



Flora Medicine, Industrial and Nutrition of Plants in Langroud (Guilan province N.IRAN)

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ABSTRACT

This paper presents the result of a study on the uses of plants in connections of Medicine , Industry and Nutrition in Langroud. The study was carried out in this district between March 2007 and May 2008. Ethnobotanical data were collected using semi structured interviews, field observations, sciences articles , preference and direct matrix ranking with traditional medicine practitioners. A total of 322 species belonging to 80 families were investigated and the samples were listed with their uses and Latin names. The investigation includes cross-checking the disorders and their herbal cures and their recommended use stated by the local herbalists, by the parts used, and by the preparations. The cultivated species and their ethno botanical uses, are documented and extensive inventory is presented. As a result, we observed that these plants are used especially in Medician (48.44%), Nutrition (26.70%) , Industrial (18.94%) . Documenting the eroding plants and associated indigenous knowledge can be used as a basis for developing management plans for conservation and sustainable use of medicinal plants in the area.

KEYWORDS: *Medicine ,Industrial,Nutrition,Langroud , Guilan.*

INTRODUCTION

In recent years, the increase in the residential and agricultural areas, and the decrease in medical, industrial, nutrition plants have triggered the interest in ethno-botanical studies throughout the world. The interest in herbal medicine in Iran has progressed parallel to the increased interest in other developed countries.

For centuries, Iran people have been using herbal medicine for the treatment of some daily diseases. The Langroud is one of the centers of the Hyrcanian Region with a rich plant diversity. Accordingly, the traditional herbal medicines are important for the life of people. The aim of this research is to focus on the kinds of medical, industrial, nutrition plants diversity found in the studied area , on the frequency of usage of the plants that are applied in the region.

The study is to be the first survey stating the herbal usages in the north of Iran (Langerud - Guilan province). a study has been recently provided for other similar ecosystem in north of Iran in Boujagh National Park [1]. The current loss of medicinal plants in the country due to natural and anthropogenic factors links with the missing of valuable indigenous knowledge associated with the plants. This strong links suggests a need to conduct ethnobotanical research and to document the medicinal plants and the associated indigenous knowledge. Such studies are useful to identify threatened plants and to take appropriate conservation measures.

MATERIALS AND METHODS

Study area

Our chosen study area, The Langroud and its environs are located in the north of Iran with 30000 ha. (Figure 1). The district is located between 37°,05' N and 37°,11' N , 50°,00' and 50°,14' E .

Based on the meteorological data recorded at Polerud station for 1 years(January2007 to December 2008), the study

area had bimodal rainfall distribution with the highest rain falling from March to May and then in October. The mean annual rainfall of the study area was 1000mm, and the mean annual temperature was 20.6 C



Figure 1. map of area Langroud

The plants are collected from the studied area (Figure 1). The collected plant taxa were dried according to herbarium techniques, and numbered and recorded. The Flora of Iranica (Reshinger, 1965-) and other flora and references (parsa Persian) were used for the identification of the specimens. All of the plant specimens are kept at the herbarium of Urmia University.

In the villages, dominant forest species are as follows:, *Quercus castaneafolia*, *Acer cappadocicum*, *Ulmus minor*, *Zelkova carpinifolia*, *Alnus subcordata*, *A. glutinosa*, *Carpinus betulus*, *Parrotia persica*. The plants are harvested from places such as open areas, steppes, scrubs and roadsides.

The List of Plants

The plant taxa of Langroud and its environs are listed in appendix 1. Taxonomic categories in main groups, such as families, genera, and species, are arranged. The terminology and delimitation of the main phytochoria (Irano-Turanian [IT], Mediterranean [M] and Euro-Siberian [ES]) is based on the known classical works particularly those of [2,3]. Based on author's assessments, PL (Pluriregional elements) are plants ranging in distribution over three phytogeographical regions and SCOS (Subcosmopolitan elements) are plants ranging in distribution over most continents but not all of them. In addition, cosmopolitan elements are abbreviated by COS (Cosmopolitan).

DISCUSSION AND CONCLUSION

In all, 322 vascular plant taxa were identified, which belong to 238 genera and 80 families. five families were nonflowering vascular plants (of Pteridophyta), 74 families belonged to Angiospermaes. The ethnomedicinal use of 322 plant species was documented in the study area. The plant taxa categorisation according to the kind of usage is as follows: Medician (48.44%), Nutrition (26.70%), Industrial (18.94%).(table 1).

