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Taxonomical and Pharmacological Survey of Therapeutic Plants in Jordan

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ABSTRACT

Three hundred fifteen (315) therapeutic species belonging to 88 families were investigated in the area of present study. 110 plant species (34.92%) were mentioned by less than three informants, and therefore excluded from further consideration. 141 plants species (44.76%) were mentioned by three or more informants, but less than 15, so they considered as unpopular ones. Only 64 species (20.31%) were mentioned by 15 or more informants (half or more of the maximum number of the informants which is 30), and therefore considered as popular medicinal plants. 45 species (14.28.%) have rank order priority (ROP) values 50 or more which represented the highest rank of medicinal popularity among the species investigated. 168 species (53.33%) have medicinal uses similar to those in neighboring countries, while the remaining 147 species (46.66%) haven't such similar common uses. The studied area was dominated mainly by Saharo-arabian element, although Mediterranean, Irano-turanian and Nubo-sudanian were present.

Keywords: Therapeutic plants; Fidelity level; Relative popular level; Rank order priority.

INTRODUCTION

Jordan lies between longitudes 35^0 40' and 39^0 E and between latitudes 29^0 30' and 34^0 N in the transition region between the zonobiome (with moist cold winters and dry hot summers) and the arid one. Jordan is of great interest in vegetation ecology due to meeting place of the Mediterranean, Irano-turanian and Saharo-arabian regions or the Holarctic kingdom and the Nubo-sindian region of the palaeotropic kingdom. For this reason there are conspicuous changes in the vegetation and in the composition of the flora over relatively short distances (within 30 km on the western slopes of the Border Mountains). Ajlun Mountain lies in the northern part of Jordan and has the highest highlands in northern Jordan which supports forests and woodland vegetation due to unique climate and topography (Boulos, 1977; Al-Eisawi, 1982; Karim and Al-Quran, 1988). The northern and southern mountains are dominated by the Mediterranean phytogeographical element, but the presence of a mixture of other phytogeographical elements is recorded within certain narrow slope strips which often

extended to the west towards the Jordan rift valley which reelects the complexity of topography, since the diversification of bioclimate is highly related to the fluctuations in topographic factors (Zohary, 1973; Zohary and Feinbrun-Dothan, 1962-1986).

The regions that have high altitudes more than 1000m above sea level in Shoubek, Karak and Sharah series which have high annual precipitation, were dominated by certain kind of vegetation similar to those found in Ajlun in Northern heights, whereas *Aretmisia* vegetation is characterizing Irano-turnain element which is extended between Petra to Tafileh (Zohary, 1973; Bender, 1974; Boulos, 1977; Boulos and Al-Eisawi, 1977; Boulos and Lehham, 1978; Al-Eisawi,1982; Zohary and Feinbrun-Dothan, 1962-1986; Karim and Al-Quran, 1988).

It is obvious that plants have been used for medication early in history and the history of herbal medicine is very old and popular worldwide. Those who practice these methods were called herbalists. The medicinal plants remained widely used in many areas of the world especially southern parts of Jordan even after the recent flourishing of chemistry of plants (phytochemistry). Greek and Egyptians were the most popular and famous nations in this field, who distributed this knowledge through ancient trade ways which influenced the development of the medicinal potentiality of the plants (Stickel et al., 2000; Adailkan and Gauthaman, 2001).

The therapeutic effects of medicinal plants of Jordan and neighboring countries were investigated during the recent years. Most of these plants were wild of mediterranean and saharo-arabian elements. They are considered the major natural resource of folk medication by local rural inhabitants and experienced cattle owners during the grazing movements and forage requirements (Khayyat and Mursi, 1981; Karim and Al-Qura'n, 1986).

Many botanists and pharmacologists all over the world investigated the medicinal plants species especially used in traditions and folklore to extract the active constituents. The proper scientific means and techniques of extractions and identifications to determine finally the therapeutic effects and dosages (Harborn, 1997; Heinrich, 2000; Joud et.al., 2001; Eddouks et al., 2002; Heinrich, 2002).

The use of plants in medicine promoted the chemical analysis of medicinal plants for the active chemical constituents to be extracted, identified, and later synthesized (Stickel et al., 2000; Krebs, 2001; Prance, 2001; Rates, 2001).

There are many botanical resources to depend upon to compare the ethno-botany in southern Jordan and neighboring countries, especially Palestine, and Iraq. This kind of comparison may be helpful to know the degree of similarity between them, which consequently gives the evidence of new records of therapeutic effects not recorded previously.

In present study we verify the phytomedicinal wealth present (Carminative, intestinal colic, opthalmia or astringent) depending on some verifying steps to differentiate among the different levels of popularity since these are unique with high level of species diversity. The majority of the people are beduoins and rural, oriented and well-experienced in this field of science, which therefore increases the responsibilities for protecting these species from the factors of threatening and endangering. Consequently, this kind of cultural heritage may be reinforced and layed down in the track of scientific measures (Stickel et al., 2000; Rates, 2001).

