Ethnopharmacological Survey of Medicinal Plants in Maraveh Tappeh Region, North of Iran

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Abstract

An ethnopharmacological survey was carried out among the most well-known Turkmen indigenous herbal practitioners in northeast of Golestan Province (Maraveh Tappeh), north of Iran, in order to evaluate the therapeutic potential of local plants used by the rural Turkmen people to prevent or treat illnesses. Nineteen local practitioners of Turkmen traditional medicine, ages 55 to 65, were interviewed using a questionnaire. The survey revealed that 45 plant species most of them belonging to Asteraceae, Lamiaceae, Apiaceae and Fabaceae family are used as traditional medicine in the region for treatment of various diseases. Among these plants, 20 species have been used mostly as anti-inflammation, anti-infection, diuretic, sedative, carminative, vermifuge, laxative and tonic to treat cough, cold, skin wounds, cramp, infections, digestive disorders, cardiovascular disorders, stomachache, menstrual problem, UTI (urinary tract infection), IBS (irritable bowel syndrome), diabetes, migraine, headache, hemorrhage and circulatory disorders. The paper also reports features such as local name, life form, the current diseases, plant species used for the treatment, their medicinal effects, the plant part used, plant status, number of citation, and methods of their preparation and administration.

Keywords: ethnopharmacology; medicinal plants, local practitioners, interview

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Introduction

Ethnopharmacology is the study of medicinal plants and their pharmacological attributes to prevent and treat common diseases, documenting traditional knowledge via evaluation of the plants' medicinal functions (Upadhyay *et al.,* 2007). Survival dependency of human on nature leads to achievement of rural peoples to unique and endemic knowledge about medicinal plants, which have been used to prevent and cure their ailments. This knowledge of the plants as food or medicine has been transmitted from each generation to the next generation (Samy, 2008; Kaileh, 2007). The variety of secondary metabolites in medicinal plants has made them a source of new therapeutic compounds to prevent and treat diseases and attracted the interest of researchers

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in identification of medicinal function of the natural components in these plants (Arayne and Bahadur, 2007).

Increase in the production and consumption of chemical drugs and concerns over their side-effects have led to an interest by World Health Organization to identify plants used in traditional medicine and study their therapeutic effects, especially in developing countries in recent years (Goleniowski et al., 2006).

Ethnic Turkmen communities in Maraveh Tappeh area enjoy a long original tradition of using plants in their traditional medicine. Located in northeast of Golestan province in north of Iran, Maraveh Tappeh is endowed with a favorable climatic variation and rich flora in its hills and mountainous regions, leading to an invaluable traditional knowledge of medicinal plants used by its rural people to prevent or treat common diseases (Hoseini et al., 2008). This study was carried out to collect extensive data from the most reliable and proficient local practitioners of ethnic Turkmen traditional medicine living in the region.

Materials and Methods

In the present study, we analyzed the traditional pharmaceutical knowledge in small Turkmen communities which are isolated in steppe areas within latitudes of 55˚ 57' 55" to 52˚ 57' 55" and longitudes of 25˚ 46' 37" to 15˚ 42' 37", covering an area of 3600 hectares in Northeast of Golestan province (Maraveh Tappeh). A population of 2820 inhabitants live in several steppe and semi-steppe ranges in hills and mountains reaching 620 to 1264 meters above sea levels with semi-dry and cold climate and precipitation of about 482 mm/year and a mean temperature 6.9° C (January-February) and 27.2° C (August-September) (Asadollahi Shahir and Abbasi, 1998).

The field observation was conducted over seven months from April to October 2009, in the steppe region bordering the Kopetdagh zone (590-1310 m above sea level), with marn to calcareous marns in loam soils. A small area, Maraveh Tappeh is a well known habitat for various medicinal plants.

The current ethnopharmacological survey was carried on 19 native born rural Turkmen practitioners (especially bonesetters and midwifes) randomly chosen from among the most famous elderly traditional medicine practitioners living in Altiaghaje Bozorg, Altiaghaje Koochak, Aghemam, Khange and Kechik villages. Data on the medicinal plant uses have been collected through interviews (using 234 questionnaires) with the practitioners and housewives. Each practitioner was interviewed at 3 stages about local name, life form, the current diseases, plant species used for the treatment, their medicinal effects, the plant part used, methods of their preparation (e.g., infusion and decoction), administration mode (oral or external), administration form, e.g., juice, (fruit) salad or jam, poultice, paste, inhalation, chewing and flavoring.