Medical plant

Most of the plants (48.44%) were reportedly used to treat human diseases. The medicinal plants collected belong to 137 genera and 59 families. The family Asteraceae was represented by the highest number of species (22 species, 14.1%). This was followed by Rosaceae (15 species, 9.61%), Lamiaceae (9 species, 5.76%), Fabaceae (8 species, 5.12%), and Brassicaceae (7 species, 4.48%) Apiaceous (6 species, 3.84%), Poaceae (5 species, 3.20%). Families *Boraginaceae*, *Caryophyllaceae*, *Euphorbiaceae*, *Primulaceae*, *Scrophulariaceae*, *Solanaceae* were represented by 3 species each. 19 Families by 2 species and 27 Families with one single taxon. This also indicates that the area consisted of considerable diversity of plant species. These plant families are consistently recorded in different ethnomedicinal inventories [4-9], which could be attributed to their wider distribution and abundance [8] and rich bioactive ingredient contents [10]. The results of growth form analysis of medicinal plants showed that hemicryptophytes made up the highest proportion being represented with 51 species (32.69%), followed by therophytes (42 species, 26.92%), phanerophytes (31 species, 19.87%), geophytes (17 species, 10.89%), Helophyte (10 species, 6.41%), Champhyte (3 species, 1.92%), hydrophytes (2 species, 1.28%) (Figure 2). This could be associated to the abundance and year round availability of shrub species in the study area. Most of the medicinal plant species collected and identified in this study were also medicinally used in other parts of Guilan.

For example, In polerud Rodesar 131 species in the medicinal plant were found. [11], and in Bojagh park 20 species were documented. The most frequently used plant part were leaves (26.61%), followed by Root (16.34%). The family Asteraceae, was represented by the highest number of genera (19genera, 13.86%). This was followed by Rosaceae (10 genera, 7.29%), Lamiaceae (9 genera, 6.56%), Brassicaceae (7genera,5.1%), fabaceae, Apiaceae represented by 6genera 4.37%), Poaceae (5 genera, 3.64%), euphorbiaceae (3 genera 2.18%). 5 Families by 2 genera and 28Families with one single taxon. Chorologically, in the total sites, the flora is much affected by pluriregional elements (Fig. 4). Phytogeographical elements include PI (28/20%), ES (19/23%), ES, IT (16/67%), SCOS (14/74%), ES,IT, M (8/97%), COS (5/76%), , IT (2/56%), IT, M (1/92%), ES, M (0/64%)and M

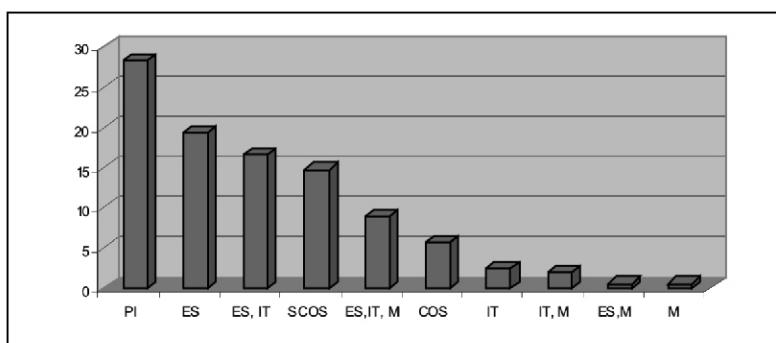


Fig. 2. Chorotype spectrum in studied area (abbreviation according to Appendix 1)

The total of the medicinal species were collected from the wild. The presence of such a large number of medicinal plant species and associated ethnomedicinal knowledge in the district compared to number of species reported for other regions in Iran indicates that the area has a very high diversity of medicinal plant species and is a site for various indigenous knowledge.

Table 2. Categorization of plant taxa in studied area

	Number of taxa	Rates (%)
Medician	156	48.44%
Nutrition	86	26.70%
Industrial	61	18.94%

The effort to conserve medicinal plants in the district was observed to be very poor. Some traditional practitioners have started to conserve medicinal plants by cultivating at home gardens, though the effort was minimal. Traditional beliefs in the area also have their own unintentional role in conservation and sustainable utilization of medicinal plants.

Industrial plant

The Industrial plants collected belong to 56 genera and 33 families. The family Asteraceae was represented by the highest number of species (7 species, 11.47%). This was followed by Rosaceae (6species, 9.83%), Lamiaceae, Brassicaceae represented by 4 species each (6.55%) and Salicaceae (3 species, 4.91%). 9Families by 2 species and 19Families with one single taxon.

The results of growth form analysis of medicinal plants showed that phanerophytes made up the highest proportion being represented with 23species (37.7%), followed by hemicryptophytes (17species, 27%), therophytes (12 species, 19.67%), geophytes(4 species, 6.55%), Champhyte(3species, 4.91%), Helophyte(2species, 3.27%).

The most frequently used plant part were wood (30.43%), followed by seed (15.94%).table 5. The family Asteraceae was represented by the highest number of genera (7 genera, 12.5%). This was followed by Rosaceae (5 genera, 8.92%), Lamiaceae, Brassicaceae represented by 4 genera each (7.14%). 7 Families by 2 genera and 22Families with one single taxon. Phytogeographical elements include ES (27/87%), ES, IT (26/23%), PI (26/22%),

SCOS (8/2%), ES,IT, M (4/91%), COS (4/91%), IT (1/63%).(Fig. 3).