MATERIALS AND METHODS

During the period of February 2006- October 2007, field investigation was done to formulate the ethno-botanical information and their medicinal verification in the area of

study. Interviews with 80 informants was done; 50 men and 30 women from different parts of the area, whose age ranged from 40-70 years. Most of the interviewees (60 persons) were more than 60 years old and they belong to families which have a strong linkage with folk medicine since they were beduoins and rural inhabitants with long experience. Most of the people were either native borne or had been living in the area for more than 30 years, they were mainly local healers, herbalists, shepherds, experienced adults or old patients.

During the first phase, preliminary data were collected from the informants through field work. Experienced people were asked to inform where the medicinal species were located and their major therapeutic effects. Structured interviews were then conducted to collect more specific information, which was used to detect the traditional methods of preparation and remediation for each species quoted.

The taxonomic identity of medicinal taxa mentioned by interviewees was confirmed precisely by several methods; either by comparison with the already identified specimens preserved in the herbaria of Jordan universities and Ministry of Agriculture, or fresh plant specimens or dried samples were shown to the interviewees for precise recognition. Questions addressed to the informants were mainly focused on the use of the plant, ways of preparation, medicinal plant parts and dosages required.

Each species not recognized by the interviewees was photographed before collection. Flora Palaestina (Zohary and Feinbrun-Dothan, 1986) in its four volumes, and the herbaria of research centers in Jordanian universities and Ministry of Agriculture were used for their identification.

13 geographical sites were investigated; they were: (1) Mujib valley, (2) Araba valley, (3) Rum valley, (4) Aqaba region, (5) Karak, (6) Shoubek, (7) Maa'n, (8) Afra, (9) Tafileh, (10) Petra, (11) Jafer, (12) Bayir, and (13) Burbaitah.

The pharmacological terms used in present study were taken from different pharmacological resources and specialized dictionaries (Khayyat and Mursi, 1981; Karim and Al-Qura'n, 1986; Stickel et al., 2000; Prance, 2001) which dealt mainly with the terms in the field of pharmacognosy relating medicinal and pharmaceutical materials of the plants.

The therapeutic effects of the medicinal species were accepted if mentioned by at least 3 informants native to the area of survey and/or have been living in the area for at least 30 years, while those mentioned by less than 3 informants were not accepted, and excluded from further consideration.

Calculation: Three verifying parameters were used to reach this goal; Fidelity Level (FL), Relative Popularity Level (RPL), and Rank Order Priority (ROP), similar to that calculated by Friedman et al. (1986).

(A) **Fidelity Level (FL) = (I_p/I_u) x 100,**

Where I_p is the number of informants who informed the specific therapeutic effect of the plant, while I_u is the number of informants who informed any therapeutic effect of the plant

(B) **Relative Popularity Level (RPL) = Percentage of I_u/30,**

was given a score of 1 if mentioned by at least half the number of informants (15 or more since the highest number of informants of any therapeutic effect is 30), and in this case it was considered (popular), while given less than 1 if mentioned by more than 3 but less than 15, and in this case it was considered as (non-popular), while the value of less than 3 informants is excluded.

(C) **Rank Order Priority (ROP) = FL x RPL,**

ROP value represents the high popularity of the medicinal plants.

RESULTS

In present study 315 native medicinal species were mentioned by 80 informants interviewed, 111 species (35.23%) were mentioned by less than 3 informants, and therefore were excluded from further consideration, while 142 species (45.07%) were mentioned by 3 informants or more but less than 15, and therefore considered as non-popular medicinal plants, but 62 species (19.68%) were considered as popular medicinal plants since they were mentioned by 15 or more informants (Table 1).

Many of the medicinal species have no similarity in their medicinal uses and therapeutic effects with those recorded in the neighboring countries especially Iraq and Palestine. These plants included 151 species (47.33%) while 168 species (52.67%) have such similarities, therefore the first group is considered as newly recorded medicinal uses and therapeutic effects.

The medicinal species recorded were belonging to 88 families, 161 species were well-known either wild, cultivated or purchased in the market and 154 species were investigated and photographed in the field.

45 species (14.28%) have ROP values of 50 or more which represented the highest rank of medicinal popularity among the species investigated (Table 1).

DISCUSSION

The medicinal plants recorded in this study can be classified according to their medicinal uses and therapeutic effects into many different categories depending on the internal or external uses.

The highly ranked medicinal plants with ROP values of 50 or more were represented by only 45 species (14.28%), and can be categorized into the following categories see table 2.

CONCLUSION

It is obvious from the above data, that the Southern part of Jordan has exhibited highly diversified medicinal species (203 species belonging to 88 families), which were confirmed by three or more informants. This diversity refers to the fact that it has at least four main phytogeographical elements which include the lowest point in their altitude under sea level in Dead sea area (-400 m) and the highest point in Sharah series (1440m).

This high diversity is, in part, due to the type of people inhabited this area and interviewed, most of them were beduoins and rural inhabitants have long experience in folk medicine as local healers, herbalists, shepherds, and well-experienced persons.

This plant wealth requires that researchers pay attention to this natural resource to be protected from threatening and endangering factors especially for the rare and endemic species.

