JOURNAL OF APPLIED Plant Biology 2023, Vol1. No1.pp1-11

An ethnobotanical survey of medicinal plants of Rudsar and Amlash province

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Original Article Received: 13 June. 2023, Revised: 29 June 2023 . Accepted: 23 September . 2023, ePublished: 24 September. 2023

Abstract

Introduction: The use of medicinal plants is a part of the culture of indigenous people is considered as an important pharmaceuticals source. Traditional botany provides valuable approaches to find new medicinal plants and plant-based pharmaceuticals.

Aim: The aim of this study was to identify the medicinal plants of Rudsar and Amlash and to introduce the common therapeutic properties.

Analysis method: A survey of the area, plants collected in these areas and identified by using the resources. For each plant species, scientific name, local name, used organs, Medicinal Standard and other related information were developed.

Results: A study of over 120 medicinal plant species, identified 91 medicinal plant species belonging to 48 families. Lamiaceae with 15, Rosaceaea with 12, Asteraceae with 7, Solanaceae and Brassicaceae each with 3 species are amongst the most-used plant families. These plants are used in traditional medicine to relieve problems related to the digestive tract, skin, blood circulation, etc.

Conclusion: Regarding the limited internal resources, development projects for employment based on the cultivation of medicinal plants, compatible with the ecological and Ethnobotanical knowledge of native plants, can have maximum efficiency. The documentation of the ethnobotanical information is necessary and appropriate to preserve these resources.

Keywords: Ethnobotany, Medicinal plant, Ruodsar, Amlash, Iran

1.Introduction

People use local treatments in many parts of the world, especially in remote areas and places where doctors and medicines are not available. The knowledge of use of medicinally important plants has been passed verbally from generation to generation over times. Traditional medicine has been mixed with the culture of the people since ancient times. Documenting this information is useful for recording local cultural traditions and gives us some of the important information necessary to protect our natural habitat (Hammer and Khoshbakht 2005).

Due to richness of flora in Iran, rich plant resources including considerable number of medicinal plants and existence of inter□est and knowledge in this science in different Iran, rich plant resources including considerable number of medicinal plants and existence of interest and knowledge in this science in different Iranian ethnicities (Ahvazi et al. 2007; Iranmanesh et al. 2010).

Guilan province in northern Iran is one of the rainy regions of the country and different topographical conditions have made it rich in vegetation. Knowing the species that many of them have not been described in reference books medicinal plants, and science still does not know them as medicinal plants, it creates a science called ethnobotany. The aim of this study is to identify the traditional therapeutic properties of plants by peoples in particular cultures and regions, in the end, using these types of experiences, the properties of these plant species can be obtained in the new medical science.

In recent years, the use of herbal medicines in Industrial countries has increased. Factors that have increased interest in medicinal plants include the emergence of new diseases and The belief that herbal remedies are less harmful than chemical medicines. Ethnobotanical studies in developing countries is very necessary, because a considerable part of the traditional knowledge, due to neglect in the past generation is dying. Also, the population of rural areas is declining, and people who are in the villages are more likely to accept modern culture (Ghorbani 2005).

In the cities of Rudsar and Amlash, due to historical age, significant plant biodiversity and nomadic migration, the use of traditional medicinal plants is well known. Therefore, the high ecological diversity and long history of people in the area in the use of medicinal plants is a good justification for the identification of medicinal plants in this area. For this reason, in the first step extraction and application of information hidden in such communities, provided a detailed list of medicinal plants and the use of these plants. Studies in this field have taken place in different parts of the world and Iran. In recent years, research has been carried on the identification and use of medicinal plants and aromatic plants in different areas iran, some of which have been referred. Medicinal plants in Guilan province and their organs were studied, based on the results, 342 medicinal plants were identified from 95 families and 229 genera. From these species, 24 species belong to the Rosaceae, 23 species belong to the Lamiacea, 19 species belong to the Asteraceae family(Akbarzadeh et al. 2010). In another ethnobotanical study of the herbs of Zaremrod Neka (Mazandaran Province), it was found that the most used plants were in the treatment of gastrointestinal disorders and blood flow, respectively (Gholipour et al. 2014). The identification of medicinal and aromatic plants in the Siahroud rudbar protected area in Guilan province showed that the medicinal and aromatic plants belong to 53 genera and 35 families. The largest number of medicinal and aromatic species belong to Asteraceae with 6 species, and Brassicaceae and Chenopodiaceae with 4 species (Ataei Jalise and Ghahremaninezhad 2009). Ethnobotany of medicinal plants in the Sistan region has also been investigated and it has been determined that 30 species of medicinal products are most used by the people of Sistan (Iranmanesh et al. 2010). Ethnobotanical study of medicinal plants in the northeast of the Persian Gulf showed that in this area 70 species of medicinal plants belong to 37 families and 62 genera, Asteraceae with 7 species of the most populous family and *plantago* with 4 species The largest gender is in the study(Dolatkhahi and Nabipour 2014). Ethnobotanical study of medicinal plants Mobarakeh showed that most of the plants in the context of digestive problems with frequency of 17 percent(Hammer and Khoshbakht 2005). In the study of ethnobotany and plants used by Turkmen people in Golestan and Khorasan provinces, about 120 medicinal plants were presented, which emphasized the use of 83 species with more than 3 replications. Considering the mentioned cases and the importance of this studies, this research was carried to identify and introduce medicinal plant in the cities of Rudsar and Amlash.