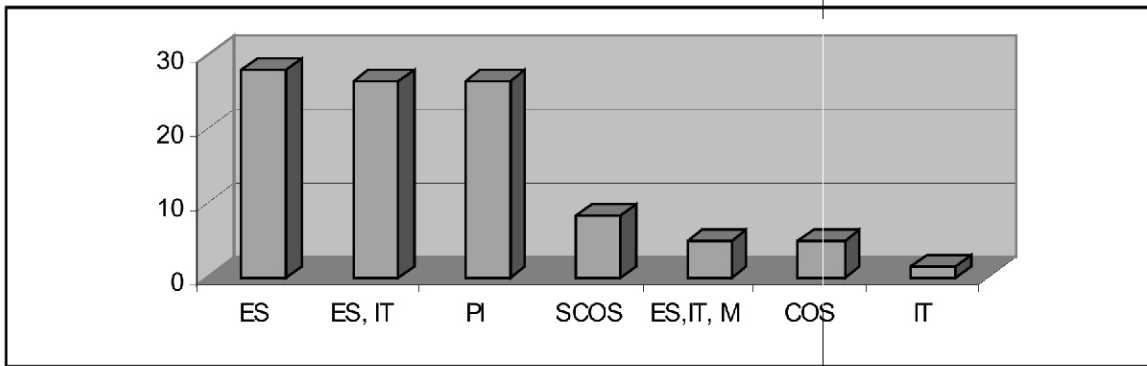


Fig3. Chorotype spectrum in blurdekan mountain and its environs (abbreviation according to appendix 1).

Nutrition plant

The Nutrition plants collected belong to 82 genera and 40 families. The family Asteraceae was represented by the highest number of species (11 species, 12.79 %). This was followed by Rosaceae (10species, 11.62%), Brassicaceae (8 species 9.3%) and fabaceae (7species ,8.13%), Lamiaceae (5 species,5.81%), Apiaceae (4species, 4.65%),Poaceae (3 species,3.48%).6Families by 2 species and 26Families with one single taxon. The results of growth form analysis of medicinal plants showed that hemicryptophytes made up the highest proportion being represented with 30species (34.88 %), followed by therophytes (27species, 31.39%), phanerophytes (16species, 18.60%), geophytes(7species, 8.13%), Helophyte (4species,4.65%), Champhyte (2species,2.32%).

The most frequently used plant part were Leaves (41.53%), followed by seed (18.46%)table4.The family Asteraceae, Rosaceae were represented by the highest number of genera (10 genera, 12.19%). This was followed by Brassicaceae (8 genera, 9.75%), Lamiaceae (5 genera, 6.09%) , fabaceae , Apiaceae represented by 4genera each (4.87%) , Poaceae (3 genera, 3.65%).5 Families by 2 genera and 28Families with one single taxon. Families by 2 genera and 28Families with one single taxon. Chorologically, in the total sites, the flora is much affected by pluriregional elements (Fig. 4). Phytogeographical elements include PI (23/25%), ES, IT (19/76%), SCOS (17/44%), ES (15/11%), ES,IT, M (9/30%), COS (6/97%), , IT (5/81%), IT, M (3.48%), ES, M (1/16%).

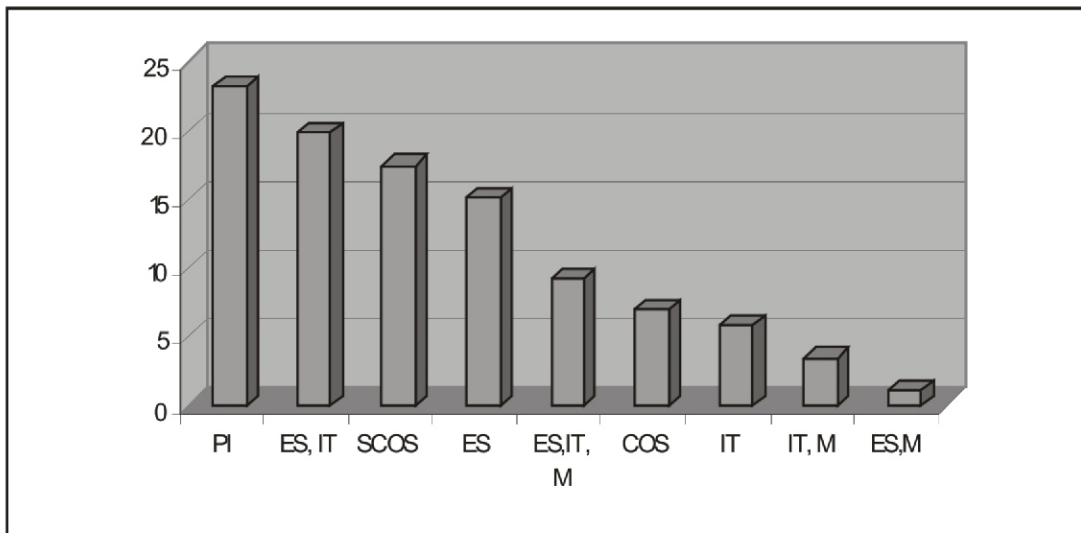


Fig. 4. Chorotype spectrum in studied area (abbreviation according to Appendix 1)