The ethno-botanical survey of folk medicine in the Southern part of Jordan is considered as clear evidence for the intimate interconnected integration between the local people and earth natural resources, which support the return to the earth and discovering the cultural and traditional symbolism for this manifestation in form of sustainable development.

This study opens the doors widely to the scientific approach to determine the validity of folk medicine are improve the pharmaceutical industries based on natural resources. This challenge needs further investigations to recognize the active constituents found in each species.

It is obvious that the number of medicinal plants verified by calculating FL, RPL, and finally ROP as three main popularity levels in the Southern part of Jordan is relatively high, and this conclusion is contrary to that found by Friedman et al. (1986) among Bedouins in the Negev desert. Friedman found that only eight medicinal species to have ROP values above 50 (12.7%), while in this study 45 medicinal species (14.17%) were found to have ROP values above 50 (26.4%), and this is because the kind of people in the Southern part of Jordan still have higher linkage with folk medicine and natural resources.

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Table-1: List of therapeutic plants with respect to their major therapeutic effects, number of informants for any effect (I_u), FL, RPL, ROP values, number of informants for specific effect (I_p), administration dosage, duration of intake, and record place.

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
1.	*Aaronsohnia factorovskyi* Warb. Et Eig	Yellow chamomile	28	71	1.00	71.0	Carminative, intestinal colic.	20+20	Int.(7, 8)
2.	*Acer pseudo-platanus* L.	Maple, sycamore	13	46	0.43	19.8	Opthalmia , astringent.	6+6	Int.or Ext (4)
3.	*Achillea santolina* L.	Milfoil	26	69	1.00	69.0	Intestinal colic, carminative.	18+18	Int.(1, 8)
4.	*Achilleae tomentosa* L.	Milfoil	28	68	1.00	68.0	Intestinal colic, carminative.	19+19	Int. (2 , 6)
5.	*Adiantum capillus-veneris* L.	Venus hair	18	67	1.00	67.0	Expectorant, antilithic.	12+12	Int .(3, 5)
6.	*Adonis aestivalis* L.	Adonis	02	50	0.07	3.5	Antispasmodic, cardiac tonic*.	1+1	Int .(7, 9)
7.	*Aesculus hippocastanum* L.	Horse-chestnut	16	63	1.00	63.0	Narcotic, antipyretic, antirheumatic.	10+10	Int. (10, 11)
8.	*Agropyron repens* (L.) Beauv	Quick varnish	06	34	0.20	6.8	For ulcered bladder	2	Int.(12, 13)
9.	*Ailanthus altissima* (Mill) Swingle	Japanese varnish	05	20	0.17	3.4	Emetic, astringent, antiseptic	1+1+1	Int.or Ext.(1)
10.	*Allium cepa* L.	Onion	15	60	1.00	60.0	Emmenagogue, aphrodisiac, hypoglycemic	9+9+9	Eaten (5)
11.	*Allium porrum* L.	Leek	15	27	1.00	27.0	Carminative, emollient	4+4	Eaten (3, 4)
12.	*Allium sativum* L.	Garlic	15	53	1.00	53.0	Aphrodisiac, skin disease	8+8	Eaten (6, 7)
13.	*Aloe vera* L.	Aloe	16	63	1.00	63.0	Expectorant	10	Ext.(8, 9)
14.	*Althaea rosea* (L.) Cav	Rose mallow	16	31	1.00	31.0	Abdominal inflammation, demulcent.	5+5	Ext. (10)
15.	*Althaea setosa* L.	Mallow	13	38	0.43	16.3	Abdominal inflammation, demulcent.	5+5	Ext. (12)
16.	*Ammi majus* L.	Bishop's weed	12	58	0.40	23.2	For skin disease (leucoderma)*.	7	Ext. (13)
17.	*Ammi visnaga* (L.) Lam.	Pick tooth	16	50	1.00	50.0	Muscular relaxant of uterus and arteries*	8	Ext.(10, 12)
18.	*Amygdalus communis* L.	Almond tree	05	40	0.17	6.8	Demulcent, for skin irritation	2+2	Ext. (11, 13)
