; Lyons 1956) [44,51]. The freshly grown leaves can be eaten cooked or raw (Heistingner 2013, Niering and Olmstead 1985) [52,53]. The aerial parts of *T. porrifolius* and some other *Tragopogon* species are eaten freshly or after cooked (Turan et al. 2003, Uğur et al. 2009) [51,54].

Gundelia -Kenger (*Gundelia tournefortii* L.)

It is used both as a medicinal plant and as food. Traditionally, *G. tournefortii* (L.) is used for the treatment of liver diseases, diabetes, chest pain, heart stroke, gastric pain, vitiligo, diarrhea, and bronchitis. It is also reported to have hypoglycaemic, laxative, sedative, anti-inflammatory, anti-parasitic, antiseptic and emetic effects. The leaves, stems, roots, and immature flower buds are edible when they first sprout in early spring. The plant is used fresh or cooked and prepared like artichokes.

Berberis- Karamuk (*Berberis crataegina* DC.)

The plant is used in the medical, food and textile industries. Traditionally it is used for the treatment of infertility, hemorrhoids, rheumatic arthritis, headache, pulmonary-vascular diseases and gynecological diseases (Tuzlaci, E. 2016) [55]. Berberine, found in the woody parts of the *Berberis* plant provides a yellow dye, which is traditionally used for dyeing wool and yarn. *Berberis* stems, shells, fruits, and leaves have phenolic compounds, alkaloids and flavonoids and are used in Anatolia for treating fever, flu, rheumatological disorders, eye diseases, gastrointestinal problems and respiratory tract diseases as well as for lowering blood sugar. *B. crataegina* contains tannins, organic acids (malic, tartic,

citric acids), vitamin C and high levels of anthocyanins. The berberis fruit water excretion was researched for α -amylase and α -glucosidase. Despite inhibiting both enzymes, it has a greater inhibitory effect on α -glucosidase (Gedikli 2006) [56]. Extracts from stems and shells of various *Berberis* species are used in traditional medicine for the treatment of various inflammatory disorders such as rheumatic arthritis and fever (Yeşilada and Küpeli 2002) [57]. *Berberis crataegina* (kızamık) and *Rumex scutatus* (ekşimük) leaves can be eaten raw (Cansaran et al. 2007) [58]. The plant's vitamin C-rich fruit can be consumed as a tea, garnish, or used to make compotes, syrups, jams, and jellies (Borelli et al. 2022) [59].

Watercress - Su teresi (*Nasturtium officinale* R.Br., Aiton)

It can be used both as a medicinal plant and as food. Watercress is rich in vitamins. It is known for being health strengthening, correcting vitamin deficiency, diuretic, appetite-stimulating, sedative and a digestive aid. It has been recorded to be used for eczema and skin wounds by applying dried watercress leaves mixed with honey directly to the skin (Baytop 1999) [43]. Also, it is used for the treatment of urinary tract infections and headaches. Traditionally it is used as a digestive aid and in treating liver diseases (Everest and Öztürk, 2005) [60]. Watercress leaves can be used raw in salads (Özer et al. 1999) [61].

Caper Bush-Kapari (*Capparis spinosa* L.)

It can be used as food and medicine. The plant contains many phytochemicals and bioactive compounds and is traditionally used for treating a host of diseases (Argentieri et al. 2012) [62]. The caper's flower seeds are antioxidant and are thought to suppress cancerous cells, while inhibiting the harmful effects of carcinogens in the body. Studies conducted in the International Cancer Research Institute, have included caper extracts in antitumoral preparations (Anonymous 1997) [8]. Several studies have shown capers to have immunomodulator, hepatoprotective, analgesic, antidiabetic, anti-inflammatory, antiallergenic, antidepressant, antioxidant, antitumoral, diuretic, antiarrhythmic, hypoglycemic, mucolytic, antibacterial, antiviral, anthelmintic, antifungal, antiallergenic, antihypertensive, antiatherosclerotic and antihyperlipidemic effects (Singh et al. 2011, Tlili et al. 2010, Argentieri et al. 2012, Huseini et al. 2013) [62-65]. The plant's fruits/seeds are used pickled or canned. Capers are used in salads, on dough bases as well as a garnish for meat and fish dishes.