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Appendix 1

	Species	C.M	P.C.M	CI	P.CI	CO	CF	P.CF
Aceraceae								
1	Acer cappadocicum gled			*	Wood	*		
2	Acer velutinum Boiss .			*	Wood	*		
Adiantaceae								
3	Adiantum capillus –veneris L	*	L,St				Hu	Fronde
Alismataceae								
4	Alisma plantago – aquatica L.	*	L,R,St,S				Hu	L,R(cooking)
Amaranthaceae								
5	Alternanthera sessilis (L.)R.Br.						Hu	Fronde,L
6	Amaranthus chlorostachys Willd convar .chlorostachys.	*	L	*	w.p			
7	Amaranthus retroflexus L.	*	L	*	w.p		Hu	S
Apiaceae								
8	Ammi majus L.	*	F				Hu	F
9	Berula angustalata (L) Mertens &W.D.koch							
10	Bifora testiculata (L.) Spreng .							
11	Centella asiatica (L.)Urban.	*	F,j.p,L,St				Hu	L
12	Dacus sp.	-						
13	Eryngium caucasicum trautv	*	L,R				*	L
14	Foeniculum vulgare Miller .	*	S,Fr				*	L,S
15	Hydrocotyle ranunculoides L.fill	*	L					
16	Hydrocotyle vulgaris L.							
17	Oenanthe aquatica (L.)Poir	*	Fr,R					
18	Pimpinella affinis Ledeb.							
19	Torilis arvensis (Huds).Link.							
20	Trinia leiogona (C.A. Mey) B. Fedstcht.							
Aquifoliaceae								
21	Ilex spinigerra (Loes) Loes .	*	L	*	Wood			
Araliaceae								
22	Hedera pastuchovii Woron .ex Grossh.							
Asclepiadaceae								
23	Periploca graeca L.	*	L,ba					
Aspleniaceae								
24	Asplenium adiantum nigrum L.	*	L			*		
25	Phyllitis scolopendrium (L.)Newn.	*	Fronde					
Asteraceae								
26	Anthemis altissima L.	*	F					
27	Arctium lappa L.	*	R,S,L,Fr				Hu	L,S,R,st
28	Artemisia annua L.	*	F*					
29	Artemisia vulgaris L.	*	w.p	*	L		Hu	L,fronde
30	Cardus pychocephalus L.							
31	Cardus seminudus M.B.							
32	Carpesium abrotanoides L.	*	w.p.	*	S		Hu	L
33	Centaurea cheiranthifolia willd							
34	Centaurea hyrcanica Bornm.							
35	Centaurea iberica trev.ex spreng							
36	Centaurea solstitialis L.							
37	Cichorium intybus L	*	S,L,R					
38	Cirsium vulgare (Savi) Ten.							
39	Conyza bonariensis(L)cronq.							
40	Conyza canadiensis (L)cronq.	*	L,F*					

