Traditional Uses of some Medicinal Plants in *Gastrointestinal tract* Treatment in East - Mazandaran (Iran)

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Abstract

Background: Iran has a long history of traditional medicine and medicinal plants use in Middle East. Many ethnics in several parts of Iran use medicinal plants for their illness.

Objective: Our aims were to identify which medicinal plants in the East- Mazandaran used for gastro intestinal problems and how the indigenous people treat their gastro intestinal problems.

Methods: An investigation was carried out for a period of 2 years (from 2014 to 2015) in the area of East- Mazandaran. A questionnaire was prepared through face-to-face interviews. In order to collect detailed information we visited the people who had knowledge of medicinal plants and identify their collected dried medicinal plants. Persian and local name of the plants, their utilized parts and preparation methods were investigated and recorded.

Results: After ethnobotanical study in the East-Mazandaran region we recorded 20 species belong to 10 family of medicinal plant in this area. The most common families are: Apiaceaea and Rosaceae (4 plants). The aerial parts, Young silks, seed, fruits, roots, buds and leaves of plants were used by people. The plants were collected in desire months, dried and stored for use during the year seasons in order to use them later.

Conclusion: This study showed that, *Heracleum persicum*, *Cichorium intybus*, *Mentha aquatica*, *Ziziphora clinopodioides* and *Mespilus germanica*, are the plants used in high range by many people for their illness. Since these species have been used by ages in traditional therapy of the area, more attention should be paid for their scientific study.

Keywords: Ethnobotany, East- Mazandaran, Gastro intestinal, Iran, Medicinal plants, Traditional remedy

Introduction

Plants have highly important roles in human lives. Ethnobotany studies introduce various aspects plants usage such as food, cosmetics, textiles, in gardening, and as medicine. Many ethnic groups rely on wild-collected plants for food and many other purposes from birth to death. Medicinal plants and their extracts comprise the natural sources of treatments used in ethnomedicine and phytotherapy [1, 2].

Many plants scientific knowledge can arise from people experiences in traditional use of medicinal plants. Traditional knowledge such as people experiences is a cumulative body of knowledge, practice and belief that handed over through generations by cultural transmission [3].

Traditions system of medicine such as Chinese, Ayurvedic, Unani, Jamu, Kampo, Iranian, Aztec or various forms of European and Arabic medicine are well known examples [4]. So it is important for us to know about which and how medicinal plants are used by tribes in Iran.

In this study we intended to identify the plants, local names and their usage for medicinal or other purposes by local people in the region. In addition, a comparative analysis between previous ethnobotanic and laboratory studies of plants was attempted.

Materials and Methods

Study area

The region is separated to tree main township: Neka, Behshahr and Galogah. Low height in the region is relevant to Galogah and heighest region was Neka. Rate of maximum and minimum temperature during last 30 years for this two region was 29.8 ºC and 9.1 ºC respectively. Also humidity average during last 30 years was 81 percent. It is located between 35˚54′- 39˚03′ northern latitudes and 38˚54′- 39˚08′ eastern longitudes. The native language of the people was Hyrcanian that is an ancient language in Iran (Figure 1).