Arrost's baby's-breath - Çöven (*Gypsophila arrostii* subsp. *nebulosa*)

It is used as a medicinal plant and food. Contains saponin, it is a good foamer. It is used as a cleaner and emulsifier as well as for extracting saponin (Tanker et al. 1998) [66]. Arrost's baby's-breath has diuretic, diaphoretic, antipyretic, relaxant, emetic, expectorant and cleansing properties and is also used in skin diseases. (Öztürk et al. 2000) [67]. Its main component, saponin, is extracted by boiling the rhizomes and used as an additive in the production of desserts called "Tahini Halva", "Koz Halva" and "Pasha Turkish Delight". (Velioglu 2001) [68].

Syrian Juniper - Andız (*Juniperus drupacea*)

It has medicinal and food uses. In traditional Turkish medicine, Syrian Juniper fruits are used as a diuretic, antiseptic and in the treatment of gastrointestinal problems (Baytop 1999) [43]. The anti-inflammatory potential of Syrian Juniper has been detected empirically and its use has spread to traditional medicine in different European countries (Mascolo et al. 1987; Tunon et al. 1995) [48,69]. Fruits of the plant are traditionally used to cure migraines, rheumatoid arthritis and gout. Native Americans used the fruit to treat diabetes (Tilford, 1997, McCabe et al. 2005) [70,71]. The whole plant is used as an anti-inflammatory, diuretic, emmenagogue, sudorific, carminative and in the treatment of digestive disorders (Pepeljnjak et al. 2005, Gumral et al. 2013) [72,73]. In several studies, the essential oil of the Syrian Juniper fruit has been shown to have inhibitory effects on multi-bacterial growth (Filipowicz et al. 2003, Pepeljnjak et al. 2005) [72,74]. Further, due to the antiprogestosterone activity of Syrian Juniper extract, the plant has anti-fertility effects (Pathak et al. 1990) [75]. Its fruits are used as the main ingredient of molasses.

Black Bryony - Dolambaç (*Dioscorea communis* (L.) Caddick & Wilkin)

It has uses in both the medical and food sector. Black Bryony roots are used in muscle ache treatment (Saraç vd. 2013) [76]. If used 1-4 times a week it is beneficial for treating gastrointestinal system disorders as well as being preventive for intestinal spasms, diabetes, hypertension, atherosclerosis, headache, abdominal pain, anemia, colds, flu, and rheumatism (Sargin et al. 2015) [77]. The roots are known to be used in rheumatological disorder treatment (Özdemir 2018) [50]. Young shoots may be eaten raw, but they are usually boiled and used in salads and omelets.

White Lupin - Termiye (*Lupinus albus* L.)

It can be used both medically and as food. White Lupin seeds are known to be anti-diabetic (int.) (Ivanova 2009) [78]. Drinking one cup of brewed and filtered White Lupin seeds in the morning is used for hypertension treatment (Birhanu 2011) [79]. Boiling White Lupin and rubbing the water all over sick animals' skin is a treatment for parasites in domestic animals transmitted by pigs (Guarrera 1999.) [80] It is used as a protein-rich vegetable or savory dish. It can be used as a bean substitute, sautéed, or ground and mixed with flour to make bread. Sautéed, it can become a snack much like peanuts. An edible oil is obtained from the seed. Roasted and ground it can be used as a coffee substitute.

Foxtail Lily-Çiriş (*Eremurus spectabilis* M. Bieb.)

It can be used both medically and as food. It is used in traditional medicine in the treatment of hemorrhoids and diabetes and has urinary tract pain reliever and blood pressure lowering traits (Arı et al. 2014) [81]. It has also proven anti-inflammatory properties and potential, and its capacity to inhibit both hPBMC (in human peripheral blood mononuclear cell) proliferation and cytokine in vitro (Raffaella et al. 2015) [82]. If the above-ground parts of the plant are boiled and eaten, it helps digestion. Also, it can be consumed as a dish. The roots of the plant are crushed into a paste and applied to the head for headache and an ointment prepared from the plant's root is used in scabies and syphilis treatment. (Baytop 1999) [43]. Young leaves are used as a vegetable for sautéés mixed with yogurt and used to prepare main meals and omelets.

Crab Apple - At elması (*Eriolobus trilobatus* (Labill. ex Poiret) M. Roem.)

It is used in both food and medical industries. The results from the ethnobotanical documentation show that the fruits and leaves of crabapple are known to have natural antioxidant properties. They also contain important quantities of phenols and flavonoids. The amount of phenols contained in the flowers are comparable to *Crataegus* flowers and could be used for medical purposes. Further tests are needed (extraction solutes and chromatographic analyses) to support these results. Fruits can be used fresh or boiled (Çınar 2020) [83]. In Turkey, ethnobotanical work has shown that the species is used for intestinal disorders, obesity, rheumatism and heart diseases and eaten as fresh fruit, dried fruit, leaf/fruit herbal tea, pickle and fruit stew (Yılmaz and Ok 2012, Bulut 2006, Çınar and

Göktürk 2019) [83-85].