41	<i>Conyzanthus squamatus</i> L.							
42	<i>Crepis foetida</i> L.							
43	<i>Eclipta prostrata</i> (L.)L	*	w.p.	*	w.p.		Hu	L
44	<i>Erigeron acer</i> L.						Hu	L(boild)
45	<i>Eupatium cannabinum</i> L.	*	L	*	j.p.			
46	<i>Filago arvensis</i> L.							
47	<i>Helianthus tuberosus</i> L.	*	R	*	R		Hu	R
48	<i>Inula britannica</i> L.	*	F,R					
49	<i>Lactuca serriola</i> L.	*	w.p.	*	S			
50	<i>Lapsana communis</i> L.	*	L,St				Hu	L
51	<i>Petastites hybridus</i> (L.)PH.	*	L,R					
52	<i>Senecio vernalis</i> Waldst & Kit.							
53	<i>Siegesbekhia orientalis</i> L	*	W,P				Hu	L
54	<i>Silybrum marianum</i> (L.)Gaertn	*	W,P					
55	<i>Sonchus oleraceus</i> L	*	L,La,R				Hu	L,St,R
56	<i>Sonchus asper</i> (L.)hill.subsp.glaucesens(Jordan)Ball.	*	L				Hu ,an	L,St
57	<i>Tagetes</i> sp.							
58	<i>Taraxacum officinalis</i> L.	*	L,R				Hu	R
59	<i>Tussilago farfara</i> L.	*	L,F*					
60	<i>Willemetia tuberosa</i> fisch&C.A.M							
61	<i>Xanthium spinosum</i> L	*	F*					
62	<i>Xanthium strumarium</i> L.	*	L,Fr,R	*	L,S			
Azollaceae								
63	<i>Azolla filiculoides</i> Lam.							
Betulaceae								
64	<i>Alnus glutinosa</i> (L.)Gaertn subsp.barbata(C.A.Mey)Yaltirik.	*	Ba,L	*	Wood			
65	<i>Alnus subcordata</i> C.A.M			*	Wood			
Boraginaceae								
66	<i>Anchusa italica</i> Retz.	*	F*,L,R				Hu	L,F
67	<i>Echium amoenum</i> . Fisch .et.Meg.	*	F					
68	<i>Lappula microcarpa</i> (Ledeb.) Garke.							
69	<i>Myosotis palustris</i> (L.)Nath	*	F					
70	<i>Nonnea lutea</i> (Deser)Reichenb.							
Brassicaceae								
71	<i>Alliaria petiolata</i> (M.Bieb.)Cavara.&Grande.	*	L,St,S	*	w.p.		Hu	L,S,F
72	<i>Arabidopsis thaliana</i> (L.)Heynh.							
73	<i>Arabis aucheri</i> Boiss.							
74	<i>Barbarea plantaginea</i> DC.							
75	<i>Brassica napus</i> L.	*	S ,R	*	S		Hu	L,S
76	<i>Cakile maritime</i> Scop.						Hu	L,St,R,F
77	<i>Capsella bursa-pastoris</i> (L.)Medicus.	*	w.p.	*	S		Hu	S ,L
78	<i>Cardamine draba</i> (L.)Desv.							
79	<i>Cardamine hirsuta</i> L.						Hu	F ,L
80	<i>Cardamine</i> sp.							
81	<i>Descurainia Sophia</i> (L.) Schur.	*	F,L,S					
82	<i>Hesperis hyrcana</i> Bornm .& Gauba						Hu	L,S
83	<i>Lepidium</i> sp.							
84	<i>Nasturtium officinale</i> R.Br.	*	L				Hu	L(cooking(
85	<i>Sinapis arvensis</i> L.	*	F	*	S			
86	<i>Sinapis</i> sp.							
87	<i>Sisymbrium officinalis</i> (L.)Scop.	*	L,F,*,S					

88	<i>Thlaspi umbellatum</i> (stev.)ex DC.							
89	<i>Thlaspi perfoliatum</i> L.						Hu	L,S
<i>Buxaceae</i>								
90	<i>Buxus hyrcana</i> Pojark.	*	L	*	Wood			
<i>Campanulaceae</i>								
91	<i>Campanula glomerata</i> L.							
92	<i>Campanula rapunculus</i> L.	*	L,R				Hu	L,R
<i>Caprifoliaceae</i>								
93	<i>Sambucus ebulus</i> L.	*	L,F,R					
94	<i>Lonicera floribunda</i> Boiss .	*	F,St					
<i>Caryophyllaceae</i>								
95	<i>Centarium minus</i> Moench.							
96	<i>Cerastium glomeratum</i> Thuill							
97	<i>Polycarpon tetraphyllum</i> (L.)L.							
98	<i>Silene conoidea</i> L.	*	Ju.P					
99	<i>Silene gallica</i> L.	*	Ju.P					
100	<i>Silene schafta</i> Gmel.							
101	<i>Silene latifolia</i> poir.subsp.persica(Boiss.& Buhse)Melzh.							
102	<i>Stellaria media</i> (L.) Vill.	*	W .P				Hu	S
<i>Chenopodiaceae</i>								
103	<i>Chenopodium album</i> L.subsp. album.	*	R ,S	*	FronD,R			
104	<i>Kochia scoparica</i> (L.) Schrad.							
105	<i>Salsola kali</i> L.	*	frond	*	w.p.		An	L
<i>Cistaceae</i>								
106	<i>Helianthemum nummularium</i> (L.) Miller							
<i>Convolvulaceae</i>								
107	<i>Calystegia silvatica</i> (Kit.) Griseb., Spic.							
108	<i>Convolvulus arvensis</i> L	*	F,L,R					
109	<i>Impoea purpurea</i> (L)Roth.Bet.	*	L,F					
<i>Corylaceae</i>								
110	<i>Carpinus betulus</i> L.	*	L	*	Wood	*	An	L,F
111	<i>Corylus avellana</i> L.	*	L,S,Ba	*	S	*	Hu	S
<i>Crassulaceae</i>								
112	<i>Sedum hispanicum</i> L.							
<i>Cyperaceae</i>								
113	<i>Carex divulsa</i> Stokes in Withering subsp.divulsa.							
114	<i>Cyperus alternifolius</i> L.							
115	<i>Cyperus odoratus</i> subsp.transcaucasicus (Kuk.)Kukkonen.							
116	<i>Cyperus serotinus</i> Rottb.							
117	<i>Fimbristylis bisumbellata</i> (Forssk.)Bubani.							
118	<i>Pycrus flavesense</i> (L.)Reichenb B.Fedtsch.							
119	<i>Pycrus flavidus</i> (Retz)Koyama.							
120	<i>Schonoplectus lacustris</i> (L.)palla subsp.hippolytii(V.Krecz.)KuKKonen.							
121	<i>Schoenus nigricans</i> L.							
122	<i>Scirpus lacustris</i> L.	*	R				Hu	R, frond