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The study area

The studied areas in this research are Rudsar and Amlash cities in the east of Guilan province. Guilan province is located in the south of the Caspian Sea and in the Alborz Mountains. This province is from the valley of the Astara River in the north, to the mountains of Somamus in the east, which is the result of mountain of the third period of geology. Rudsar city, on the south side of the Caspian Sea, north of the Alborz Mountains, west of Ramsar, is located in the province of Mazandaran and east of Amlash and Langarud.

The northern part of the city is located in the plain area and has a humid climate. The Plorud River, with branches of Kiarud and Shirarud, flows in this city. The city of Amlash is located in a mountain range with two plains and mountainous regions, located in the south of Langroud and Rudsar. Its climate is temperate, humid, semi-mountainous (Figure.1).

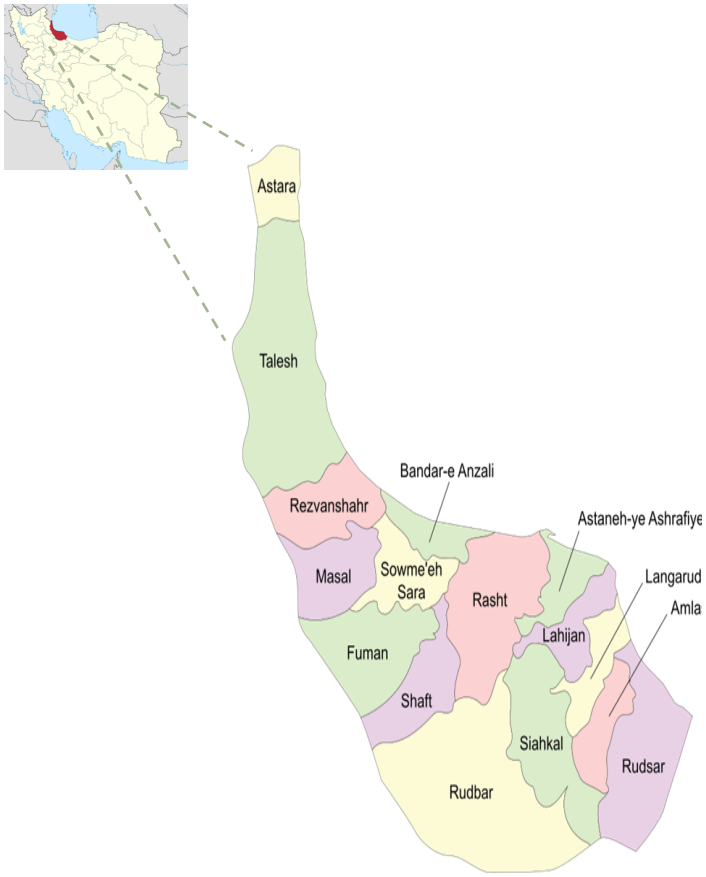

Figure.1Geographical location of Rudsar and Amlash in the north of Iran.

Materials and methods

First, plant species from different regions of Rudsar and Amlash were collected in different seasons of 1998-1998. Then, for indigenous information about plants, interviews were conducted with well-known people, especially traditional botanists who had information on herbs and their use in the city and the countryside. Identification of plant species using the Iranian flora books, Flora Iranica (Rechinger 1963) Iranian color flora(Ghahreman 1978), Iranian plant culture in Herbarium of the Faculty of Basic Sciences of Mazandaran University(Dolatkhahi and Nabipour 2014; Ghahreman 1978; Ghorbani et al. 2006; Rechinger 1963). The life form of the collected plants was determined based on Rankier's classification system (Raunkiaer 1934). The geographical distribution of species based on the zoning of Zohari vegetation zones (Zohary 1973) also used some of the sources of medicinal herbs (Valant 1997; Zargari 1997) to compare the results of the ethnobotany of this study with them.

Results

The results of the study led to the identification of 91 native plant species belonging to 48 families (Table.1). Of these, 3 species belongs to 3 genera and 3 families belonging to the Nebula sedentary, 6 species belong to 6 genera and 5 familieswere monocotyledons, and 76 species of 72 genera and 40 families belong to the dicotyledons. Lamiaceae with 15 species are the richest family, followed by Rosaceaea with 12 species, Asteraceae with 7 species, and Solanaceae and Brassicaceae, each with 3 species in the following ranks (Figure.2). The largest genus in the region is *Mentha* which includes 3 species.

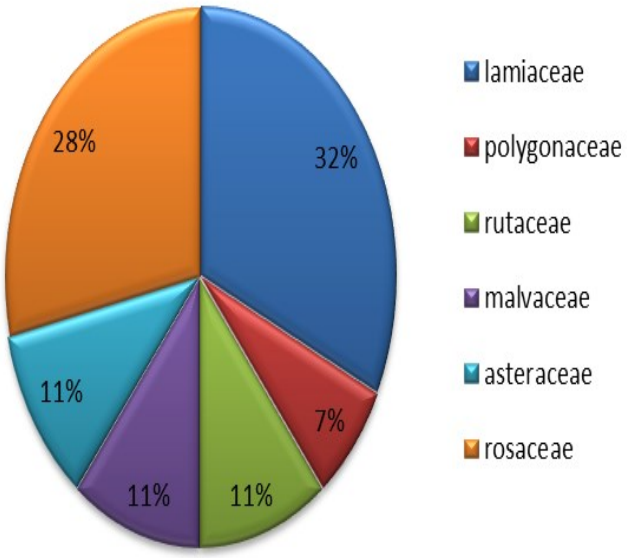

Fig2.The largest families with medicinal species in the region.