Also the herbarium specimen vouchers were prepared and deposited in the herbarium of Research Center of Medicinal Plants, Islamic Azad University, Gorgan Branch (R.C.M.P). The obtained data from questionnaires were analyzed for the number of citation for each factor. Medicinal effects of cited plant species were also compared with the findings about in vivo and in vitro experiments in other parts of the world.

Results

The result of the survey indicated that there were 45 medicinal plant species still in use in the region (Table 1). Most of these species which grow naturally in different habitats belong to Asteraceae (20%), Lamiacaea (17.8%), Apiaceae, Fabaceae (6.7%) and Chenopodiaceae, Gutifferae, Malvaceae, Rosaceae and Zygophyllaceae family (4.4 %). Therophytes (47%), hemicryptophytes (20%) and geophytes (18%) comprised the majority of biological from of plants in the survey. Table 1 shows their medicinal effects used by traditional Turkmen practitioners to treat cough, cold, inflammations, wounds, cramp, digestive disorders, cardiovascular disorders, stomachache, women diseases, IBS, UTI and circulatory disorders.

Table 1
List of therapeutically applications of plants used in the traditional medicine of peoples Turkmen in the Marave Tappe.

Scientific Name	Local Name	Family	Part(s) Used	Life Form	Medicinal Uses	Preparation	Administration Mode of Use	Plant State	No. of Citation
Mentha longifolia (L.) Hud.	Bodaneh	Lamiaceae	Le	Ge, P	Antiseptic, stomach ache, Carminative, Cold, Appetizer	Flavoring, Decoction, Infusion	O (Edible, Drink)	F/D	10
Peganum harmala L.	Ozarlik	Zygophyllaceae	Le، Se	Th, A	Soporific,Anathematic,Air purifier,delivery	Smoke, Decoction	E (Smell), O(Drink)	F	8
Rumex crispus L.	Ghowey-yarfagh	Polygonaceae	Le	Ge, P	stomach ache Colic, Anti inflammations, Wounds	Decoction	O(Drink), E(Poultice)	F	5
Hypericum perforatum L.	Chayoti	Hypericaceae	A.p	He, P	nerve headache, Sedative	Infusion	O(Drink)	F/D	5
Tragopogon persicus Boiss.	Atielmeg	Asteraceae	Le	Th, A	Menstrual disturbances	Edible and medicine	O(Edible)	F	3
Eryngium campestre L.	Zallash	Apiaceae	Fl, St	He, B	Kidney stones, Carminative, Appetizer	Decoction, Edible	O (Drink, Edible)	F	3
Spinacia turkestanica Iljin. P.	Esmanagh	Chenopodiaceae	Le, St	Th, A	Cooking food, Anemia	Edible	O (Edible)	F	10
Malva neglecta Wallr.	Malakeh	Malvaceae	Le	Th, A	leg pain, digestive, Cold	Demulcent, Decoctio	O(Drink), E(Rubbing)	F	5
Silybum marianum L.	Ghalqan	Asteraceae	Ro, St	He, B	Vegetable, increase blood pressure, Fever	Edible, Decoction	O (Drink, Edible)	F	4
Alhagi camelerum Fisch.	Yannaq	Fabaceae	Ro, Le, Fl	Th, P	Kidney pain, Diarrhea	Concentrated Decoction	O (Drink)	F/D	2
Verbascum gossypinum M.	Segherghureq	Scrophulariacea	Le, Fl	He, B	Digestive, Throat inflammation	Decoction	O (Drink)	F/D	3
Ferula sp.	Anghuzeh	Apiaceae	La	He,A	Carminative, asthma, hiccup	Infusion	O (Drink)	F	3
Teucrium polium L.	Bakhshiya ushen	Lamiaceae	Le, A.p	He, P	cramp and digestive problems, kidney stone, Carminative, skin softener	Decoction, Demulcent, Infusion	O (Drink), E(paste)	F	12
Chenopodium album L.	Salmeh	Chenopodiaceae	Le, St	Th, A	Food, antiinflammation, anthelmintic, vegetable, depurative blood	Infusion, Edible	O (Edible)	F	7
Echium amoenum Fisch. & C.A.	Gulgozan	Boraginaceae	Fl	Th, A	sore throat, nerve system relaxant, digestive	Infusion, Decoction	O (Drink)	F/D	9