Dipsaceae								
123	Pterocephalus plumosus (L.) Coulter.							
Dioscoraceae								
124	Tamus communis L.	*	R					
Ebenaceae								
125	Diospyros lotus L.	*	Fr ,L,S	*	Wood		*	Fr
Equisetaceae								
126	Equisetum arvens L.	*	St	*	St			
Euphorbiaceae								
127	Acalypha australis L.	*	L					
128	Euphorbia helioscopia L.	*	L,St,S,R					
129	Euphorbia peplus L.	*	j.p.					
130	Euphorbia maculate L.							
131	Ricinus communis L.	*	Fr,S,L	*	S.oil	*	*	S.oil
Fabaceae								
132	Albizzia julibrissin Durazz.	*	F ,ba,,R			*		
133	Coronilla balansae Boiss.							
134	Gladitschia caspica Desf.							
135	Lathyrus aphaca L.	*	S,F					
136	Lathyrus hirsutus L.							
137	Lathyrus laxiflorus (Desf.)o.Kuntze.							
138	Lathyrus pseudocicera pamp.							
139	Lathyrus vernus (L)Bernch					*		
140	Lens cyanea Boiss & Hohen.							
141	Lotus corniculatus L.subsp.corniculatus var.corniculatus.	*	F,R	*	F			
142	Lotus halophilus Boiss. & Spauner							
143	Medicago polymorpha L.						Hu	L,S,F.
144	Melilotus officinalis (L.)Pall.	*	F*,				An,hu	L,frond
145	Trifolium aureum poll.						An	L
146	Trifolium arvense L.							
147	Trifolium pratense L.	*	F					
148	Trifolium repense L.var.repense.	*	F,L				An	L,frond
149	Trifolium tumense stev.ex M.B.var.tumens						An	L,frond
150	Vicia faba L.	*	S	*	St		Hu	S,L
151	Vicia peregrine L.						An	L
152	Vicia sativa L	*	S					
153	Vicia tetrasperma(L.) Schreb.							
Fagaceae								
154	Fagus orientalis Lipsky.	*	L	*	Wood		Hu	L, S
155	Quercus castaneaefolia C.A.Msubsp.Castaneaefolia.			*	Wood			
Fumariaceae								
156	Corydalis rupestris subsp .aghustinii.	*	L,F					
157	Corydalis sp.	*	L,F					
Gentianeae								
158	Centaurium pulchellum (swartz)Druce							
Geraniaceae								
159	Geranium collinum Steph ex.evill.							
160	Geranium purpureum vill.							
Hammamelidaceae								
161	Parrotia persica (Dc.)C.A.Mey.	*	L					
Hypericaceae								
162	Hypericum androsaemum L.	*	L					
163	Hypericum perforatum L.	*	F*					

Hypolepidaceae								
164	Pteridium aquilinum (L.)Kuhn	*	R,L, Frond	*	Frond		An	L
Iridaceae								
165	Crocus caspius fisch C.A.Mey							
166	Iris psedoacorus L.							
Juglandaceae								
167	Juglans regia L.	*	Fr,L	*	Wood, L,s		Hu	S
168	Pterocarya fraxinifolia(lam.)spach	*	L	*	Wood			
Juncaeeae								
169	Juncus articulatus L.							
170	Juncus buffonius L.							
171	Juncus effuses L.							
172	Juncus minutulus Albert&Jahan diez.							
173	Juncus turkestanicum V. Krecz & Gontsch.							
Lamiaceae								
174	Ajuga comata Stapf.							
175	Calamintha grandiflore (L.) Moench.	*	L				Hu	L
176	Clinopodium vulgare,	*	w.p.	*	L		Hu	L
177	Lamium album L	*	F					
178	Lycopus europaeus L.	*	w.p.	*	L		Hu	R
179	Melissa officinalis L.	*	F*,L	*	w.p.		Hu	L
180	Menthe pulegium L.	*	frond					
181	Origanum vulgare L.	*	F*,			*		
182	Prunella vulgaris L.	*	w.p.	*	F,St		Hu	L
183	Scutellaria pinnatifida Arth.Hamilt.							
184	Scutellaria tournefortii Benth .							
185	Stachys byzanthina C.Koch.							
186	Stachys persica Gmel .							
187	Stachys spectabilis Choisy ex DC.							
188	Tecurium chamaedrys L.	*	w.p.			*		
189	Tecurium hyrcanicum L							
Lentibularaceae								
190	Utricularia neglecta Lehm.							
Liliaceae								
191	Danae racemosa (L)moench.					*		
192	Gagea reticulate .nat.size							
193	Muscari neglectum Guss.							
194	Ornithogallum sintenisii freyn							
195	Ruscus hyrcanus							
196	Scilla hohenackeri fiet mey							
197	Scilla sibirica nat.size							
Linnaceae								
198	Linum bienne Miller	*	S					
Lytracaeae								
199	Lythrum salicaria L	*	F*,					
200	Lythrum sp.							
Malvaceae								
201	Abutilon theophrasti Medicus	*	L,R,S,				Hu	Fr,S
202	Alcea hyrcana (Grossh.) Grossh.							