Table.1 Medicinal plants of Rudsar and Amlash with

Family	Farsi name	Scientific name	choro-types	Life forme	Local name	Used organ	Using method	Traditional therapeutical effect
Adoxaceae	Aghti	Sambucus ebulus L.	PL	He	Pilom	leaves , stem		Anti-rheumatoid, cold, Infec-tion caused by work on farms, Removing itching nettle, difficulties in breathing, Treatment for insomnia, Anti-migraine, Sedative, Diuretic
Alliaceae	Piyaz	Allium cepa L.	ES	Ge	Piyaz	leaves , Bulb	Raw, Baked	gastro-intestinal, infection Anti-bacterial, toothache,
	Sir	Allium sativum L.	ES	Ge	Sir	Leaves,Bulb	Raw	Blood pressure, Disinfectant, Anti parasitic, Relieve insect bites, Treating bone pain, toothache, Anti-flatulence, Reduce blood lipids, Strengthen hair
Amarantaceae	Taj Khuroos	Amaranthus Spp	PL	Th	Taj khuroos	Seed	Brew	sedative, Anti parasitic, ‹anti-hemorrhoid
Apiaceae	Marhami shafa-bakhsh	Sanicula europaea L.	ES	He				Stomach cramps, Anti-nociceptive, Skin discom-fort, Sputum
Apocynaceae	Pich telegrafi	Vinca minor L.	ES	He	Kish tite	Youn g branc hes	Brew, Decoc-tion	Blood pressure, Women's dis-comfort, anti-diarrhea, cough, Decrease blood glucose
Asparagaceae	Shaghag-hol	Polygona-tum orientale Desf.	ES	He	Shaghag-hol	Rhi-zome	Decoc-tion	Anti-rheumatoid, Diuretic, anti-diabetics
Asparagaceae	Kole Khas	Ruscus hyrcanus Wo ronow	Hyr	Ch	chesht	Rhi-zome	Decoc-tion	Diuretic, Appetizer, gout, icterus, kidney and bladder stone, fever
Asteraceae	Kasni	Cichorium intybus L.	PL	He	kasni	Root		Appetizer, Diuretic, laxative, bile and kindly stone
	Bo-madran	Achillea millefolium L.	IT,ES	He	boma-daran	Flow-ers, Youn g leafy branc hes		anti-diarrhea, anti-ulcer eczema,
	Dermane	Artemisia annua L.	IT,ES	Th	Gand vash	Leafy branc hes		Appetizer, Anti-flatulence, anti-diarrhea, anti-Parasite, anti-ulcer, Earache
	Gol Gandom	Centaurea cyanus L.	PL	He		Flow-ers, leaves	Brew	anti-diabetics
	Gol Ghasedak	Taraxacum officinale web in WJGGERS	IT	He		Root, leaves , branc h	Decoc-tion	Stomach Strengthening
	Tarkhon	Artemesia dracuncu-lus L.	IT,ES	Th		Leafy branc hes	Decoc-tion	Appetizer
	Baba Adam	Arctium lappa L.	IT,ES	Th		Root	Poultice	Skin discomfort , antimicrobial
Berberidaceae	Zereshk	Berberis vulgaris L.	IT	Ph	malisk	Bark, Fruit	Decoc-tion	Kidney discomfort, Stomach Strengthening, Diuretic
Betulaceae	Toska	Alnus glutinosa(L.) Gaertn	ES	Ph	Tose dar	Youn g leaves		anti-diarrhea, Cold, fever, anti-ulcer