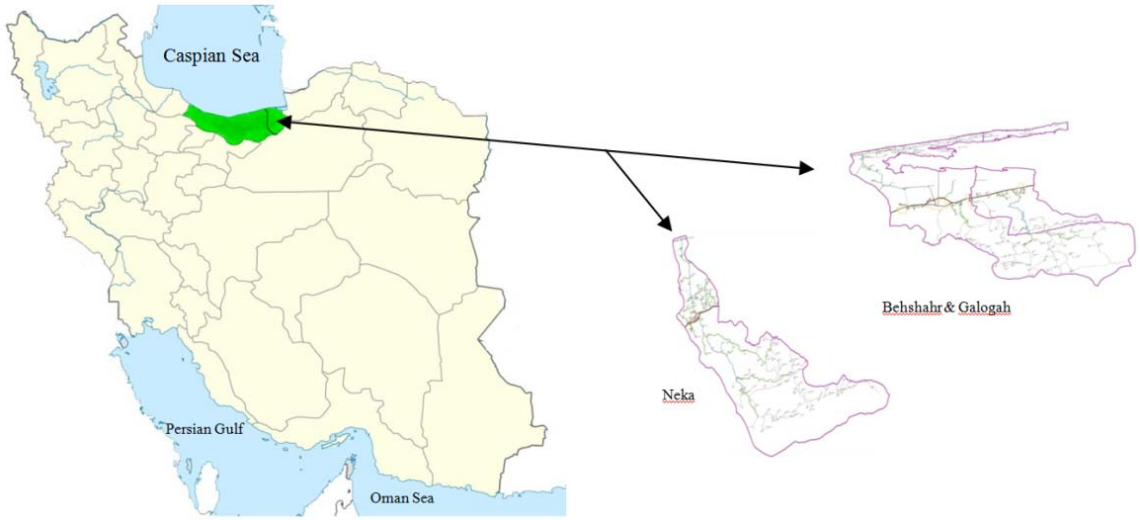

Figure 1- Study area: Iran map and East of Mazandaran

Interviews with local people

An investigation was carried out for a period of 2 years from 2014 to 2015 in the area. A questionnaire was prepared through face-to-face interviews. It included the following information: (a) date of interview; (b) name of village; (c) name of interviewees; (d) age and educational level of interviewees; (e) local name of plants; (f) plants part/s used for GI system; (g) the method of preparation; (h) the dosage of use. In order to obtain detailed information from people who had knowledge of plants we visit them in their houses. After interview the dried medicinal plants that had been collected by them were identified and collected fresh from field. Some of them were recognizable but some was very grinded so informants were asked the fellow to come to the field to introduce the plants. Sometimes we showed these fresh specimens especially aromatic plants to the local people during the interview. The fresh specimens were pressed, preserved and identified by means of some different Floras, such as Flora of Iranica, Flora of Turkey, Flora of Iran. The voucher specimens of each plant were deposited in the Medicinal plants Institute herbarium (MPIH).

Results

Use of medicinal plants

The experiences of the local people were recorded during the interviews. We interviewed a total of 50 people (12 men and 38 women) whose age ranged from 30 to 90 years (median age 58 years). We found that women have better knowledge of the medicinal plants application and most collected plants were carried out by the women. All the medicinal plants were collected from the wild or cultivated in the native people's gardens except *Rosa damascenea* that is cultivated for its flowers. In brief we found that, the largest number of plant used by people belonging to Apiaceae and Rosaceae (with 4 species), Asteraceae and Lamiaceae (with 3 species).

The results of the field survey are presented in Tables 1 and plants are arranged in alphabetical order of their botanical names. For each species, the botanical name and family, local name, medicinal parts, preparation form and traditional uses are presented. Most of the plants were prepared by water infusion for orally use. Results showed species such as *Heracleum persicum*, *Cichorium intybus*, *Mentha aquatica*, *Ziziphora clinopodioides*, *Mespilus germanica*, are plants that used by most of the people. *Solanum nigrum* was in lowest level of medicinal use.

Different parts of medicinal plants were used by the inhabitants of the region as medicine for GI system treatment. The most common parts used were leaves by 24%, aerial parts 20%, seeds and fruits 16% and roots 12% whiles buds, flowers and young silks were used by 4% were lower than the others. As a result, we observed that aerial parts and leaves are main part for medicinal usage. (Figure 2).