203	Malva neglecta wallr	*	L,F						
204	Sida rhomboica L.								
Moraceae									
205	Ficus carica L.subsp.carica.	*	Fr,j,p,L					Hu	Fr
206	Morus alba L.	*	L,Fr,St	*	wood			Hu	Fr
Nymphaeaceae									
207	Nymphaea alba L.		R,F				*		
208	Nuphar luteum (L.) Smith.	*	R*				*		
Onageraceae									
209	Epilobium hirstum L.	*	L					Hu	L
210	Epilobium montanum L.								
211	Oenothera biennis L	*	F,L,S,R	*	F, s			Hu	S,L,Fr,R
Orbancaceae									
212	Orbansh nana Noe.								
Orchidaceae									
213	Orchis coriophora L.	*	R					Hu	R
Oxalidaceae									
214	Oxalis corniculata L.	*	w.p.	*	w.p.			Hu	L
Papaveraceae									
215	Chelidonium majus L.	*	j.p.,L,R						
216	Papaver dubium L.								
Phytolaceae									
217	Phytolacca Americana L.	*	W.P	*	Fr,S		*	Hu	L,Fr
Plantaginaceae									
218	Plantago lanceolata L.	*	L,R,S	*	w.p.			Hu	L,S
219	Plantago indica L.								
220	Plantago major L	*	L,S,R						
Plantanaceae									
221	Plantanus orientalis L			*	wood				
Poaceae									
222	Aegilops tauschii Cosson.								
223	Agropyron repens L.	*	R						
224	Alopecurus myosuroides Hudson var. myosuroides								
225	Arundo donax L.	*	R						
226	Avena sativa L.	*	S						
227	Briza minor L.								
228	Bromus briziformis Fisch .&C.A.Mey.								
229	Bromus japonicus Thumb .var.japonicus.								
230	Bromus tectorum L.								
231	Calamagrostis pseudophragmites (Hall.f)koel.								
232	Catabrosa aquatica (L.)P.Beauv.								
233	Digitaria sanguinalis (L.)Scop.								
234	Echinochloa crus-galli (L.)Beauv var.crus-galli.								
235	Eragrostis poaeoides P. Beauv.								
236	Eragrostis barrelieri Dav.								
237	Hordeum spontaneum C.koch.								
238	Lophochloa pheoides(Vill.)Reichenb.								
239	Lolium perenne L.								
240	Lolium rigidium Gaudir .								
241	Milium sp.								
242	Oplismenus undulatifolius (Ard.)P.Beauv.								
243	Paspalum paspaloides (Michx.)Scribner							An	S
244	Phleum pretense L.								
245	Phleum sp.								

246	Phragmatis australis (cav.)Tin.ex steud.	*	R					
247	Poa annoa L.							
248	Poa teivials L.							
249	Polypogon semiverticillatus (Forssk.) Hyl.							
250	Setaria glauca (L.)P.Beauv.							
251	Setaria viridis (L.)P.Beauv.	*	S				Hu	S
252	Sorghum halepense(L.)Pnes.						An	frond
253	Vulpia myuros (L.)c.c Gmelin.							
254	Vulpia sp.							
Podophyllaceae								
255	Epimedium pinnatum Fisch.							
Polygalaceae								
256	Polygala major Jacq.							
Polygonaceae								
257	Polygonum laphthifolium L.	*	W.P	*	W.P			
258	Polygonum mite Schrank.							
259	Polygonum persicaria L.							
260	Rumex acetosa L.	*	L,R,S	*	R			
261	Rumex angustifolius CAMPD.							
262	Rumex chalepensis Miller .							
263	Rumex patinta L.							
264	Rumex pulcher L. subsp.pulcher.						Hu	L
Polypodiaceae								
265	Polypodium vulgare L.	*	W.P				Hu	R
Portulacaceae								
266	Portulaca oleracea L.	*	W.P				Hu	W.P
Primulaceae								
267	Anagalis arvensis L.	*	W.P	*	W.P			
268	Cyclamen coum Mill	*	R					
269	Primula heterochroma stapf	*	R,F					
Pteridaceae								
270	Pteris cretica L.							
271	Pteris dentata Forskah L .							
Punicaceae								
272	Punica granatum L.	*	W.P.	*	Wood, F		Hu	Fr,L,S
Ranaunculuaceae								
273	Ranunculus dolosus F.et.M							
274	Ranunculus mucricatus L.var.graecus Helder .et sart	*	F*,					
275	Ranunculus scleratus L.	*	W.P				Hu	L
Rhamnaceae								
276	Paliurus spina-christi miller	*	L,Fr				Hu	Fr
Rosaceae								
277	Agrimonia eupatoria L.	*	W.P	*	R		Hu	S
278	Crataegus melanocarpa M.B. subsp .elbursensis Rech .F.	*	Fr,F	*	Wood		Hu	Fr
279	Crataegus microphylla C.Koch.	*	L,Fr,F	*	Wood			
280	Cydonia oblonga Mill.	*	bar,S,Fr,L				Hu	Fr,S
281	Eriobotrya japonica Lindl.	*	L,Fr,frond				Hu	Fr,S
282	Fragaria vesca L.	*	R,Fr	*	Fr		Hu	Fr,L
283	Geum urbanum L.	*	R	*	R		Hu	L,R
284	Mespilus germanica L.	*	L,S,Ba				Hu	Fr
285	Potentilla reptans L.	*	R				Hu	L
286	Prunus divaricata Ledeb.	*	L,S	*	L,Fr		Hu	Fr
287	Pyrus communis L.						Hu	Fr
288	Rubus caesius L.	*	L,Fr					
289	Rubus hirtus waldst.skit	*	L,Fr					