O, Oral; E, External; R, root; St, stem; Le, leaf; Fl, flower; Fr, fruit; Se, seed; A.p, aerial parts; Wh.p, whole plant; Bu, Bulb; Ba, bark; La, latex; Th, Therophytes; Ge, Geophytes; He, Hemicryptophytes; Ch, Chaemophytes; Ph, Phanerophytes; A, Annual; B, biennial; P, Perennial; F, Fresh; D; Dry

Table 1 (Continued)

Scientific Name	Local Name	Family	Part(s) Used	Life Form	Medicinal Uses	Preparation	Administration Mode of Use	Plant State	No. of Citation
Ziziphus sp.	Ennab	Rhamnaceae	Fr, St	Ph, P	Hypertension, depurative blood, anemia, digestive	Edible and medicine	O (Edible)	F	6
Artemisia kopetdagensis Krasch	Yeushen	Asteraceae	Le, A.p	Ch, p	Fever, wound in children Flavoring	Decoction, Demulcent	O(Drink,E dible), E(paste)	F	8
Crataegus sp.	Kelasor	Rosaceae	Fr	Ph, B	depurative blood	Edible	O(Edible)	F	4
Allium rubellum M. B.	soghan	Lamiaceae	Le, Bul	Ge, P	blood pressure, vegetable, Infected wounds	Edible, Flavoring	E(poultice), O(Edible)	F	4
Thalictrum minus L.	Ghoshiomoi	Ranunculaceae	A.p	Ph, P	Additive of blood pressure	Decoction	O(Drink), E(Other application)	F	3
Orchis colina Bank.	Kurtob	Orchidaceae	Bul	Ge, P	-	Be Sell	-	-	10
Cichorium intybus L.	Soltlangech	Asteraceae	Le, Ro, St	Ge, P	Appetizer, depurative blood, anthelmintic	Decoction, Edible	O(Drink, Chaw)	F	6
Ziziphora sp.	Kakeli-oti	Lamiaceae	A.p	Th, A	Carminative, digestion	Infusion, Edible	O(Edible)	F/D	3
Euphorbia bungei Boiss.	Maya-oti	Euphorbiaceae	La	Th, A	Skin wound and wart	Demulcent	E(Demulcent)	F	2
Anthemis nobilis Boiss.	Tatbashi-Golbarmagh	Asteraceae	Fl	Th, p	Kidney stones, women, Carminative, analgesic,	Decoction, Infusion (with tea)	O(Drink)	F/D	6
Achillea millefolium L.	Ghurtgharan	Asteraceae	Fl, A.p	Th, p	Anthelmintic, antiinfections, wounds, antihemorrhage, stomach ache and menstrual, antiinflammation	Infusion, Demulcent	O(Drink), E(Rubbing)	F/D	6
Satureja mutica Fisch.	Kemeroti	Lamiaceae	Le	He, B	Carminative, disinfect of stomach, stomach ache	Flavoring	O(Additive)	F/D	10
Parrotia persica (DC.) C.A. Mey.	Enjili	Gutifferae	Ba	Ph, p	Broken bone, Fever, Sedative	Concentrated Decoction	O(Edible), E(Other application)	F	5
Alcea gorganica Rech.	Charbie	Malvaceae	Fl	Th, A	Infected wounds	Decoction	E(Demulcent)	F	2
Artemisia annua L.	Suzah	Asteraceae	Wh.p	Th, A	Antihemorrhage, Diarrhea	Decoction	E(Demulcent-Other application)	F	5
Urtica dioica L.	Chitchiti odghin	Urticaceae	Le	Ge, P	Hypertension, Blood sugar, Sedative, digestive	Decoction, Edible	O(Drink, Edible)	F	4