Brassicaceae	Kise Keshish	Capsella bursa-pastoris (L)Medik.	ES, IT	Th		leaves, stem. root	Poultice	Anti-hemorrhage
	Kardamine	Cardaminea bulbifera L.	ES, IT	Th		Leaves, stem	Decoction	Skin discomfort, eczema
	Alafe Cheshme	Nasturtium officinale W.T.Aiton	IT	He		branch-es	Raw, Brew	Appetizer
Brogynaceae	Gol Gavza-ban	Echium amoenum Fisch.&C.A.Mey	ES	He	Gol-gavzaban	Flowers	Brew	Sedative, anti-nocicepti, Cold, heart disease
Buxaceae	Shemshad	Buxus hyrcana L.	HYR	Ph	kish	Leaves, Young shoot	Brew	Urinary tract, disorders, Skin discomfort
Caryophyl-laceae	Mikhak	Silene latifolia Poir.	ES	Th		aerial parts	Decoction	Headache, asthma, Stomach Strengthening
	Kale sar dava	Scleran-thus orientalis Rössler	ES	Th		Flower-ing branch	Brew	Anti-diabetics, toothache
	Alaf Gha-nary	Stellaria holostea L.	ES	Th		Leafy branch-es	Decoction	Appetizer, fever, Back ache, stomachic
Chenopodi-aceae	Salmk	Chenopodium album L.	PL	Th		leaves, seed	Decoction	Diuretic, anti-hemorrhoid, Anti-hair loss
Conabona-ceae	Razak	Humulus lupulus L.				Cones	Brew	Sedative, Treatment for insomnia, Appetizer, Diuretic, Disin-fectant
Dryopterida-ceae	Sarakhs	Dryopteris filix (L.) Schott	HYR	Ge		Rhi-zome	Brew	Anti-rheumatism
Ebenaceae	Khormalo	Diospyros lotus L.	Hyr	Ph	Arbeh	Fruit	Baked ، Sap Extract	Sore throat, cough, icterus
Equasetaceae	Dom Asb	Equisetum arvense L.	PL	Ge		Frond		Anti-ulcer, Skin discomfort
Fabaceae	Sana Kazeb	Coronila varia L.	ES, M, IT	He		Flower-ing branch	Decoction	Diuretic Asthma,
	Mash	Vicia faba L.	PL	He	Mash	Seed	Decoction, Baked	Headache
Geraniaceae	Sozan Chopan	Erodium cicutarium L.	PL	He		Leafy stem	Decoction	Kidney discomfort
	Shamdani	Geranium robertianum	ES, M, IT	Th		Leafy stem	Decoction	Diuretic, anti-diarrhea, kidney stone
Hypericaceae	Hezar Cheshm	Hypericum perforatum L.	PL	He	Zakhm vash	Flower-ing branch	Decoction	Stomach Strengthening, Liver disease, headache
Juglandaceae	Gerdo	Juglans regia L.	ES	Ph	aghoz	Green shell fruit وFlower s	Mashed	Skin discomfort, anti-ulcer

Lamiaceae	Chay kohi	Sta-chys lavandulifolia Vahl	ES, IT	He		Flow-ers Young branches	Brew	Sedative
	Badrangboye	Melissa officinalis L.	ES, IT	He	varanbo	leaves	Brew	stomach cramps
	Gazane Sefid	Lamium alba L.	ES, M	He	Kal garzane	Flow-ering branch	Brew	Diuretic, , Skin discomfort Burn
	Maryam nokhodi	Teucrium chamaedrys L.	Euxino-Hyr	He		Young branches, Flow-ering branch	Brew	Appetizer, anti-diarrhea, anti-ulcer, anti-hemorrhoid
	Maryam goli	Salvia sclarea L.	ES, IT	He	Kola kola	Young leaves	Decoction	stomach cramps, anti-diarrhea, Anti-flatulence, cough, Skin discomfort
	Gosh bareh	Stachys bisantina L.	PL	He	Mesh-gosh	Flow-ers	Brew	Cold
	Reihan	Ocimum basilicum L.	PL	He	reihan	Young branches	Poultic Brew, Decoction	Fever, Stomach Strengthening, gastro-intestinal, infection ,Cold
	Gazane saghe aghosh	Lamium amplexicau-le L.	PL	He		Young branches	Decoction	anti-diarrhea, Anti-flatulence, Stomach Strengthening, Cold
	Gandnaie kohi	Marrubium vulgar L.	PL	He	Pitinik	Young branches	Brew	anti-nociceptive, Appetizer, Menstrual Discomfort, Sputum
	Afrasion	Lycopus europaeus L.	PL	He		Flow-ering branch	Brew	nervine sedative properties, anti-spasmodic
	Poneh	Mentha piperita L.	PL	He	poneh	leaves	Distillates	Anti-flatulence, anti-diarrhea, Sedative, Anti-flatulence, Stomach Strengthening, Disinfectant
	Khalvash	Mentha pulegium L.	PL	He	Kotkoto	Flow-ering branch	Brew, Raw, Distillates	stomach cramps, Anti-flatulence
	Poneh abi	Mentha aquatica L.	PL	Hy	Khansh	Young branches	Brew	Appetizer, stomach cramps, Anti-flatulence, anti-diarrhea
	Mar-zanjosh	Origanum vulgar L.	ES	He		Young branches	Decoction	Cough, anti-nociceptive, anti-spasmodic, Sputum
	Avishan	Thymus vulgaris L.	IT	Ge	Avishan	Young branches	Brew	Disinfectant, cough, anti-spasmodic
Loranthaceae	Darvash	Viscum album L.	ES	Ge	Lishe	Young branches	Decoction	Blood pressure, Strengthen the heart
Malvaceae	Panirak	Malva necaeensis All	IT	He	Panirkoh	Leaves , Flow-ers	Decoction	Female infection, Skin discomfort, stomach cramps
	khatmi	Hibiscus sp	PL	Ph	khatmi	Flower	Brew	Sedative, Cold
	Namdar	Tilia malvaplatyphyl-lus SCOP.	ES	Ph		Flower	Decoction	Diuretic Appetizer,
	Anjir	Ficus carica L.	M, IT	Ph	lanjir	Gum, Fruit	Poultice, Raw	Bowel facilitator, Infection caused by work on farms, Purgative, cough