19.	*Anabasis articulata* (Frossk) Moq.	Yellow chamomile	09	33	0.30	9.9	Surfactant*	3	Ext. (9, 11)
20.	*Anagallis arvensis* L.	Glass wort	01	100	0.03	3.0	Psychotropic, for skin ulcers*	1+1	Ext.(10,12)
21.	*Angayris foetida* L.	Red pimpernes	02	50	0.07	3.5	Depress never ends*	1	Ext. (3, 4)
22.	*Anchusa italica* Retz.	Stink herb	27	78	1.00	78.0	Diaphoretic, antipyretic	21+21	Int. (4, 7)
23.	*Anchusa strigosa* Lab.	Bugloss	16	68	1.00	68.0	Diaphoretic, antipyretic	11+11	Int. (7, 9)
24.	*Anemone coronaria* L.	Bugloss	02	50	0.07	3.5	Sedative, antirheumatic*	1+1	Int . (5,6)
25.	*Anethum graveolens* L.	Anemony	05	40	0.17	6.8	Antitussive, hypotensive, bronchodilator	2+2+2	Eaten (8, 9)
26.	*Anisum vulgare* L.	Dill	08	25	0.27	6.8	For abscess, CNS stimulant	2+2	Syrup (5, 8)
27.	*Anthemis cotula* L.	Anise	02	50	0.07	3.5	For abscess, CNS stimulant	1+1	Syrup (6,7)
28.	*Anthemis nobilis* L.	Common name	01	100	0.03	3.0	Antiscorbutic, for hepatic diseases	1+1	IntorExt.(9)
29.	*Antirrhinum majus* L.	Roman camomile	03	33	0.10	3.3	Carminative, antispasmodic	1+1	Int. (8, 9)
30.	*Apium graveolens* L.	Greater snapdragon	08	25	0.27	6.8	Antispasmodic, carminative	2+2	Ext. (6, 8)
31.	*Arachis hypogaea* L.	Celery	01	100	0.03	3.0	Solvent for bleeding in hemophillias	1	Int. (7, 8)
32.	*Arbuts andrachne* L.	Pea nut	02	50	0.07	3.5	Narcotic (in wine manufacturing).	1	Int. (7, 9)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
33.	*Aristolochia maunrorum* L.	Strawberry tree	01	100	0.03	3.0	For skin diseases, wounds and leprosy*	1+1	Ext. (8, 10)
34.	*Artemisia arborescens* L.	Birthwort	18	67	1.00	67.0	Emmenagogue	12	Int. (9, 11)
35.	*Artemisia herb-alba* L.	Field southern wood	30	67	1.00	67.0	Pleurisy, hypoglycemic	20+20	Int. (10 ,11)
36.	*Arundo donax* L.	Worm wood	16	44	1.00	44.0	Hypertensive	7	Int. (10, 12)
37.	*Asclepias curassavica* L.	Silkweed	13	23	0.43	9.9	Stypic, anthelmintic, emetic	3+3+3	Int. (6, 7)
38.	*Asparagus officinalis* L.	Sparrow grass	12	58	0.40	23.2	Laxative, for treating gout , arthritis	7+7+7	Int.or Ext.(5)
39.	*Asperula arvensis* L.	Quiswort	02	50	0.07	3.5	Useful for curing quincy.	1	Ext.(12,13)
40.	*Asphodelus fistulosus* L.	Asphodel	01	100	0.03	3.0	Diuretic, antispasmodic*	1+1	Int. (8, 9)
41.	*Astragalus hamosus* L.	Milk vetch	02	50	0.07	3.5	Astringent, carminative	1+1	Int. (5, 6)
42.	*Atriplex hastata* L.	Salt orache	11	27	0.37	10.0	Used to cure gout	3	Ext. (1, 2)
43.	*Atropa belladonna* L.	Deadly night shade	06	50	0.20	10.0	Antiolinergic, for eye diseases*.	2+2	Ext. (1, 9)
44.	*Avena sativa* L.	Oats	03	67	0.10	6.7	Antispasmodic	2	Int. (2, 10)
45.	*Bacopa monniera* (L.)Hay &Mat.	Gratiola	05	60	0.17	10.2	Sedative in hysteria, mania , epilepsy	3+3+3	Int.or Ext.(4)
46.	*Ballota nigra* L.	Black hemp-nettle	01	100	0.03	3.0	Antispasmodic, restorative	1+1	Int. (6, 13)
47.	*Bauhinia variegata* L.	Camels foot	06	50	0.20	10.0	Astringent in skin diseases , for ulcers	3+3	Ext. (7, 13)
48.	*Bellis perennis* L.	Bellis	04	50	0.13	6.5	Against cold, vulnerary	2+2	Syrup (10)
49.	*Beta vulgaris* L.	Beet	13	31	0.43	13.3	Tonic (liver and spleen) , analgesic .	4+4	Int. (6, 8)
50.	*Betula alba* L.	White birch	02	50	0.07	3.5	Gonorrhea , rheumatism , skin diseases	1+1+1	Int.orExt.(7)
51.	*Bidens tripartita* L.	Water agrimony	06	33	0.20	6.6	Antiscorbutic, emmenagogue	2+2+2	Int.or Ext.(9)