O, Oral; E, External; R, root; St, stem; Le, leaf; Fl, flower; Fr, fruit; Se, seed; A.p, aerial parts; Wh.p, whole plant; Bu, Bulb; Ba, bark; La, latex; Th, Therophytes; Ge, Geophytes; He, Hemicryptophytes; Ch, Chaemophytes; Ph, Phanerophytes; A, Annual; B, biennial; P, Perennial; F, Fresh; D; Dry

Table 1 (Continued)

Scientific Name	Local Name	Family	Part(s) Used	Life Form	Medicinal Uses	Preparation	Administration Mode of Use	Plant State	No. of Citation
Marrubium vulgare L.	Itsieg	Lamiaceae	Le, St	Ge, P	Antalgic, stomach ache, digestive, cooling	Decoction	O(Edible)	F	6
Medicago sativa L.	Yorunchgha	Fabaceae	A.p	Th, A	Antihemorrhage, Wound redress, body	Demulcent, Edible	O(Edible), E(Rubbing)	F	3
Berberis sp.	Zereg	Berberidaceae	Fr	Ph, p	Jaundice, Hypertension, depurative blood,	Juice, Decoction Concentrated	O(Drink)	F/D	5
Artemisia absinthium L.	Aghsuzeh	Asteraceae	A.p	Th, A	stomach ache, Laxative in children, skin	Decoction, Demulcent	E(rubbing), O(Drink)	F/D	8
Haplophyllum rubustum Bge.	Pighemberoti	Rutaceae	Wh.p	Th, A	Dermal wounds	Infusion	O(Drink)	F	3
Physospermum cornubiense L.	Ghaziaghi	Apiaceae	St	Th, A	edible	Edible	O(Edible)	F	3
Tribulus terrestris L.	Chopanch okorek	Zygophyllaceae	Wh.p	Th, A	Kidney stones, Laxative	Concentrated Decoction	O(Drink)	F/D	2
Salvia macrosiphon Boiss.	Ghortgharan	Lamiaceae	Se	Th, P	cleaning eyes, Cold, expectorant	Humid, Decoction	O(Drink), E(Cleaning)	F/D	3
Plantago lanceolata L.	Balghasha	Plantaginaceae	Le	He, P	Digestive, dermal wounds	Decoction, Poultice	E(application), O(drink)	F	3
Glycyrrhiza glabra L.	Boyan	Fabaceae	Ro	Ge, P	Ulcer, cramp and Colic antitussive	Concentrated decoction, Chaw	O(Drink, Chaw)	D	11
Phlomis pungens Willd.	Kechgholagh	Lamiaceae	A.p	Th, A	Anthelmintic, stomach ache	Infusion	O(Drink)	F/D	5
Calendula persica C.A. Mey.	SariSolmaz	Asteraceae	Fl	He, P	Kidney stones, Skin inflammation	Juice	O(Edible), E(poultice)	D	3
Falcaria sp.	Ghaziaghi	Apiaceae	A.p	Th, A	Skin inflammation	Decoction	E(Poultice)	F	2
Rubus sp.	Biowrsen	Rosaceae	Fr	Ph, p	Hypertension, Appetizer, Tonic	Jam, Juice	O(Drink, Edible)	F	4

O, Oral; E, External; R, root; St, stem; Le, leaf; Fl, flower; Fr, fruit; Se, seed; A.p, aerial parts; Wh.p, whole plant; Bu, Bulb; Ba, bark; La, latex; Th, Therophytes; Ge, Geophytes; He, Hemicryptophytes; Ch, Chaemophytes; Ph, Phanerophytes; A, Annual; B, biennial; P, Perennial; F, Fresh; D; Dry

Nineteen plant species (27%) were used as anti inflammation for treating cold, cough, arthritics and rheumatic pain, 14 species (20%) as antiseptic to treat wounds, skin problems and colic, 13 species (19 %) to treat women disease, stomachache and vermifuge, 13 species (19 %) to treat digestive disorders, kidney stone and 11 species (13 %) to treat IBS and the remaining species were used to treat other ailments such as sedative to treat headache, ulcer, infected eyes, hiccup, diarrhea and warts.

The field observation also provided valuable information about the plants' regional Turkmen names, Persian names, parts used for medical purposes, preparation and administration methods, life form, status, life form, plant species used for the treatment, and their medicinal effects (Table 1). The survey revealed that in Turkmen traditional medicine all plant extractions were obtained by water or oil solvents.