As the figure 3 shows the preparation modes for infusion 30%, edible and decoction 25% and 20%. Other type of preparation is plant powder for foods and sometimes people eat fresh fruit of the plants. Some medicinal

Table 1- Medicinal plants in GI system treatment in East Mazandarn

No.	Scientific name	Persian name:	Local name	Medicinal parts	Preparation form	Traditional uses
1	**Apiaceae** *Foeniculum vulgare* Miller. 4561 (MPIH)	Raziyaneh	Vatek	Seed and leaf	Powder	Carminative
2	*Heracleum persicum* Desf. ex Fischer 4550 (MPIH)	Golpar	Kolakpar	Seed and leaf	Decoction, Infusion	GI cramps, stomachache
3	*Froriepia subpinata* (Ledeb.) Baill 4554 (MPIH)	Zolang	Zolang, anarije	Leaf	Edible	Tonic
4	*Laser trilobum* (L.) Borkh. (Akbarzadeh)*	Komaye-jangali	Goreeze	Seed	Edible	Tonic
5	**Asterraceae** *Achillea wilhelmsii* C. Koch (Akbarzadeh)*	Bomadaran	Maranbo	Aerial part	Infusion	Constipation
6	*Cichorium intybus* L. 4562 (MPIH)	Kasni	Kasni alaf	Root and leaf	Fresh, cooked	Constipation
7	*Silybum marianum* (L.) Gaertn	Khar maryam	Kangar	Root	Edible	Fatty liver
8	**Berberidaceae** *Berberis integerrima* Bge. 4564 (MPIH)	Zereshke zarafshani	Zereshk	Root	Infusion	Intestinal worms
9	**Convolvolaceae** *Convolvulus arvensis* L. 4559 (MPIH)	Pichak sahraee	Kakmarim	Aerial part, bud	Infusion	Stomachache
10	**Fagaceae** *Quercus castaneifolia* C.A.M. 4563 (MPIH)	Siyahmazo	Balot	Seed	Cooked	Stomach bleeding
11	**Lamiaceae** *Mentha aquatica* L. 4557 (MPIH)	Sosanmbar	Ojee-alaf	Aerial part	Edible	Flatulence, tonic
12	*Origanum vulgare* L. 4553 (MPIH)	Marzangosh	Marzanjosh	Aerial part	Infusion	Stomachache, Appetizing
13	*Ziziphora clinopodioides* Lam. 4565 (MPIH)	Kakoti	Kamarbandi	Aerial part	Powder	Tonic
14	**Poaceae** *Zea mays* L. 4552 (MPIH)	Balal, zorat	Zorat	Young silk	Infusion	Stomachache
15	**Polygonaceae** *Rumex acetosa* L. (Akbarzadeh)*	Torshake-baghi	Telepa	Leaf	Edible	Tonic
16	**Rosaceae** *Fragaria vesca* L. 4551(MPIH)	Tootfarangi	Semnak	Fruit	Edible	Pain and inflammation of the liver
17	*Malus orientalis* Ugl. (Akbarzadeh)*	Seeb	Seeb jangali	Fruit	Decoction	stomachache
18	*Mespilus germanica* L. 4558(MPIH)	Azgil	Kondes	Leaf, fruit	Decoction	Stomachache, dysentery, vomiting,hypoglycemic agent
19	*Rosa damascenea* Mill. (Akbarzadeh)*	Ghol-mohammadi	Ghol-mohammadi	Flower	Decoction	Tonic, constipation
20	**Solanaceae** *Solanum nigrum* L. 4556 (MPIH)	Tajrizi	Sozchenar	Ripe fruit	Edible	Stomachache, appetizing