52.	*Brassica oleracea* L.	Wild cabbage	15	53	0.50	26.5	For peptic and deuodenum ulcers, diabetes	8+8+8	Eaten (3, 5)
53.	*Brassica nigra* (L.) Kotck	Black mustard	14	43	0.47	20.2	Cardiac tonic, laxative	6+6	Eaten (6,12)
54.	*Brassica repa* L.	Turnip	13	31	0.43	13.3	For arthritis, rheumatism , muscle spasm	4+4+4	Eaten (12)
55.	*Bryonia dioica* Jaca.	Whit vine	05	40	0.17	6.8	To relieve pain of pathisis and pleurisy*	2+2	Int. (10)
56.	*Bryophyllum calycinum* Salisb	Sprouting leaf	02	50	0.07	3.5	Useful in healing wounds and ulcers	1+1	Ext.(4, 6)
57.	*Caesalpinia bonducella* Flim	Fever nut	05	40	0.17	6.8	Asthma, anthelmintic, uterine disturbances	2+2+2	Int. (6, 9)
58.	*Calendula officinals* L.	Marigold	02	50	0.07	3.5	Diaphoretic, dysmenorrhoea	1+1	Int.(4, 12)
59.	*Calotropis procera* willd R.Br.	Common name	17	24	1.00	24.0	Antispasmodic, for gastric diseases*	4+4	Int.(2, 13)
60.	*Campanula rapunculus* L.	Mudar plant	02	50	0.07	3.5	Mouth and throat diseases	1+1	Ext. (6,13)
61.	*Canabis sativa* L.	Bell-flower	01	100	0.03	3.0	Neuralgia, insomnia*	1+1	Ext.(3, 13)
62.	*Capparis spinosa* L.	Caper bush	06	33	0.20	6.6	Expectorant	2	Int. (5, 12)
63.	*Capsella bursa-pastoris* L.	Capweed	08	63	0.27	17.0	Haemostatic, astringent	5+5	Int (6, 12)
64.	*Capsicum annuum* L.	Chilli	12	33	0.40	13.2	Styptic, aphrodisiac	4+4	Eaten (6, 9)
65.	*Capsicum frutescens* L.	Chilli	11	27	0.37	10.0	Styptic, aphrodisiac	3+3	Eaten (3, 8)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
66	*Carthamus tinctorius* L.	Staffflower	02	50	0.07	3.5	Diaphoretic in measles	1	Int. (3, 6)
67.	*Carum carvi* L.	Caraway	03	33	0.10	3.3	Analgesic for headache and stomaches	1+1	Syrup (9)
68.	*Cassia italica* (Mill) Lam.	Negro coffee	04	50	0.13	6.5	For skin diseases, febrifuge.	2+2	Ext. (5 ,7)
69.	*Casuarina equisetifolia* L.	Iron wood tree	07	43	0.23	9.9	Astringent in headache, diarrhoea and colic	3+3+3	Int. (5, 9)
70.	*Celosia cristata* L.	Cook's comb	02	50	0.07	3.5	Used for cough, astringent in diarrhoea	1+1	Int. (1, 5)
71.	*Centaurea solstitialis* L.	Centaury	01	100	0.03	3.0	Remedy for dissolving urinary stones	1	Int. (3, 13)
72.	*Ceratocephalus flacatus* Pers.	Ceratocephale	02	50	0.07	3.5	Antirheumatic for knee and joints.	1+1	Int. (6 , 9)
73.	*Ceratonia siliqua* L.	Carob	07	29	0.23	6.7	In syphilis and veneral diseases	2+2	Ext. (2 , 4)
74.	*Creasus vulgaris* Mill.	Cherry tree	02	50	0.07	3.5	In kidney pain	1	Int. (1 , 3)
75.	*Chenopodium album* L.	Fat hen	01	100	0.03	3.0	In hepatic and billiary disease	1+1	Int. (3 , 7)
76.	*Chenopodium ambrosoides* L.	Goose foot	02	50	0.07	3.5	In hepatic and billiary disease	1+1	Int. (3 , 7)
77.	*Cheiranthus cheiri* L.	Wall flower	07	29	0.23	6.7	Antithrombic, emmenagogue*	2+2	Int. (4, 10)
78.	*Chrysanthemum cinrariaefolium* Vis.	Insect plant	02	50	0.07	3.5	Used for skin diseases like scabies	1	Ext. (3, 10)
79.	*Chrysanthemum vulgare* L.	Tansy	05	60	0.17	10.2	Used for skin diseases like scabies	3	Ext. (4 , 9)
80.	*Cicer arietinum* L.	Chick pea	02	50	0.07	3.5	Antiyrpetic, analgesic in dysmenorrhoea	1+1	Int. (11,12)
81.	*Cichorium intybus* L.	Chicory	02	50	0.07	3.5	Sedative in typhoid, cholagouge	1+1	Int. (6, 7)
82.	*Cistanche tubulosa* Schwi	Broomrape	06	50	0.20	10.0	Antidiarrhoeal	3	Int. (5, 9)
83.	*Citrullus colocynthis* (L.) Sch.	Bitter apple	26	69	1.00	69.0	Antidiabetic , cathartic *	18+18	Int. (2, 11)
84.	*Citrullus vulgaris* Schirad	Water melon	02	50	0.07	3.5	Hypotensive, dilating blood capillaries.	1+1	Eaten (8 ,10)