Teucrium polium L., *Glycyrrhiza glabra* L., *Mentha longifolia* (Hud)., *Chenopodium album* L.,

Spinacia turkestanica Bunge., *Satureja mutica* Fisch., *Echium amoenum* Fisch., *Cichorium intybus* L., *Anthemis nobilis* Boiss., *Achillea millefolium* L., *Artemisia kopetdaghensis* Krasch., *Phlomis pungens* Willd., *Peganum harmala* L., *Hypericum perforatum* L., *Artemisia absinthium* L., *Marrubium vulgare* L., *Berberis vulgaris* L., *Urtica* dioica L., *Crataegus* oxyacantha and *Silybum marianum* L. were the most famous medicinal plants that have been used as anti inflammation, anti infection, diuretic, sedative, carminative, vermifuge, laxative and tonic to treat various ailments.

Discussion

Urbanism and its subsequent destructive effects, emigration, road building and increasing uses of modern chemical drugs instead of traditional remedies, have diminished the role of traditional medicines with the concomitant result of discrediting the traditional practitioners. This in turn has led to decline in the diversity of plant species used and unfortunately invaluable knowledge of local remedies is lost. In fact, most ethnic Turkmen practitioners believed that with changes in the environment more medicinal plants were in use in the past than now.

Mentha longifolia (Hud)., *Teucrium polium* L., *Satureja mutica* Fisch., *Artemisia absinthium* L., *Achillea millefolium* L., *Phlomis pungens* Willd., *Cichorium intybus* L., *Marrubium vulgare* L., *Chenopodium album* L. and *Berberis vulgaris* L. have traditionally been used in the region as antiseptic, sedative, vermifuge and carminative to treat stomachache and expel worm. These medicinal effects have also been reported by researchers world-wide (Ugulu et al., 2009; Fakir et al., 2009; Sarma et al., 2008; De-la-Cruz et al., 2007; Kaileh et al., 2007; Naghibi et al., 2005; Said *et al.,* 2002).

Studies show that menthol, thymol, 1, 8-cineole, α and γ-terpinene, para-cymene, β-pinene and myrcene are the main secondary metabolites in *Mentha longifolia* Hud., *Satureja mutica* Fisch. and *Artemisia absinthium* L. which are effective in treating ailments (Gohari et al., 2009; Cosentino et al., 2009; Akbarinia and Sefidkon, 2009, Tabatabaei-Raisi et al., 2008). Also flavonoids in *Teucrium polium* L. (Khleifat et al., 2002), eucalyptol, camphor, α-terpineol, β-pinene, borneol and apigenin in *Achillea millefolium* L. (Yassa et al., 2007; Candan et al., 2003) have proved effective in treating stomachache.

The flavonoid glycosides, iridoid glycoside, germacrone-D, B-cyclogermacrone, α-pinene and e-β-pharnesene in *Phlomis pungens* Willd. (Sarkhail et al., 2006), phenolic compounds in *Cichorium intybus* L. (Kisiel and Michalska, 2003), hexadecanoic and hexahydrofarnesyl in *Marrubium vulgare* L. (Kurkcuoglu et al., 2005), glycosides, limonene, myrcene, anthraquinone and saponins in *Chenopodium album* L. (Gadano et al., 2006, Akhtar et al., 1999) and vitamin C, malic acid and tannin in *Berberis vulgaris* L. (Hanachi and Golkho, 2009) were the main secondary metabolites, which were more effective as antiseptic, sedative, vermifuge and carminative and expel worm.

Extracts of *Mentha longifolia* (Hud)., *Glycyrrhiza glabra* L., *Echium amoenum* Fisch., *Marrubium vulgare* L., *Artemisia kopetdaghensis* Krasch. and *Urtica dioica* L. have been used in the region as an inflammation, antiseptic and sedative to treat cough, cold, sore throat and fever. Similar practices were reported in a number of studies carried out in other parts of the world (Tene *et al.,* 2007; Pieroni and Quave, 2005; Mehrabani et al., 2005; Ghorbani, 2005; Camejo-Rodrigues et al., 2003; Said et al., 2002).