Serik Pear- Zingit (*Pyrus serikensis* Güner & H. Duman)

Results from previous studies show that *Pyrus serikensis* extract is effective against plant pathogens (Kordali et al. 2009; Özcan et al. 2013; Bayar and Genç 2021) [77,86,87]. Serik pear fruit extracts have important antifungal activity and holds potential as an antimicrobial agent in alternative new drug therapies (Güven et al. 2006) [36]. Leaves and fruit extracts of *P. Serikensis* were found to have biofungicidal effects in plant pathogen control and can be used as a biopesticide. Its fruits can be consumed fresh or boiled.

Taro - Gölevez (*Colocasia esculenta* (L.) Schott)

It can be used both medically and as food. Taro has been shown effect to prevent the development of harmful bacteria in the intestine, to regulate the immune system, to increase mineral absorption, to accelerate blood flow in the colon. Taro's anticarcinogenic, antiinflammatory effect has been reported. It has been reported in scientific studies that extracts obtained from taro inhibit certain tumor metastases strongly and specifically. Gastronomy and food industry have the potential to develop new products from taro which is a rich source of nutrition and has positive effects on health. Leaves and tubers of taro can be consumed. Taro tubers are blanched to cooked vegetables dishes. The leaves of taro are eaten as vegetables by people and also are regarded as wrapping and soup. The consumption of local in Turkey, taro tubers are blanched with meat. It is used as canned food, flour, chips, noodle and frozen food in tropical and subtropical countries. Dried fine powder of the taro tuber is used as thickening additives for bread, pastry, food and pasta. Mucilage of taro is added to diet products (Akgül et al. 2017) [88].

In the first stage of the research, information was given about edible medicinal plants in the region. In the second stage, the results of the survey conducted with consumers are given. According to these results; 61.5% of the people that has participated in the survey are men and 38.5% are women. 200 people who participated in the survey reside in 7 different districts of Antalya. The number of family members of the surveyed people varies between 1 and 6 people, and the most common family size is 4-person families with 42.4%. The average family size was calculated as 3.42. When the age groups of the people surveyed were examined, it was determined that the most common age group was between the ages of 31-40 (40.5%). When the educational status of

the people participating in the survey is examined; It was determined that the majority of the people surveyed within the scope of the study had high school degree (27%) and university degree (47.5%) levels (Table 2).

Table 2: Socio-demographic characteristics of the people surveyed.

Gender of the people surveyed		
	Number of People	(%) Percentage
Male	123	61,5
Woman	77	38,5
Total	200	100,0
Districts where the interviewees resid		
District	Number of People	(%) Percentage
Kepez	47	23,5
Muratpaşa	48	24,0
Konyaaltı	14	7,0
Döşemealtı	8	4,0
Elmalı	2	1,0
Aksu	1	,5
Serik	80	40,0
Total	200	100,0
Number of family members of interviewees		
Number of Family Members	Number of People	(%) Percentage
1	8	4,0
2	34	17,0
3	52	26,0
4	85	42,5
5	11	5,5
6	10	5,0
Total	200	100,0
Age groups		
Age group	Number of People	(%) Percentage
1-30	43	21,5
31-40	81	40,5
41-50	53	26,5
+50	23	11,5
	200	100
Education status		
Education status	Number of People	(%) Percentage
Literate	7	3,5
Primary School	21	10,5
Middle School	14	7,0
High School	54	27,0
University	95	47,5
Postgraduate	9	4,5
Total	200	100,0

The income of 44.5% of the individuals participating in the survey is between 1-20000 TL, and this income group has the highest percentage. The average monthly food expense of 48% of the survey participants is between 5 and 10 thousand liras. Regular and healthy nutrition is a situation that directly

affects edible medicinal plant consumption habits. In this context, the respondents were asked about their regular diet. According to the results obtained, a large portion of the survey participants, 69%, stated that they eat healthy. (Chart 3).

Table 3: Average monthly income, food expenditure and nutritional status of respondents.

Average monthly income,		
Income Group (TL)	Number of People	(%) Percentage
1-20000	89	44,5
20001-30000	58	29
30001-50000	40	20
+500000	13	7
Total	200	100,0
Average monthly food expenditure		
Harcama Grubu(TL)	Number of People	(%) Percentage
1-5000	58	29
5001-10000	96	48
10001-20000	42	21
+20000	4	2
Total	200	100,0
Regular and healthy nutrition		
Düzenli beslenme	Number of People	(%) Percentage
Yes	138	69,0
No	62	31,0
Total	200	100,0

Although the respondents' sources of information about edible plants are very different, the main sources of information are the internet, television, neighbors and market places (Table 4)

Table 4: News sources for information on edible medicinal plants.