*= The plant was identified in the area by Akbarzadeh

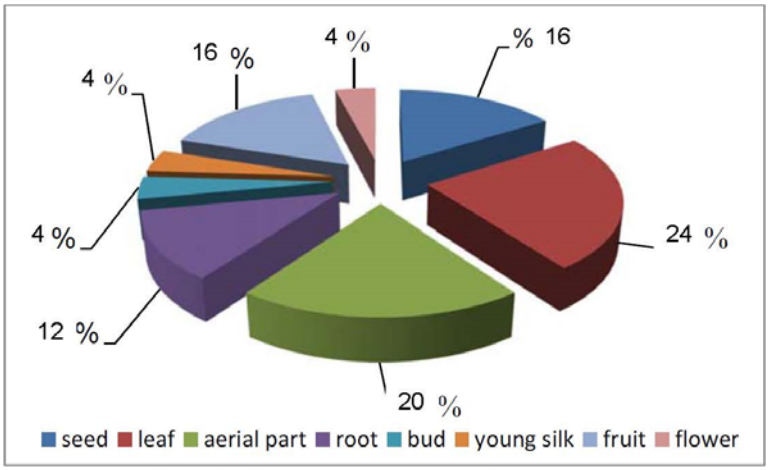

Figure 2- Plant parts use and their percentages

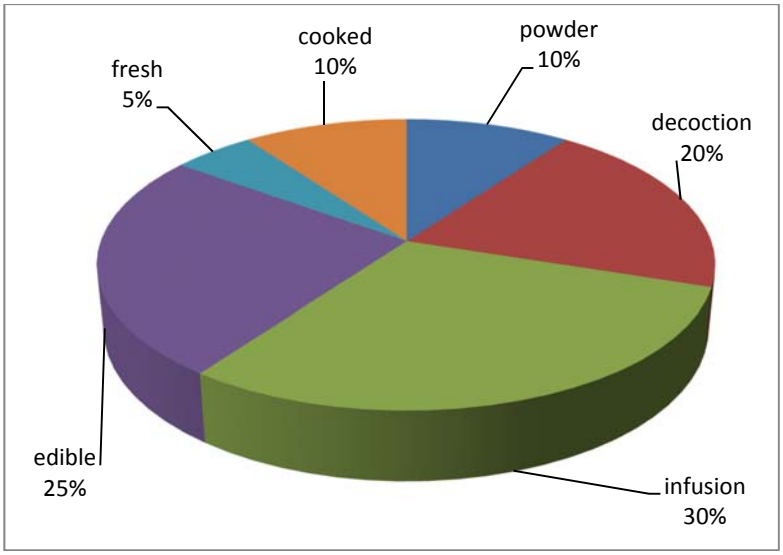

Figure 3- Mode of preparations and their percentages

plants with thick tissue are cooked or boiled before usage such as root of *Chichorium intybus* (constipation treatment) or seed of *Qurecus castaneifolia* (stomach bleeding treatment).

Discussion

Ethnobotanical comparison with other studies

This paper is focused on ethnobotanical and medicinal use of wild plants for GI system illness. The results of the comparisons are presented in Tables 2.

Comparison with traditional therapy in other studies showed that there exists considerable similarity with respect to plants used and the way of use. But among plants that studied in several references we found that for example *Foeniculum vulgare* use for several illnesses such as eyes blurry, antihypertensive,