Oleaceae	Zaban gonjeshk	Fraxinus excelsior L.	Euxino-Hyr	Ph	Van dar	Bark, leaves	Brew	anti-parasite, fever, Kidney discomfort kidney stone, anti-ulcer
Onograceae		Epilobium angustifolium L.	PL	Ge		leaves	Brew, Decoction	sedative headache,
Oxalidaceae	torshak	Oxalis corniculata L.	PL	He	Torsh vash	leafy branch-es	Baked	Swelling of the gums, Use in local food
Perimulaceae	pamchal	Primula veris L.	HYR	He	pamchal	Flowers	Brew	anti-nociceptive, Uri-nary tract disorders, Sputum
Petridaceae	parsiavash	Adiantum capillus-veneris L.	PL	Ge	Par-siavash	Frond	Brew	Diuretic, kidney stone
Plantagina-ceae	barhang	Plantago major L.	ES, IT, M (COS)	He	romaj	leaves	Decoction	difficulties in breathing, anti-nociceptive, cough, hoarseness, Spu-tum
Poaceae	ulaf	Avena sativa L.	IT2, ES	Th		Seed	Brew	Appetizer, sore throat, Treatment for insomnia
Polygona-ceae	Felfel abi	Polygonum hydropiper L.	PL	Ch	Talkh sib	Flower-ing branch	Decoction	Diuretic, Anti-rheumatoid, Men-strual, Discomfort , anti hemorrhoidal
Ponicaceae	anar	Ponica granata	IT2, ES	Ph	anar	Fruit	Raw	Anti-flatulence, Stomach Strengthening
Ranuncula-ceae	Alale barfi	Ficaria kotchii (Ledeb)	PL	He	masgoleh	Leaves, Flowers	In food	Cold ,Anti-diabetes
Robiaceae	shirpanir	Galium oderatum (L.) Scop.	ES	Th	Chasbak	Branch	Brew	sedative,Treatment for insomnia, anti-ulcer
Rosaceae	Jal	Lauruscerasus officinale L.	ES	Ph		Flowe, Root, leaves	Brew	back ache, sore feet, Anti-rheumatoid
	tameshk	Rubus hirtus L.	ES	Ph	bolosh	Fruit, leaves	Decoction	Antifungal anti-diarrhea, cold, cough, Anti-rheumatoid, blood purifiers, Skin, discomfort.
	Beh	Cydonia oblonga Mill.	ES	Ph	Beh	Fruit, seed		Cough Cold,
	Mobarakeh mamoli	Geum urbanum L.	ES, IT	Ge		Rhi-zome		anti-diarrhea, Bad smell, Anti-hemorrhage, anti-hemorrhoid, Skin discomfort
	a	Alchemilla xanthochlora ROTHM.	ES	Ge		leafy branch-es		stomach cramps, Anti-flatulence, anti-diarrhea
	azgil	Mespilus germanica L.	ES	Ph	konos	Fruit, leaves		Cold, headache
	roz	Rosa spp	IT, M	Ph	Sorkh gol	Fruit, seed		Cold, anti-ulcer, Purgative, Diuretic
	Alaf nogh-rei	Potentilla anserine L.	IT	He	Panje live	Flower-ing branch		anti-diarrhea, colic, Menstrual Discomfort, Skin discomfort anti-ulcer
	Sorkhevalik	Crataegus microphyla K.Koch	ES, IT	Ph	marikh	Flowers		Blood pressure, Cold
	Tot farangi vahshi	Fragaria vesca L.	Pl	He	Boloshe	Fruit, Young leaves		Nervine, Sedative, Property, Urinary tract disorders, kidney Stone, anti-ulcer, Bad smell
	Baranak	Sorbus orientalis Schönb. -Tem		Ph		Fruit	Brew	Laxative, anti-diabetics
	Golabi	Pyrus spinosa L.	IT	Ph	khoj	Fruit		Blood pressure, cystitis, Urinary tract, disorders
	Ghafes	Agrimonia eupatoria L.	IT	He		leaves	Decoction	Liver disease kidney stone, Stomach, Strengthening, Skin discomfort

Rutaceae	**Sodab**	**Ruta graveolens L.**	**ES**	**Ph**	**Rizolakh**	**leaves**		**Air disinfectant, Sight enhancement Anti-stress, icterus, headache, feverishly Earache,**
Smilacaceae	Azmalak	Smilax excelsa L.	M, Cau, Eux-ino-Hyr	Ph	Azmalakh	Root		Anti-rheumatoid, Kidney discomfort
Solanaceae	Tajrizi	Solanum nigrum L.	COS	Th		leaves ، Flower-ing branch, seed	Decoction	sore throat
	Shabizak	Atropa belladonna L.	ES, M	He		rhi-zome, leafy branch-es	Decoction	Colic, Urinary tract, disorders
	Arosak posht parde	Physalis alkekengi L.	ES, IT	Ge	Besorde	Fruit	Raw, Brew	Kidney discomfort, gout, Anti-rheumatoid, Warts, blood purifiers, Abortion
Ulmaceae	Narvan	Ulmus minor Mill.	ES	Ph	Malaj	Bark	Decoction	stomach cramps, anti-ulcer
Urticaceae	Gazaneh	Urtica dioica L.	ES	He		Leaves, stem	Decoction	Urinary tract disorders, anti-diabetics, Blood pressure, Anti-rheumatoid sore throat hoarseness, Anti-flatulence, Anti-diabetes, Cold, Skin discomfort
Verbenaceae	Shahpasand	Verbena officinalis L.	COS	He		Young branch-es		Anti-nociceptive, Stom-ach Strengthening, Treat-ment for insomnia, Spu-tum Diuretic Kidney, discomfort blood, purifi-ers fever,
Violaceae	Banafshe	Viola caspia (Rupr.) Freyn	IT	He	Mishin	Flow-ers,leav es, rhizome	Flower syrup	Anti-nociceptive, Cold, Diuretic, inflammatory, anti anti ulcer, difficulties in Breathing, Sputum

Most plants in the area are used to treat diseases of the digestive system, blood circulation, respiration and colds and the lowest is used in the treatment of skin conditions (Figure. 3).