Source of information	Yes	No	(%) Yes	(%) No
Internet	133	67	67	34
Television	118	82	59	41
Neighbors	108	92	54	46
Market	104	96	52	48
Brochures	97	103	49	52
Market	92	108	46	54
Newspaper	87	113	44	57
By sight during shoppi	85	115	43	58
Festival	85	115	43	58
Magazine	82	118	41	59

Within the scope of the project, the recognition of the plants identified in the region among the survey participants was examined and the results are given in Table 5. According to the results obtained, the most well-known edible medicinal plants among the survey participants are Elm-Leaved Sumach

and Syrian Juniper (75%). Other plants known at high rates by respondents are Sorrel (73%), Asparagus (72%) and Watercress (70%). The least known edible plant species are; Calamus (27%), Çakşır (31%) and Gundelia (33%).

Table 5: Knowledge of which edible medicinal plants are known.

Edible medicinal plants	Yes	No	(%) Yes	(%) No
Elm Leaved Sumach-Sumak	150	50	75	25
Syrian Juniper-Andız	149	51	75	26
Kuzukemirdi (Kuzu kulağı)	145	54	73	27
Black Bryony-Kuşkonmaz	143	57	72	29
Watercress-Su teresi	140	60	70	30
White Lupin-Termiye (Tirmis)	129	71	65	36
Common chicory-Karahindiba	125	75	63	38
Caper Bush-Kapari	105	95	53	48
Serik Pear-Serik Armudu	101	99	51	50
Foxtail Lily-Çiriş	97	103	49	52
Salsify-Dedem sakalı	90	110	45	55
Arrost's baby's-breath-Çöğen	87	114	44	57
Crab Apple-At Elması	78	122	39	61
Berberis-Karamuk	78	122	39	61
Rush skeletonweed-Gara gavruk	74	126	37	63
Taro-Gölevez	73	127	37	64
Purple Salsify-Helevan (Yemlik)	73	127	37	64
Gundelia-Kenger	66	134	33	67
Ferula-Çakşır	61	139	31	70
Calamus-Eğir	53	147	27	74

Knowing the medicinal benefits of edible plants is the main factor affecting the consumption of these plants. Within the scope of the study, respondents were asked whether they knew the benefits of edible medicinal plants detected in the Mediterranean region. According to the results, the edible

plants with the highest rate among plants with at least one known medicinal benefit are Syrian Juniper with 40% and Sumach with 35%. However, the data that has been obtained showed that the respondents did not know much about the medicinal benefits of these plants. (Table 6).

Table 6: Knowledge of the medicinal benefits of edible medicinal plants.

Edible medicinal plants	Yes	No	(%) Yes	(%) No
Elm Leaved Sumach-Sumak	79	121	40	61
Syrian Juniper-Andız	70	130	35	65
Kuzukemirdi (Kuzu kulağı)	54	146	27	73
Black Bryony-Kuşkonmaz	53	147	27	74
Watercress-Su teresi	48	152	24	76
White Lupin-Termiye (Tirmis)	45	155	23	78
Common chicory-Karahindiba	44	156	22	78
Caper Bush-Kapari	42	158	21	79
Serik Pear-Serik Armudu	42	158	21	79
Foxtail Lily-Çiriş	41	159	21	80
Salsify-Dedem sakalı	40	160	20	80
Arrost's baby's-breath-Çöğen	38	162	19	81
Crab Apple-At Elması	32	168	16	84
Berberis-Karamuk	31	169	16	85
Rush skeletonweed-Gara gavruk	30	170	15	85
Taro-Gölevez	23	177	12	89
Purple Salsify-Helevan (Yemlik)	22	178	11	89
Gundelia-Kenger	22	178	11	89
Ferula-Çakşır	20	180	10	90
Calamus-Eğir	20	180	10	90

Another important reason affecting the consumption of edible plants is the accessibility of the market for these plants. In this context, the respondents were asked whether there was a place where they could reach and purchase one or more of these plants in the environment where they live or work, and the data obtained is given in Table 7. While only 27.5% of the respondents have access to some of these plants, 72.5% do not have a farmer’s market around them where they can access these plants, although they have the desire to buy them. While 51.5% of the survey participants purchased at least one of the

plants identified, 48.5% did not purchase any of these plants. Respondents were asked whether they would want to buy edible medicinal plants growing in the Mediterranean region if they knew their benefits and side effects. The majority of the respondents (80.5%) stated that they could buy and consume these plants after being informed about the benefits and side effects of the plants, while the remaining part (19.5%) stated that they would not buy and consume these plants even if they were informed.