Table 2- Treatment comparison in the region with other references

Scientific name	Traditional Preparation	Traditional uses in East-Mazandaran	Traditional and medicinal uses in references
Foeniculum vulgare	carminative		Antioxidant and antimicrobial [5], digestive ailments [6], eyes blurry and itching, digestive [7], Fruit: antiemetic,emmenagogue, galactogen, leaf: carminative, root: diuretic, antihypertensive, anti-cholesterolemic, appetizer, diuretic [8], cough, stomachache, bronchitis [9], galactogenous [10], cancer, conjunctivitis, gastritis, nursing, relaxant [11], kidney, digestive system, diabetes [12], cough [13], diuretic, kidney, infections [14], renal ailments, flatulence and to enhance lactation, digestive ailments, obstipation, flatulence, loss of appetite and stomach spasms, increased diuresis, renal and urinary bladder stones; cough, bronchitis, as expectorant; and for gingivitis, eye inflammations and eye purification [15], hypertention, diabetes [16], flatulence, appetite stimulant, kidney pain, catarrh, infant colic, diarrhea, concentration, lactation [17], diuretic, diarrhoea, digestive, eye inflammation, catarrh and bronchitis, impotence and frigidity [18], flatulence, irritable colon, abdominal cramps [19], diabetes [20], colds and coughs, mouth ulcers, digestive [21], abdominal pains [22], antiseptic, carminative, flavoring [23], diuretic, kidney infections [14]
Heracleum persicum	GI cramps, stomachache		Anticonvulsant activity [24], antimycotic, flavoring, digestive, antiseptic [23], antioxidant [25], cytotoxic [26], anti-inflammatory and analgesic [27], spice, flatulence, indigestion [28], anticonvulsant activity [24], tremor, migraine, headache caused by sinusitis (It is harmful for eyes.), ascaris worms [29]
Froriepia subpinata		tonic	Mineral elements: iron, zinc and manganese, antioxidant [30], antioxidant [31]
Laser trilobum.		tonic	Antimicrobial effect [32], immunobiological properties [33], antioxidant and antihaemolytic activities [34], treatment of liver, kidney, gall and urinary tracts as well as bleeding [35]
Achillea wilhelmsii		constipation	Diuretic, abdominal pain,stomachic, emmenagogues, women' sterility, antihemorrhoidal [36], hemorrhoid [37], digestive, for hemorrhoids, high cholesterol [38, 39], blood coagulation, diabetes, hypertension, kidney stone, constipation [14]
Cichorium intybus		constipation	Diabetic [40], diarrhea [41], treat menopausal symptoms, hot flashes, nervousness [42], renal disease [16], epilepsy, asthma, ulcer, dermatitis, vulnerary, herpes labialis, balding [48], epistaxis, hyperlipidemia and diabetes, eye problem, jaundice, stomach problem [14]
Silybum marianum		fatty liver	Sedative, stomach reflux, galactogenic [14]
Berberis integerrima		intestinal worms	Eye problems, hyperlipidemia, diabetes [14], enteric fever, hyperlipidemia, diabetes, anemia [29]
Convolvulus arvensis		stomachache	Stomachic [36], diuretic [43], antioxidant [44], immunostimulant effects [45], Hepatoprotective [46], antidiarrhoeal [47], anthelmentic, skin disorders, remove from stomach [48]
Quercus castaneifolia		stomach bleeding	Antibacterial of pathogenic enteric [49]
Mentha aquatica		flatulence, tonic	Stomachache, food digestion, flavoring, respiratory complaints [50], antimicrobial, antioxidant [51], antibacterial [52]