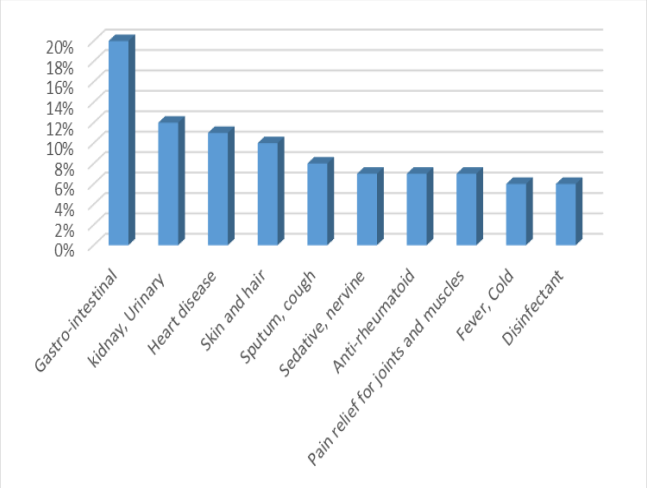

Fig3.The most commonly used medicinal plants in the region

The most commonly used drug herbs in the studied region are brewed and the least amount of the use is in the form of extract (Figure.4).

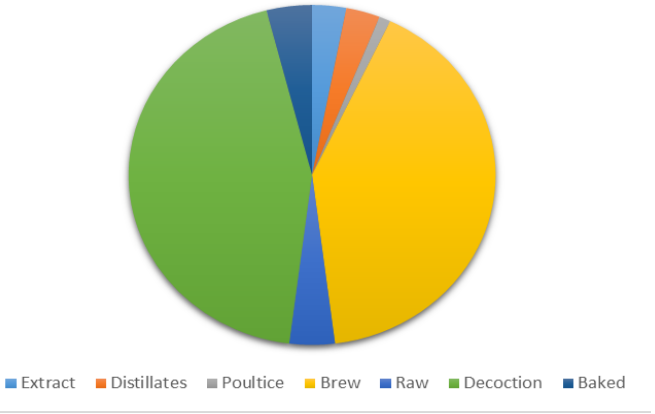

Fig4.The most commonly used drug herbs in the studied area.

The most commonly used plant parts are flowers, leaves and flowers (Figure.5).

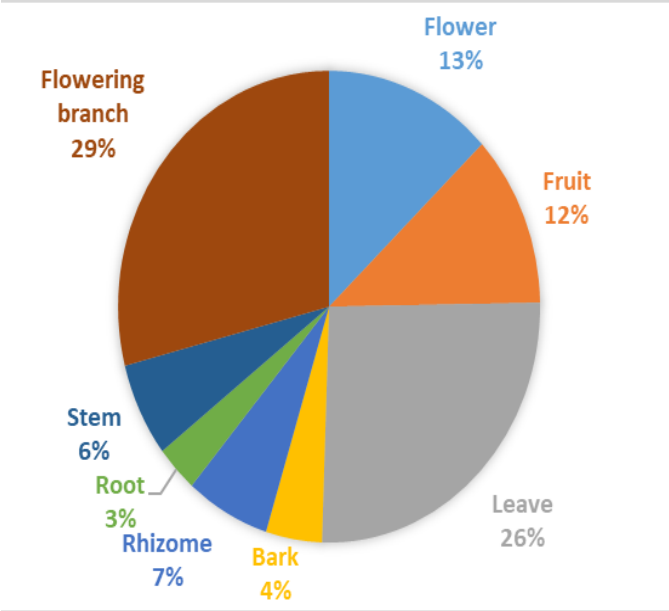

Fig5.Most used plant parts.

The study of life forms of plant species showed that hemicryptophytes with 39 species (44.8%) had the most abundant life form among these herbaceous species. Also, phanerophytes with 22 species (25%), trophyte and geophyte and hydrophyte each with 14, 10 and 2 species, respectively. Figure.6 shows the abundance of life forms of medicinal plant species in the study area. The geographical distribution of these species also indicated that Europe-Siberian elements with 41 species (36.6%) were present. Iranian-Turanian and poly region elements each with 29 and 23 species are next in rank with 20 and 25%. Figure.7 shows the frequency distribution of medicinal plants in the geographical units of the region.