Table 7: Request for sale and purchase of edible medicinal plants.

Availability of places selling these plants in the immediate vicinity		
Location status	Number of People	(%) Percentage
Yes	55	27,5
No	145	72,5
Total	200	100,0
Purchasing status of edible medicinal plants		
Are you buying it?	Number of People	(%) Percentage
Yes	103	51,5
No	97	48,5
Total	200	100,0
Willingness to buy edible medicinal plants if they know their benefits and side effects		
I buy	Number of People	(%) Percentage
Yes	161	80,5
No	39	19,5
Total	200	100,0

The main reasons for the group who are reluctant to purchase medicinal plants are that the prices of these plants are high, they are not reliable, they are not suitable for their consumption

habits, they do not know their benefits, and they prefer to use medicine instead of consuming these plants (Chart 8).

Table 8: Reasons not to buy edible medicinal plants

Reasons	Mean	Standard Deviation
High price	2,27	1,011
Lack of reliability	2,40	1,032
Not suitable for consumption habits	2,41	,920
Not knowing the benefits	2,44	1,011
I prefer to take medicine	2,48	1,012
Not believing in quality	2,50	,935
Not preferred by family members	2,53	,935
Not knowing the side effects	2,54	,934
Unknown medical effects	2,54	,990
Considered to be harmful to health	2,56	,949
Expensive compared to medicines	2,56	,949
Low nutritional value	2,60	,967
Inappropriate storage location and conditions	2,62	1,000
Lack of knowledge about the product	2,63	1,020
Lack of flavor	2,63	1,004
I don't know enough	2,64	,982
I don't know how to consume	2,66	1,132
The taste is not pleasant	2,66	1,096
The weight of the packaging is not appropriate	2,69	1,025
High price	2,74	1,030

Scale: 1: Very important, 2: Important, 3: Neutral, 4: Not important, 5: Not important at all

Those who participated in the survey and consumed at least one of these plants were asked how they accessed edible medicinal plants and the results are shown in Table 9. 28% of these people buy all the plants they consume, 25% buy the

majority part of the plants they consume, 19% mostly collect them from nature, 3.5% collect all the plants they consume from nature, and 24% obtains these plants from their neighbors and relatives.

Table 9: Availability of edible medicinal plants consumed.

Availability	Mean	Standard Deviation
I buy the whole thing	57	28,5
I buy mostly	50	25,0
Mostly I collect it myself	38	19,0
I collect it all myself	7	3,5
I get it from my neighbors or relatives	48	24,0
Total	200	100,0

Within the scope of the research, the respondents were asked how much of the edible medicinal plants growing in the Mediterranean region they consumed annually, and the results are given in Table 10. According to this data, the edible

medicinal plants that are mostly consumed are Capers, Rush skeletonweed, White Lupin, and Watercress, while the least consumed plants are Arrost's Bay's Breath, Gundelia, and Berberis.

Table 10: Annual consumption of edible medicinal plants consumed.

Consumption of Medicinal Plants	Amount (kg/year)
Elm Leaved Sumach -Sumak	10,63
Syrian Juniper -Andız	6,63
Kuzukemirdi (Kuzu kulağı)	5,83
Black Bryony -Kuşkonmaz	5,74
Watercress -Su teresi	4,69
White Lupin -Termiye (Tirmis)	4,27
Common chicory -Karahindiba	3,04
Caper Bush -Kapari	2,86
Serik Pear -Serik Armudu	2,85
Foxtail Lily -Çiriş	2,82
Salsify -Dedem sakalı	2,79
Arrost's baby's-breath -Çöğen	2,78
Crab Apple -At Elması	2,58
Berberis -Karamuk	2,44
Rush skeletonweed -Gara gavruk	1,63
Taro -Gölevez	1,61
Purple Salsify -Helevan (Yemlik)	1,60
Gundelia -Kenger	1,52
Ferula -Çakşır	1,48
Calamus -Eğir	1,35

Survey participants make their decisions based on certain reasons when deciding to purchase edible medicinal plants. The most important reasons why the survey participants buy these plants are that these plants are healthy, delicious, natural and have high nutritional values (Table 11). People

who consume these plants choose plants to buy and consume by paying attention to the freshness of the product, whether it is an organic product or not, the price level and the quality of the product (Table 11).