85.	*Citrus limon* (L.) Burm	Lime	04	50	0.13	6.5	Anti dandruff	2	Eaten (7 , 13)
86.	*Citrus sinensis* L.	Sweet orange	02	50	0.07	3.5	Anti rheumatic, antidiarrheal	1+1	Eaten (6, 11)
87.	*Clematis recta* L.	Clematis	15	53	1.00	53.0	Antisyphilitic, eye diseases*	8+8	Int. (4, 7)
88.	*Clitoria ternatea* L.	Clitoris	01	100	0.03	3.0	Purgative, used for snake bites	1+1	Int. or Ext.(7)
89.	*Colchicum autumnale* L.	Meadow crocus	03	33	0.10	3.3	For gout*	1	Ext. (5, 9)
90.	*Conium maculatum* L.	Hemlock	02	50	0.07	3.5	Acting on the tetanus, paralysis tremors*	1+1	Int. (6, 9)
91.	*Convolvusus arvensis* L.	Blind weed	02	50	0.07	3.5	Cholagogue, wound healing	1+1	Int. or Ext.(8)
92.	*Convolvusus scammonia* L.	Smaller blind weed	01	100	0.03	3.0	Cholagogue, wound healing	1+1	Int. or Ext.(6)
93.	*Convolvuus sepium* L.	Smaller blind weed	02	50	0.07	3.5	Cholagogue, wound healing	1+1	Int. or Ext(4)
94.	*Corchorus olitorus* L.	Jew's mallow	02	50	0.07	3.5	Demulcent, cardiac tonic	1+1	Eaten (3, 5)
95.	*Coriandrum sativum* L.	Coriander	15	53	1.00	53.0	Aphrodisiac, stomachic	8+8	Eaten (4, 8)
96.	*Coronilla scorpiodes* L.	Coronilla	02	50	0.07	3.5	Purgative, cardiac tonic	1+1	Eaten (4, 8)
97.	*Corylus avellana* L.	Hazel nut	03	67	0.10	6.7	Stimulates circulation and bile secretion	2+2	Eaten (6, 8)
98.	*Crataegus azarolus* L.	Hawthorn	02	50	0.07	3.5	Hypotensive, sedative	1+1	Eaten (6, 9)
99.	*Crocus sativus* L.	Saffron	04	75	0.13	9.8	Aphrodisiac	3	Eaten (3, 8)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
100.	*Cucumis melo* L.	Sweet melon	02	100	0.07	7.0	Diuretic, anthelimintic	2+2	Eaten (3, 11)
101.	*Cucumis sativa* L.	Cucumber	01	100	0.03	3.0	Diuretic, anthelimintic	1+1	Eaten (4,12)
102.	*Cucurbita pepo* L.	Pumpkin	08	63	0.27	17.0	Diuretic, anthelimintic	5+5	Eaten (5, 7)
103.	*Cucurbita maxima* Duch.	Winter squash	15	53	1.00	53.0	Diuretic, anthelimintic	8+8	Eaten (5, 9)
104.	*Cuminum cyminum* L.	Cuminum	13	54	0.43	23.2	Lactagogue, dyspepsia	7+7	Eaten (4, 7)
105.	*Cupressus sempervirens* L.	Cypress	02	50	0.07	3.5	Anthelmintic, whooping cough treatment	1+1	Int. (6, 9)
106.	*Cydonia vulgaris* Pers	Cydonium	09	67	0.30	20.1	Antidysenteric, hair fixative	6+6	Int. (3, 8)
107.	*Cynodon dactylon* (L.) Pers.	Bermuda grass	02	50	0.07	3.5	Urinary disorders, healing wounds	1+1	Eaten (4, 8)
108.	*Cyperus longus* L.	Adrupe	02	50	0.07	3.5	Diaphoretic, gastric and intestinal ulceration	1+1	Int. (6, 9)
109.	*Dalbergia sissoo* Roxb.	Sissoo	02	50	0.07	3.5	Useful in gonorrhoea	1	Int.(12, 13)
110.	*Daphne linearifolium* L.	Spurge laurel	03	67	0.10	6.7	For skin diseases (warts)*	2	Ext. (5, 9)
111.	*Datura stramonium* L.	Thorn apple	05	60	0.17	10.2	For asthma , neuralgic pain*	3+3	Int. (5, 8)
112	*Daucus carota* L.	Wild carrot	08	63	0.27	17.0	Aphrodisiac, kidney disorders	5+5	Int. (7, 11)
113	*Desmostachya bipinnata* (L.) Stapf.	Hulpa grass	06	67	0.20	13.4	In amenorrhoea and kidney diseases	4+4	Int. (4, 6)
114	*Dianthus caryophyllus* L.	Colve pink	02	50	0.07	3.5	Narcotic, diaphoretic	1+1	Int. (12, 13)
115	*Digitalis purpurea* L.	Fox glove	19	58	1.00	58.0	Cardiac tonic*	11	Int. (5, 8)
116	*Dolichos lablab* L.	Lablab bean	10	30	0.33	9.9	Aphrodisiac, antispasmodic	3+3	Int. (5, 9)
117	*Ecballium elaterium* (L.) A.Rich.	cucumber	29	59	1.00	59.0	For fluid retention, for jaundice*	17+17	Ext. (4, 8)