Terpinene, menthol, 1, 8 cineole, menthofuran, limonene, sabinene, linalool and ocimene in *Mentha longifolia* (Hud) (Cosentino et al., 2009), Glycyrrhizinic acid in root of *Glycyrrhiza glabra* L. (Gupta et al., 2008; Handa et al., 2006) and phenolic compounds in *Urtica dioica* L. (Gulcin et al., 2004) were more effective as antimicrobial, anti inflammation and antioxidant in treatment of cough, ulcer, thorax pains and as an expectorant. The flowers of *Echium amoenum* Fisch. contain a-cadinene, viridiflorol, a-muurolene, ledene, a-calacorene, a-cadinene, flavonoid, anthocyanidine and rosmarinic acid applied as anti inflammation, laxative, and sedative and also for treating fever, cough, sore throat, depression, and cancer (Heidari et al., 2006; Mehrabani et al., 2006; Ranjbar et al., 2006; Mehrabani et al., 2005; Ghasemi et al., 2003).

The bicyclogermacrene, B-caryophyllene, spathulenol, germacrene D α-humulene, hexadecanoic acid and hexahydrofarnesyl acetone in *Marrubium vulgare* L. are used as vermifuge and containing calcium. They are used for hypertension and hypoglycemia and also as abortifacient and channel blocker (Teimori et al., 2008).

Harmine, harman, β-carboline, peganine, harmalol, quinazolin, harmaline, dipeganine, isopeganine, vasicinone and vasicine alkaloids in roots and seeds of *Peganum harmala* L. (Mirzaie et al., 2007; Fathiazada et al., 2006; Mahmoudian et al., 2002), camphor, myrcene, cineole, caryophyllene, linalool and sesquiterpene lactones in flowers of *Achillea millefolium* L. (Jalali Nadoushan et al., 2008; Krishji et al., 2004) were the main secondary metabolites. These are more effective as sedative to treat dysmenorrhea and stomachache (Ugulu et al., 2009; Aburjai et al., 2007; Jalali Nadoushan et al., 2008; Albuquerque et al., 2007).

Teucrium polium L., *Peganum harmala* L. and *Achillea millefolium* L. contain harmine, harmaline, vasicinone, deoxyvasicinone, achillin, limonene, borneol, α-cadinol, caryophyllene oxide and terpinen -4-ol alkaloids (Astulla et al., 2008; Jaimand et al., 2006) applied as antiseptic. Some researchers have also reported the medicinal use of these species particularly as an antiseptic in traditional medicine of other countries (Aburjai et al., 2007; Mohagheghzadeh et al., 2006).

Glycirizin, glabridin, glabrene, glabrol, licoflavonol, glycyrol, licoricone formononetin, 3-methoxy, 3-hydroxy glabrol, hispaglabridin A & B, phaseollinisoflavan, glabranin isomer, lupiwightenone, rutin, narigenin, 3,6 dimethoxy apigenin and 4,7 dimethoxy apigenin (Sharififar et al., 2009; Gupta et al., 2008) in root of *Glycyrrhiza glabra* L. and aerial parts of *Teucrium polium* L. were the main secondary metabolites. These are used as sedative to treat vessel spasm and colic and this is confirmed by other ethnopharmacologyst (Ghorbani, 2005).

Flowers and aerial part decoction of *Teucrium polium* L., *Artemisia kopetdaghensis* Krasch., *Artrmisia absinthium* L., *Anthemis nobilis* Boiss. and *Achillea millefolium* L. are used in treatment of skin wounds, inflammations, infections, furuncle, tumor (Ugulu et al., 2009; Pieroni and Quave; 2005; Naghibi et al., 2005; Agelet and Valles, 2003; El-Hilaly et al., 2003; Said et al., 2002). 1,8-cineole, camphor, davanone, β-ocimene, (E)-β-farnesene, acetylenes (Z), methylchavicol, eugenol, myrcene, trans-thujone, trans-sabinyl acetate, sesquiterpene, monoterpenes, lactones, flavonoids, coumarins and sterols in *Artrmisia absinthium* L. and *A. kopetdaghensis* Krasch. were the main components effective to prevent the growth of bacteria and fungus of the skin and yeasts (Lopes-Lutz et al., 2008; Iranshahi et al., 2007).