Table 11: The most important reason or reasons for respondents to purchase edible medicinal plant.

Reasons	Mean	Standard Deviation
Good health	1,45	1,01
Being delicious	1,83	1,21
Being natural	1,84	1,27
Nutritional value	1,88	1,23
No additives	1,89	1,24
Ease of preparation	1,97	1,14
Reliable and hygienic	1,97	1,18
Diversity	1,98	1,17
Family members like it	2,02	1,19
More effective than medicines	2,07	1,25
Availability in all seasons	2,09	1,23
Economical compared to pharmaceuticals	2,09	1,27
Advice from the environment	2,16	1,33
Habit	2,20	1,27

Scale: 1: Very important, 2: Important, 3: Neutral, 4: Not important, 5: Not important at all

Table 12: Qualities that are important when buying edible medicinal plants.

Qualities	Mean	Standard Deviation
Product Freshness	1,73	1,19
Organic Product	1,78	1,17
Price Level	1,85	1,32
Product Odor	1,91	1,19
Product Quality	1,91	1,31
Nutritional Value	1,95	1,26
Product Appearance	1,98	1,24
Easy to access	2,08	1,30
Product Size	2,35	1,33
Product Color	2,37	1,41

Scale: 1: Very important, 2: Important, 3: Neutral, 4: Not important, 5: Not important at all

The data obtained in the study and stated previously show that at least one or more of the edible medicinal plants were purchased and consumed by the respondents. However, consumption amounts were quite low. In this context, the respondents were asked the question "If which conditions are met or changed, consumption amounts of these plants may

increase." According to the results obtained, consumers stated that this could increase their consumption if their income increases, if these plants are more easily found and accessible, if they are pre-cleaned and packaged reliably, and if the level of knowledge about the plant increases (Chart 13).

Table 13: Factors that will influence your future purchase of medicinal plants.

Factors	Mean	Standard Deviation
If income increases	1,55	1,00
If it is easy to find	1,65	1,03
Reliable packaging-cleaning processes	1,66	1,09
Increased product awareness	1,67	1,13
If the preparation is known	1,72	1,07
If the product range expands	1,73	1,12
If the price is right	1,73	1,04
If adequate information is provided	1,74	1,14
If medical effects are proven	1,75	1,19

Scale: 1: Very important, 2: Important, 3: Neutral, 4: Not important, 5: Not important at all

Consumers act according to their priorities when choosing the products they consume. These include qualitative or quantitative features such as the product being healthy, having a low price, etc. In this context, consumption preferences of edible medicinal plants are based on various factors. Consumers participating in the survey act according

to different factors when deciding to purchase or consume medicinal plants. The most important of these were determined as factors such as nutritional value, product cleanliness, price level, product being organic, availability and product freshness (Table 14).

Table 14: Comparison of medicinal plant consumption preference in terms of various characteristics.

Consumption Preferences	Mean	Standard Deviation
Nutritional value	1,81	1,08
Product Cleaning	1,83	1,12
Price level	1,84	1,01
Organic Product	1,85	1,12
AvailabilityProduct freshness	1,86	1,16
Certified	1,90	1,13
Smell of the productAvailability	1,91	1,15
Organic product range	1,92	1,08
Product quality	1,94	1,15
Proximity (home)	1,95	1,13
Medical value	1,96	1,15
Product diversity	1,97	1,08
Payment alternatives	1,98	1,07
Receiving in the desired weight	2,00	1,03
Product awareness	2,03	1,14
The product is packaged	2,04	1,14
Price reductions	2,04	1,16
Habit	2,04	1,07
Product display	2,05	1,11
Shopping environment	2,05	1,18
Skilled salesperson	2,06	1,16
Product appearance	2,07	1,44
Friendly salesperson	2,07	1,12
Promotion activities	2,09	1,20
Product color	2,12	1,21
Salesperson persuasion skills	2,12	1,16
Size of the product	2,13	1,14
Helpful salesperson	2,16	1,19
Bulk shopping	2,18	1,18
Salesperson who can provide information	2,19	1,20
Sufficient sales staff	2,20	1,26
Nutritional value	2,21	1,22
Product Cleaning	2,31	1,23

Scale 1: Very important, 2: Important, 3: Neutral, 4: Not important, 5: Not important at all.