118	*Echinochloa crus-galli* (L.) P.Beauv.	Cock spur grass	15	73	1.00	73.0	Styptic, for spleen disorders	11+11	Int. (6, 8)
119	*Echinops ritro* L.	Globe thishle	02	50	0.07	3.5	Neurotonic, antispasmodic	1+1	Int. (3, 9)
120	*Echium italicum* L.	Blue weed	14	36	0.47	16.9	For snake bites, aphrodisiac	5+5	Ext. (4, 8)
121	*Elettaria cardamomum* Maton	Lesser Cardamom	07	43	0.23	9.9	Flatulence, liver disorders	3+3	Int. (5, 9)
122	*Ephedra alte* C.A. Mey	Ephedra, joint pine	28	25	1.00	25.0	Asthma, bronchodilator	7+7	Int. (4, 9)
123	*Ephedra campylopoda* C.A.Mey	Ephedra, joint pine	12	50	0.40	20.0	Asthma, bronchodilator	6+6	Int. (3, 11)
124	*Ephedra peduncularis* Boiss.	Ephedra, joint pine	19	42	1.00	42.0	Asthma, bronchodilator	8+8	Int. (5, 8)
125	*Ephedra transitoria* Riedl.	Ephedra	18	67	1.00	67.0	Asthma, bronchodilator	12+12	Int. (2, 7)
126	*Equisetum ramossisimum* L.	Horse tail	05	40	0.17	6.8	Stops bleeding	2+2	Int.ort Ext.(7)
127	*Erigeron canadensis* L.	Erigeron	02	50	0.07	3.5	In menstruation disturbances	1	Ext.(8 , 9)
128	*Erodium cicutarium* (L.) L'Herit.	Pine weed, storksbill	01	100	0.03	3.0	Stops bleeding and uterine haemorrhage	1+1	Int. (7)
129	*Erynigium creticum* Lam.	Snake root	07	29	0.23	6.7	In renal stones and skin diseases	2+2	Eaten (6, 10)
130	*Erynigium repanium* L.	Erysimum	06	33	0.20	6.6	Antiscorbutic	2	Eaten (6, 9)
131	*Eucalyptus bicolor* (A.) Cunn.	Eucalyptus	26	62	1.00	62.0	Anti-inflamatory for upper respiratory tract	16	Ext.(7, 9)
132	*Eupatorium cannabinum* L.	Water hemp	16	38	1.00	38.0	Narcotic, in liver and spleen disorders	6+6	Int. (6, 9)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
133	*Euphorbia helioscopia* L.	Wolf's milk, surge	04	25	0.13	3.3	For arthritis, anthelmintic*	1+1	Int. (7, 9)
134	*Euphorbia pilulifera* L.	Wolf's milk, surge	05	20	0.17	3.4	For arthritis, anthelmintic*	1+1	Int. (5, 9)
135	*Euphorbia tinctoria* Boiss.	Spurge	04	50	0.13	6.5	For arthritis, anthelmintic*	2+2	Int. (1, 2)
136	*Ficus carica* L.	Fig tree	03	33	0.10	3.3	Useful in measles	1	Eaten (5,6)
137	*Ficus religiosa* L.	The peepal	04	50	0.13	6.5	Latex removes warts	2	Eaten (7, 8)
138	*Foeniculum vulgare* (L.) Mill	Fennel	15	53	1.00	53.0	Antitussive, bronchodilator, lactagogue	8+8	Syrup (3, 4)
139	*Fragaria vesca* L.	Strawberry	03	33	0.10	3.3	Useful in gastric and hepatic disorders	1+1	Eaten (1,12)
140	*Fraxinus syriaca* Boiss.	Anna ash	16	31	1.00	31.0	For arthritis and rheumatism	5+5	Int. (2,13)
141	*Fumaria officinalis* L.	Fumitory	04	25	0.13	3.3	Diaphoretic, eczema	1+1	Int. (4, 10)
142	*Fumaria parviflora* Lam.	Fumitory	02	50	0.07	3.5	Blood purifier, eczema	1+1	Int. (5 , 9)
143	*Galium aparine L.*	Cliver	05	60	0.17	10.2	Used for renal stones and calculi	3+3	Int. (6, 11)
144	*Galium verum* L.	Bed straw	06	50	0.20	10.0	Used for renal stones and calculi	3+3	Int. (6, 11)
145	*Geranium robertianum* L.	Cranesbill root	02	50	0.07	3.5	Useful in renal diseases	1	Int. (7, 13)
146	*Glaucium conniculatum* (L.) Curt.	Horned poppy	19	58	1.00	58.0	Bronchodilator and antitussive*	11+11	Ext.or Int.(8)
147	*Glycyrrhiza glabra* L.	Liquorice	19	58	1.00	58.0	Useful for peptic ulcers, diuretic	11+11	Int. (9, 11)
148	*Gossypium luteo-album* L.	Cud weed	02	50	0.07	3.5	Diaphoretic, vulnerary	1+1	Ext. (4, 5)
149	*Gossypium herbaceum* L.	Cotton plant	01	100	0.03	3.0	Emollient in liniments and hand creams	1+1	Ext. (6, 8)
150	*Gossypium hirsutum* L.	Cotton	04	75	0.13	9.8	Emollient in liniments and hand creams	3+3	Ext. (7, 10)