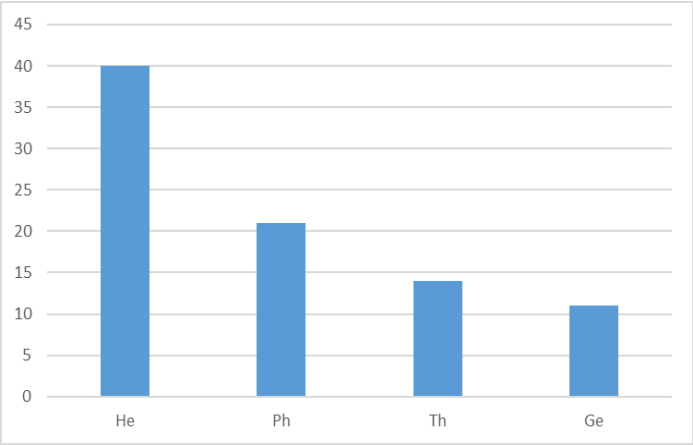

Fig6.Frequency distribution life forme of species of medicinal plants (Geophyte = Ge, Hemicryptophyte = He, Phanerophyte = Ph, Trophyte = Th).

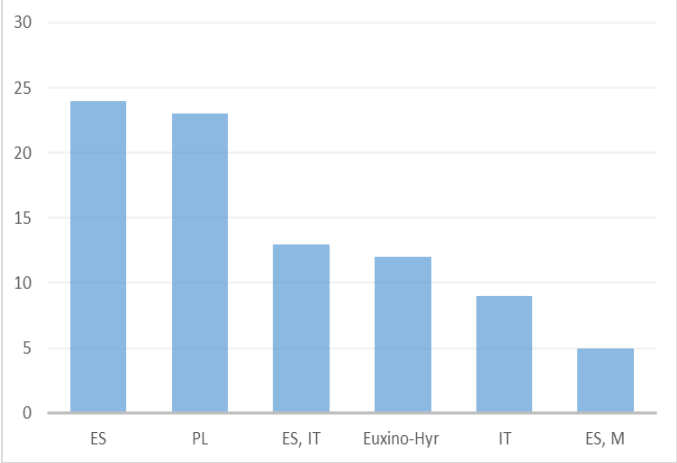

Fig7.Frequency distribution of medicinal plants of the region in geographical units (polyregion, Pl = EuropSiberian = ES, Mediterranean = M, Irano-Turanian = IT, Exino-Hyrcani = (Euxino-Hyr).

Discussion

Medicinal plants are nowadays a viable alternative to chemical drugs as biomedical innovations in the medical field. One of the important reasons for this replacement is their very low damage to chemical drugs. Also according to the different regions, different customs are for the use of medicinal plants, so plants that are used, the consumer will have different methods. For example, a plant may be used in two different regions to treat different diseases, or a different plant may be used for a particular disease in the two regions. According to the results of this study, Lamiaceae with 15 species, Rosaceaea with 12 species, Asteraceae with 7 species and Solanaceae and Berassicaceae with 3 dominant species are medicinal plant,That the results of this study are in line with Gholipour's studies in Zaram roud in Neka and Ataii and Ghahremani nejad of the Breed in SiahRud rudbar Protected Area, because in these areas also, medicinal species belong to the families Lamiaceae, Asteraceae and Rosaceae, the dominant families (Akbarzadeh et al. 2010; Sharififar et al. 2010). The results of our studies showed that the most commonly used medicinal plants in the region were gastrointestinal remedies with a frequency of 20%, which is also true with studies in ethnobotany in different parts of Iran (Hammer and Khoshbakht 2005; Mosaddegh et al. 2012; Sharifar et al. 2010).

Geographical distribution of plant species indicates that Europe-Siberian elements are present with 36.6%, which corresponds to the location of this region in the European-Siberian basin, and other studies in these areas indicate a high abundance of these elements (Ismail Pour 2014). Also, the high abundance of hemicryptophytes in this

in Guilan province and neighboring provinces (Gholipour et al. 2014).

In this study, various uses of plants were recorded that were not recorded in previous sources, which can be noted: the roots of plants like *Urtica dioica*, *Sambacus ebulus*, *Phytolacc Americana* are fused together and used locally to treat foot pain, *Polygonum hydropyper* is used to eliminate pests and insects from domestic birds, tree species such as *Fagus sylvatica*, *Alnus subcurdata* and *Juglans regia* are used to make Kandoj , leaf and bark of *Juglans regia*, *Fraxinus excelsior* and *Petredim aqualium* are used to dye yarn and fabric, *Petredim aqualium* was used to prevent winter snow and its use in summer, use *Fraxinus excelsior* in fishing, *Sambacus ebulus* is used in rice nurseries for better germination, they used *Sambacus ebulus* crushed leaves with yogurt and spinach to eliminate skin and tart fungi, the dried leaf of *Typha latifolia* was used for mat texture, *Petredim aqualium* was used for silkworm breeding and was used as a place for silkworm nesting, *Urtica dioica*, *Allium sativa*, *Artemisia anemua*, *Mentha aquatica*, *Melisa officinalis*, *Oxalis acetosella* and *Mentha piperita* are used to cook local and flavored foods, use *Gleditscia caspica*, *Lamium album*, *Smilax excelsa* and *Viscum alba* to feed and grow young goats or to feed more livestock or in times of forage shortage.