Within the scope of the research, a factor analysis was conducted on the factors affecting edible medicinal plant consumption in order to make the edible medicinal plant consumption preferences of the consumers participating in the survey more explainable and meaningful. Initially, a reliability analysis was performed and the Cronbach alpha value was calculated as 0.899. In factor analysis, eigenvalue???

was taken as the criterion in determining the number of factors. Accordingly, six factors with eigenvalues above one were found. These factors explain 77.89% of the total variance. Factor weights obtained as a result of factor analysis are given in Table 15. The obtained factors are named as following according to the subjects and characteristics of the sub-factors that make up these factors;

Factor 1: Information and accessibility; The sub-factors that make up this factor consists of factors such as proving the benefits of edible medicinal plants, obtaining information from written and visual media, health properties, knowing their effects, etc.

Factor 2: Marketing; The sub-factors of this factor basically consist of sub-factors such as the way edible medicinal plants are introduced to the market, packaging, pricing and storage conditions.

Factor 3: Healthy nutrition; The third factor obtained as a result of the analysis is based on the association of edible medicinal plants with healthy nutrition. The sub-factors in this group are sub-factors that feature regular and healthy nutrition.

Factor 4: Taste and benefit; This factor, which affects consumers'

edible medicinal plant consumption habits, is specific to the fact that edible plants are delicious, healthy and beneficial to human health.

Factor 5: Brand and awareness; This factor refers to the fact that the benefits of edible medicinal plants are better known by the public, as well as the impact that these plants will have on the consumer through branding.

Factor 6: Type of cultivation; This factor shows that the way edible medicinal plants are grown can directly affect the consumption of these plants. The sub-factors that make up these factors are; Factors that consumers pay attention to when purchasing and choosing to consume these plants are the region where the plant is grown, the way it is grown, whether it is domestic production or imported production.

Table 15: Factor analysis results of the respondents' consumption of edible medicinal plants.

F	Consumer preferences for edible medicinal plants	Factors					
		1	2	3	4	5	6
1	Scientific proof of side effects of medicinal plants is important to me	,820					
	I follow the written/visual media on health etc. related to medicinal plants.	,787					
	The packages of the medicinal plants I buy should have information on their health properties	,779					
	It is important to consume medicinal plants carefully.	,744					
	It is very important for me to know the scientific effects of the medicinal plants I buy.	,740					
	It is important that the benefits of medicinal plants are scientifically proven	,712					
	The smell of the medicinal plants I buy is very important to me. The appearance of the medicinal plants I buy is very important to me.	,630					
	Scientific proof of side effects of medicinal plants is important to me	,445					
2	It is important that the medicinal plants I buy are reliable.		-,839				
	I prefer to consume medicinal plants instead of medicines		-,806				
	It is very important for me that medicinal plants are not expensive.		,859				
	It is important to know the storage methods of medicinal plants.		-,775				
	The medicinal plants I buy should be packaged		,766				
	I spend a long time shopping for medicinal plants and make careful choices.		-,762				
	The medicinal plants I want to consume should be sold close to my home. Price is not important for me when buying medicinal plants.		,547				
	The packaging material of the medicinal plants I buy is important		-,726				
	The medicinal plants I will buy must have appropriate storage conditions.		-,611				
	The package size of the medicinal plants I will buy is not important.		-,564				
	Packaging waste of medicinal plants should not harm the environment.		-,537				
	It is important that the medicinal plants I buy are reliable.		-,497				

3	I make sure to eat three meals a day without skipping meals			,301			
	Medicinal plants are healthier than other foods.			,733			
	I always research the side effects of medicinal plants I am considering buying			,563			
	Our family has a habit of eating breakfast regularly.			,553			
	I always research the effects of the medicinal plants I plan to buy			,551			
	Regular nutrition is important to me.			,542			
4	I make sure that the plant I buy has health benefits.				1,007		
	The medicinal plants I consume should help me relax and calm down.				,995		
	The flavor of the medicinal plants I buy is important to me.				-,594		
5	I prefer imported medicinal plants.					,882	
	I prefer medicinal plants to be branded.					,574	
	I generally find what the public says about the benefits of medicinal plants exaggerated.					,546	
	When consuming medicinal plants, I take into account what is said by the public about their benefits					,521	
6	The way medicinal plants are grown is important to me (natural environment, greenhouse, open field, etc.)						-,360
	I prefer that the plants I will buy are locally produced.						-,331
	Production of medicinal plants should be expanded						-,642
	It is important to me that the medicinal plants I buy are organic.						-,448
	The place where medicinal plants are grown is important for me (Region)						-,421
KMO and Bartlett's Test							
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.						,899	
Bartlett's Test of Sphericity	Approx. Chi-Square					9863,298	
	df					861	
	Sig.					,000	

CONCLUSION

The use of wild plants as medicine and food by the Anatolian people dates to ancient times. (Akgün et al. 2004) [88].