290	Rubus hyrcanus Juz .	*	L,Fr					
291	Rubus persicus Boiss.	*	L,Fr					
292	Rubus sanctus Schreber	*	L,Fr					
293	Spira.crenta L.							
Rubiaceae								
294	Galium aparine L.	*	W.P				An	L
295	Galium haumifusum Bieb							
296	Galium sp.							
297	Phuopsis stylosa (Trin)Hook.F.							
298	Sherardia arvensis L.							
Salicaceae								
299	Populus caspica Bornm			*	wood			
300	Populus nigra L.var.italica	*	Ba,R,	*	wood		Hu	In.ba
301	Salix alba L.	*	bark	*	wood			
Scrophulariaceae								
302	Rhynchocorys elephas (L.)Grisch.							
303	Verbascum thapsus L.	*	L,F	*	F,L			
304	Verbascum punalense Boiss.et Bushe							
305	Veronica hederifolia	*	L,F					
306	Veronica persica poir.	*	L,F*					
Smilacaceae								
307	Smilax excelsa L							
Solanaceae								
308	Datura stramonium L.	*	L,S					
309	Physalis alkekengi L.	*	L,Fr				Hu	Fr
310	Solanum kieseritzkii C.A.Mey.							
311	Solanum nigrum L.	*	W.P				Hu	ripeFr
312	Solanum persicum Willd .Ex Roemer & Schultes subsp.persica							
Sparginiaceae								
313	Sparginum neglectum Beeby.							
Thyphaceae								
314	Typha australis Schum .& Thonn.			*	R			
Ulmaceae								
315	Ulmus minor Miller	*	bark			*		
316	Zelkova carpinifolia (Pall)Dipp.			*	wood	*		
Urticaceae								
317	Parietaria officinalis L.	*	w.p.				Hu	L
318	Urtica dioica L.	*	L,R					
Verbenaceae								
319	Verbena officinalis L	*	L,F,St*,R				Hu	L,F
Violaceae								
320	Viola alba Besser .	*	F					
321	Viola odorata L.	*	w.p.				Hu	F,L
Valerianiaceae								
322	Valerianella dactylophylla Boiss&Hohen.							

Symbols and abbreviations used in the table:

C.M.(cost of medicine),P.C.M(part of cost of medicine),C.I(cost of industrial),P.C.I(part of cost of industrial),C.F(cost of food),P.C.F(part of cost of food).2.F(food),L(leave),W.P.(whole plant),ST(stem),R(root),F*(flower),Ba(bark),S(seed),Fr(fruit),J.P.(juice of plant).3.HU(human),AN(animal)

Table 2. Medicinal plant parts used

Plant part used	No of species	Percent
Leaves	70	26.61
Root	43	16.34
Flower	30	11.40
Seeds	27	10.26
Whole plant	25	9.5
Fruits	22	8.36
Fronds	19	7.22
Stem	11	4.18
Bark	9	3.42
Juice of plant	7	2.66

Table 3. Industrial plant parts used

Plant part used	No of species	Percent
Wood	21	30.43
Seed	11	15.94
Flower	30	11.40
Whole plant	10	14.49
Leaves	7	10.14
Root	6	8.69
Stem	3	4.34
Fruits	3	4.34
Fronde	2	2.89
Juice of plant	1	1.44

Table 4. Nutritional plant parts used

Plant part used	No of species	Percent
Leaves	54	41.53
Seed	24	18.46
Fruits	16	12.30
Root	13	10
Flower	9	6.92
Fronds	8	6.15
Stem	4	3.07
Whole plant	1	0.76
Bark	1	0.76

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