Similar studies can be used to study medicinal plants of Guilan province and their used parts. Based on this study, 342 species of 95 families and 229 genera were identified, of which 24 species of Asteraceae and 23 species of, Labiatae and 19 species of Rosaceae. *Urtica dioica* is one of the most widely used drugs in the treatment of many diseases in most areas, from its branches, whether fresh or dried, to treatment of urinary tract, diabetes, hypertension, anti Rheumatism, sore throat, hoarseness, bloating, colds and skin infections are used. Also, in some places it is used for excretion of intestinal worms and incubation of roots for colds. And topical use for insect bites and nasal bleeding, eczema and hair loss has been reported. In traditional regional medicine, *Artemisia annua* extract is used to relieve ear pain in children and its leaves are also used as antidotes. The tradition of the eastern region of Mazandaran is consistent (Ahvazi et al. 2012).

The results of this study were compared with the use of the mentioned therapeutic effects in the authoritative sources of medicinal plants. Some similar studies have been cited. Green peel (*Juglans regia*) called locally Aghoz is used to whiten and eliminate tooth mass and *Mentha aquatica* is also used to treat arthritis and joint pain, which was reported in a study in the Neka region of Mazandaran province (Gholipour et al. 2014). *Hypericum perforatum* is used in the region of Roudbar as a digestive, bile-based, potent nerve agent, while in our study, anti-inflammatory, liver, and kidney effects have been reported. *Lamium album* in the Neka region of Mazandaran province has been cited as a treatment for sore throat and ulcer while in our study area, it has anti-inflammatory, diuretic, chest pain, skin rash and burn treatment (Ataei Jalise and Ghahremaninezhad 2009; Gholipour et al. 2014).

The results showed that the most widely used medicinal plants in the region are in the context of digestive problems with a frequency of 20% (Figure.3 and Table.1). Due to the limitation of domestic resources, development of employment plans based on cultivation and development of medicinal plants adapted to the ecological conditions of the region, we can maximize production and productivity and provide suitable solutions to conserve these resources.

Acknowledgments

We highly appreciate Mr. Sharian Qasemi and Mr. Mehdi Shafiei, who have sincerely assisted us in conducting this research.

Conflict of Interest

The authors state that they have no conflicts of interest.

References

Ahvazi M, Akbarzadeh M, Khalighi-Sigaroodi F, Kohandel A (2012) Introduce some of the medicinal plants species with the most traditional usage in East Mazandaran Region Journal of medicinal plants 4:164-175

Ahvazi M, Mozaffarian V, Nejadsatari T, Mojab F, Charkhchiyan M, Khalighi-Sigaroodi F, Ajani Y (2007) Medicinal application of native plants (Lamiaceae and Rosaceae family) in Alamut region in Gazvin province J Med Plant 4:74-84

Akbarzadeh A, Jaimand K, Hemmati A, Shiraz BK (2010) Medicinal plants of Gilan province and their applications Iranian Journal of Medicinal and Aromatic Plants 26

Ataei Jalise S, Ghahremaninezhad F (2009) Study of medicinal and aromatic plants Siahrud-e Rudbar protected area in Guilan province Journal of Identification and application of Medicinal Plants 1:43-50

Dolatkhahi M, Nabipour I (2014) Ethnobotanical study of medicinal plants used in the northeast latrine zone of Persian Gulf Journal of Medicinal plants 2:129-143

Ghahreman A (1978) Flore de l'Iran

Gholipour A, Ghorbani Nohooji M, Rasuli N, Habibi M (2014) An Ethnobotanical Study on the Medicinal Plants of Zarm-rood Rural District of Neka (Mazandaran Province) Journal of Medicinal Plants 4:101-121

Ghorbani A (2005) Medicinal plants of Torkman Sahra Research Centre of Ethnobotany and medicinal synonymes Tehran

Ghorbani A, Naghibi F, MOSADEGH M (2006) Ethnobotany, ethnopharmacology and drug discovery

Hammer K, Khoshbakht K (2005) Towards a 'red list'for crop plant species Genetic Resources and Crop Evolution 52:249-265

Iranmanesh M, Najafi S, Yosefi M (2010) Studies on Ethnobotany of important medicinal plants in Sistan Journal of Herbal Drugs (An International Journal on Medicinal Herbs) 1:58-65

Ismail Pour A (2014), University of Mazandaran

Mosaddegh M, Naghibi F, Moazzeni H, Pirani A, Esmaeili S (2012) Ethnobotanical survey of herbal remedies traditionally used in Kohghiluyeh va Boyer Ahmad province of Iran Journal of ethnopharmacology 141:80-95

Raunkiaer C (1934) The life forms of plants and statistical plant geography; being the collected papers of C. Raunkiaer The life forms of plants and statistical plant geography; being the collected papers of C Raunkiaer

Rechinger KH (1963) Flora iranica

Sharififar F, Koohpayeh A, Motaghi MM, Amirkhosravi A, Puormohseni Nasab E, Khodashenas M (2010) Study the ethnobotany of medicinal plants in Sirjan, Kerman province, Iran Journal of Herbal Drugs (An International Journal on Medicinal Herbs) 1:19-28

Valant J (1997) Translated by Saed Zaman Medicinal Plants Methods of cultivation, taking and coloring description of 256:219-229

Zargari A (1997) Medicinal plants. Tehran University of Medical Sciences,

Zohary M (1973) Geobotanical foundations of the Middle East