The diversity of wild edible plants are laden with nutrients and bioactive compounds which have immense potential for providing nutritional security and health benefits. They are an important source of food for the indigenous people and are also used in the traditional system of medicine.

The sine qua non of long and healthy life, Mediterranean-type nutrition has stood out as humanity grasped the importance of healthy nutrition. Mediterranean-type nutrition, which has dominated most of the Turkish cuisine due to its geographic location, has its basis in wild plants and plant dishes (Kılıç 2010) [89].

A new interest and curiosity has arisen towards traditional medicine globally. It has been reported that traditional

medicine forms 40% of all healthcare services in China and similar medical practices are performed by 71% of the Chilean population and 40% of the Colombian population. 65% of the population living in rural India uses traditional medicine techniques to meet their basic healthcare needs (Öztürk et al. 2005) [90]. Another reason for the increasing importance of medicinal plants is resistant variants developed by disease agents. Due to the versatile effects of preparations made from medicinal plants, they are found to have an effect against new strains. Because of these reasons, there has been a return to herbal preparations. Malaria is as an example. Even though synthetic preparations such as Atabrine are used for malaria treatment, Quinine obtained from the chinchona tree which grows in the tropics still carries great importance (Ceylan 1995) [91].

Singular grouping in trade statistics is out of the question because of the amount and vast variety of active ingredients obtained from medicinal and aromatic plants in trade. Most

healthy and trustable information about world trade volume and value of medicinal and aromatic plants can be obtained from the Data Base of the International Trade Center in Geneva (UN Comtrade). In the last 5 years worldwide herbal drug trade was estimated at 16,8 million dollars in exportation and 18,6 million dollars in importation. The most important plant varieties in terms of production are onion-tuber, tea, coffee, spice, seasoning, root and other plant groups. The countries that import medicinal and aromatic plants in the world are America, the United Kingdom, Germany, France, Netherlands. China and India also export a vast variety of plants. On the other hand, changing health conception in developed countries has increased the use of plants that add flavors to dishes due to decreasing unhealthy components of food like salt and oil (Binici 2002) [92].

There are 374 imported and exported plant species in Turkey that are collected from nature, with a 30% exportation rate (Özhatay and Koyuncu 1997) [93]. The important medicinal and spice plants exported by Turkey are thyme, bay leaves, cumin, anise, fennel seeds, juniper bark, st lucie cherry, fenugreek, rosemary, licorice root, mint, sumac, sage and linden flowers (Bayram et al. 2010) [94].

Plant derived natural bioactive compounds are a valuable source for drug development and in recent years, they have been approved by Food and Drug Administration (FDA) for development of modern drugs.

Wild edible plants, which are assessed as plants should be consumed for their vitamin, flavinoid, antioxidant, fiber, and microelement components as healthy, nutritious and protective foods. In our country, it is aimed to protect public health through regulations and laws (Turkish Food Codex Regulation on Addition of Vitamins, Minerals and Certain Other Elements to Foods, Date: 07-03-2017, Number: 30000 and Turkish Food Codex Notification on Food Supplements - Number: 28737, Date :16/8/2013) regulations regarding the use of bioactive compounds have been made and studies on this subject continue.

The health importance of edible wild plants has been increasing against rising nutrition problems because of the fast overpopulation. Also, when wild plants are medically assessed they provide a substantial amount of active ingredients for drugs used for human and animal health. For these reasons, to maintain a healthy diet as well as to provide balanced nutrition, plant dishes should be included in the menus.

As a result of this study, it was determined that the edible medicinal plants found to grow in the Mediterranean region are not well known by consumers and consumers' knowledge about the benefits and harms of these plants is not sufficient. Consumers stated that they could consume these plants if they were informed about the benefits and side effects of these plants and if the prices of the plants were affordable.

Consuming edible herbs has now become one of the habits given up by people who migrated to the city, in parallel with urbanization. Over time, people have come to know only cultivated herbs because they are not in touch with nature. Herbs that grow spontaneously in nature are no longer consumed by young people in cities and even in the regions where they grow. Recently, steps have been taken to change this situation. In particular, people have become curious to know what edible wild plants are, how they are consumed, their taste, how they are cooked, and the benefits of herbs. This being the case, medicinal edible plants have begun to be seen, albeit to a small extent, in many different places such as restaurant menus, festivals, events, and street markets. This situation will also change consumer behavior towards edible medicinal plants over time. In this study, important results were obtained in terms of consumer behavior regarding edible medicinal plants.

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