Table 2- Continued

Scientific name	Traditional Preparation	Traditional uses in East-Mazandaran	Traditional and medicinal uses in references
Origanum vulgare		stomachache, appetizing	Antibacterial [53], antispoiling yeasts in food [54], antiproliferative activity [55], infection of the urinary tract [41], abdominal pain [56], vulnerary, stomache pains, hypertension, epilepsy, headache, internal medicine, asthma, stomachic, toothache, cold(subsp. gracile), stomachic(subsp viride) [36], cold, flu (subsp. hirtum) [43], colds and flu, sedative [57], kidney stone, colitis, food digestion [50]
Ziziphora clinopodioides.		tonic	Antiinflammatory, antiseptic [23], strengthening stomach, stomachalgia, typhus, cold, antiseptic [58, 59], antibacterial activity [60], supported stomach, heart ailment [58], antibacterial [60], stomach ache, carminative, orexigenic, colds [36], cold [14], cold, infections, stomachache, headache, increase nausea [29]
Zea mays		stomachache	Constipation [2], diuretic [41], high blood pressure [56], urinary system, digestive system, panacea, symptoms and conditions badly defined, osteomuscular system [61], dieresis [62], urethral stone, hemorrhoid [1], regulate menses [46], renal disease [47], infection of urinary system, heart tonic [14], to encourage lactation [63], postpartum remedy [64], stomach ache, kidney stone [43], kidneys, urinary tract [65], aphrodisiac [66], guatr, kidney stones [57], kidney stones, diuretic [67], prostatitis, diuretic [68], kidney stone [50]
Rumex acetosa		tonic	Antiviral activity against HSV-1 [69], antiphlogistic and immunostimulating effects for treatment of sinusitis [70], anti-influenza agent [71], inhibit cell proliferation in human (antiproliferative effect) [72], antimutagenicity and cytotoxicity [73], diuretic, anti-hypertensive, anti-oxidative, anti-cancer effects [74]
Fragaria vesca		pain and inflammation of the liver	Cardiovascular effects [75], analgesic property central and peripheral analgesic activity [76], antioxidant [77]
Malus orientalis		stomachache	Vitamin-rich [35], recurrent hunger-induced headache [78], anti-constipation, laxative, febrifuge, antihelmintic, purgative, carminative [79]
Mespilus germanica		stomachache, dysentery, vomiting, hypoglycemic agent	Antihelmintic (cattle) [68], edible as wild fruit [50], enteritis [4], asthma, hemorrhoid [80], leishmaniosis phytotherapy [81], antioxidant [82], to stop diarrhea. for cough, rheumatism, diabetes and haemorrhoids, to treat inflammations [83], aphtes [84], hematopoietic, treatment of large intestine infection, diarrhea treatment, internal hemorrhage treatment, elimination of oral abscess, treatment of Cutaneous, leishmaniasis, strengthen fine skin, stimulation treatment throat [85], diuretic, kidney and bladder, stone, anti hemorrhages, anti diarrhea [86], antibacterial activity [87], stomach ache and dysentery [88]
Rosa damascenea		tonic, constipation	digestive system, urinary system, symptoms and conditions badly defined, nervous system, respiratory system, skin's ailments [61], sedative, stomach ulcer and reflux [14], eye disease [64]
Solanum nigrum		stomachache, appetizing	Indigestion [89], high blood pressure, anemia, tonic [56], leucorrhoea [62], constipation [14], fever: washings with sap of squeezed fruits [65]

cancer, conjunctivitis, bronchitis, diabetes, gingivitis, impotence and frigidity. *Heracleum persicum* has antimycotic, cytotoxic, migraine, ascaris worms effects. *Froriepia subpinata* has mineral elements such as iron, zinc and manganese. *Laser trilobum* has immunobiological properties and use for treatment of liver, kidney, gall blader diseases. *Achillea wilhelmsii* in addition to GI system was used for treatment of women sterility, genital disorders, hemostatic [4]. *Cichorium intybus* also has hemorrhoids, urinary disorders effects. On the other hand, some plants have unusual or less known phytotherapeutic uses. Such as *Foeniculum vulgare* (bronchitis, cancer, obstipation, gingivitis), *Heracleum persicum* (anticonvulsant activity, migraine, sinusitis), *Froriepia subpinata* (antioxidant), *Laser trilobum* (antihaemolytic activities), *Achillea wilhelmsii* (high cholesterol, diabetes), *Cichorium intybus* (treat menopausal symptoms, epilepsy, epistaxis, eye problem), *Silybum marianum*(sedative), *Berberis integerrima* (eye problems), *Origanum vulgare* (toothache, kidney stone), *Ziziphora clinopodioides* (typhus), *Zea mays* (panacea, osteomuscular system, heart tonic, postpartum remedy, aphrodisiac, prostatitis), *Rumex acetosa* (sinusitis, antimutagenicity and cytotoxicity, anti-cancer), *Rosa damascenea* (eye disease), *Solanum nigrum* (anemia). *Quercus castaneifolia* is noted has antibacterial of pathogenic enteric effect. So perhaps it prevented stomach bleeding because of antibacterial effect.

Conclusion

People living in East-Mazandaran usually collect medicinal plants from the wild or cultivate in their gardens. Some species has several effects additional to GI system treatment except *Froriepia subpinata, Quercus castaneifolia* and *Rumex acetosa.* In the presented survey less known plants which have been used since ages in traditional therapy of this area and which are potential sources for new therapies were identified. On the other hand, if a plant is used to treat the same disease in different places across the world then its pharmacologic effect could be accepted but if it has unusual or less known phytotherapeutic uses it seem the plant must be has a supplementary examination.

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