Limonene, borneol, α-cadinol, caryophyllene oxide, terpinen -4-01, chamazulene, camphor, isoborneol, p-cymene and eucalyptol in *Salvia macrosiphon* Boiss. and *Anthemis nobilis* Boiss. (Jaimand et al., 2006; Duarte et al., 2005; Candan et al., 2003; Arzi and Akhavan 2001; Jaimand et al., 2000) and flavonoids, iridoids and crisiol in *Teucrium polium* L. (Khleifat et al., 2002) were the main secondary metabolites effective as antioxidant, antimicrobial, cytotoxic and anti inflammation.

Terpinoids, saponins, estrols, flavonoid, glycoside, α and β-pinene in *Teucrium polium* L. and compounds such as borneol, octen -4-ol, 1,8 -cineole, dehydro sabine ketone, trans-geraniol, geranil acetate, trans-β-farnesene, terpin -4-ol and y-muurolene in *Anthemis nobilis* Boiss. (Ansari et al., 2009; Duarte et al., 2005; Uzela et al., 2004), Anthocyanin, carotenoide pigments, phenolase, polyphenolase, glycosidase enzymes and berberine alkaloids in *Berberis vulgaris* L. (Aghbashlo et al., 2008; Arayne et al., 2007), caffeic acid, rutin, quercetin, hyperin and isoquercitrin in *Urtica dioica* L. (Kavtaradze et al., 2001), procyanidins, oligomeric procyanidins, quercetin, hyperoside, rutin, flavonoglycosyls and vitexin-4-rhamnoside in *Crataegus* oxyacantha (Furey, 2008; Verma et al., 2007) and silymarin, silibinin, isosilibinin, silidianin, silichristin and 2,3-dehydrosilybin in *Silybum marianum* L. (Gurley et al., 2005; Kurkin et al., 2001) were the main secondary metabolites. These secondary metabolites are effective as sedative, anti inflammation and diuretic to treat IBS, UTI, kidney stone, fever and liver diseases (Mendel and Hollis, 2010; Fakir et al., 2009; Ugulu et al., 2009; Aburjai et al., 2007; Tahraoui et al., 2007;

De-la-Cruz et al., 2007; Tene et al., 2007; Kaileh et al., 2007; Mazandarani, 2006; Jaradat, 2005; Said et al., 2002).

Monoterpenes (Capasso et al., 2008) and sesquiterpene (Nogueira et al., 2008; Guedes et al., 2008) compounds in *Hypericum perforatum* L. which are effective as sedative, anti infections and languor, are used to treat depression, nervous headache and improve memory (Ugulu et al., 2009; Fakir et al., 2009; Rigat et al., 2007). It however should be mentioned that the medical effects of monoterpenes and sesquiterpene in traditional medicine are still debatable needing more research. Also manganese (Mn) and ferrum (Fe) in *Spinacia oleraceae* is effective for anemia (khan et al., 2006).

Evaluation of TPhK (Traditional Pharmaceutical Knowledge) in far off and poor rural regions seems more urgent than ever. This research showed that only few people especially elders (3 interviewees) have comprehensive information on curative properties of many medicinal plants in the region under study. Nonetheless, traditional medicine and pharmacological knowledge of medicinal plants are used nearly by the majority of people living in the north east Golestan province, north of Iran. Also, despite the wide spread use of the modern medicine sometimes deemed as more viable and healthier than traditional medicine, it seem necessary to document and preserve the existing knowledge of medicinal plants and the few herbalists still doing their practice in Golestan and other parts of the world. In this regard, traditional knowledge on using medicinal plant species as an invaluable source has been evaluated using information from local people. Also, in order to document the most important plant species, results have been compared with the results of other researches and ethnic groups of the world. Result were also compared, evaluated and studied with reference to studies on phytochemical (*in vitro*), animal and clinical models (Iranshahi et al., 2007). Unfortunately, wide part of this ancient knowledge is disappearing or being misinterpreted because of urbanism, development of agricultural and new generation's disinterest in identification and using of these plant' medicinal function. Also these studies can serve as a basis for phytochemical and pharmaceutical studies to identify and produce effectives herbal drugs in prevention and treatment of common regional deceases.

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