151	*Hedera helix* L.	Ivy	13	54	0.43	23.2	Antirheumatic, emmenagogue*	7+7	Ext. (5, 12)
152	*Helianthus annuus* L.	Sun flower	15	47	1.00	47.0	Expectorant, antitussive	7+7	Int. (6, 9)
153	*Helianthus tuberosus* L.	Jerusalem artichoke	15	60	1.00	60.0	Useful in diabetes, antirheumatic	9+9	Int. (2, 7)
154	*Heliotropium europaum* L.	Turnsole	01	100	0.03	3.0	Cholagogue, throat diseases	1+1	Int. (6, 9)
155	*Heliotropium undulatum* Vahl	Turnsole	02	50	0.07	3.5	Cholagogue, throat diseases	1+1	Int. (5, 7)
156	*Herniaria hirsuta* L	Herinaria	01	100	0.03	3.0	Bronchodilator, for bladder disorders	1+1	Int. (3, 9)
157	*Hibiscus esculentus* L.	Burst wort	02	50	0.07	3.5	Antisyphilitic	1	Intor Ext (5)
158	*Hibiscus rosa-sinensis* L.	Red mallow	07	43	0.23	9.9	Analgesic, for gonorrhoea	3+3	Int. (2, 7)
159	*Hordeum sativum* Pers.	Barley	02	50	0.07	3.5	Diuretic (in beer brewing)	1	Syrup (4, 8)
160	*Hordeum vulgare* L.	Barley	01	100	0.03	3.0	Diuretic (in beer brewing)	1	Syrup (6, 8)
161	*Humulus lupulus* L.	Hop	08	25	0.27	6.8	Aphrodisiac, for gonorrhoea	2+2	Int.(6, 9)
162	*Hyoscyamus albus* L.	White henbane	16	63	1.00	63.0	Narcotic, hypnotic*.	10+10	Int. (9, 12)
163	*Hyoscyamus aureus* L.	Hanbane	19	58	1.00	58.0	Narcotic, hypnotic*.	11+11	Int (6, 9)
164	*Hyoscyamus reticulatus* L.	Hanbane	13	54	0.43	23.2	For travel sickness, narcotic, hypnotic*	7+7+7	Int. (6, 9)
165	*Hypericum triuetrifolium* L.	St.John's wort	06	50	0.20	10.0	Antispasmodic, for intestine disorders*	3+3	Int. (7, 12)
166	*Ilex aquifolium* L.	Holly tree	01	100	0.03	3.0	For influenza , antirheumatic*	1+1	Int. (5, 9)
167	*Inula viscosa* (L.) Ait.	Inula	30	67	1.00	67.0	Anthelmintic, for lung disorders	20+20	Int. (4, 8)
168	*Iris germanica* L.	German iris	02	50	0.07	3.5	Expectorant, for teething infants.	1+1	Ext. (6, 9)
169	*Iris petrana* L.	Iris, orris	01	100	0.03	3.0	Expectorant, for teething infants.	1+1	Ext. (2, 8)
170	*Jasminum officinale* L.	White Jasmine	02	50	0.07	3.5	For ophthalmic diseases	1	Ext. (5, 7)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
171	*Jasminum sambas* Ait	Arabian Jasmine	01	100	0.03	3.0	For ophthalmic diseases	1	Ext. (5, 9)
172	*Juglans regia* L.	Walnut	07	71	0.23	16.3	For syphilis, nerve tonic	5+5	Ext. (6, 7)
173	*Juniperus oxycdrus* L.	Red Juniper	02	50	0.07	3.5	For rheumatism and skin diseases (eczema)	1+1	Ext. (4, 7)
174	*Juniperus phoenicea* L.	Common Juniper	05	60	0.17	10.2	For rheumatism and skin diseases (eczema)	3+3	Ext. (6, 10)
175	*Lactuca sativa* L.	Lettuce	08	25	0.27	6.8	In typhoid fever, hypnotic	2+2	Eaten (1, 6)
176	*Lactuca virosa* L.	Great lettuce	09	33	0.30	9.9	Narcotic *	3	ExtorInt.(6,9)
177	*Lagerstroemia indicum* L.	Crape myrtle	11	27	0.37	10.0	Narcotic *	3	Ext.orInt(3,8)
178	*Lallemantia iberica* (M.B)Fish	Hemp nettle	15	33	1.00	33.0	For heart attack.	5	Int.(11,13)
179	*Lamium amplexicaule* L.	Henbit	11	56	0.37	20.7	Stops bleeding of pulmonary and uterine origin	6+6	Int.(12, 13)
180	*Lantana Camara* L.	Lantana	16	44	1.00	44.0	For dermatological diseases and itching*	7+7	Ext. (10,12)
181	*Laurus nobilis* L.	Laurel, Kafur	19	53	1.00	53.0	Antirheumatic, antiscabies.	10+10	Int. (6, 8)
182	*Lavandula officinalis* L.	Lavender	24	63	1.00	63.0	For gall bladder treatrment	15	Int. (7, 9)
183	*Lawsonia inermis* L.	Henna	28	43	1.00	43.0	In dermatology (leprosy and leucoderma)	12	Ext.(11, 13)
184	*Leontice leontopetalum* L.	Lion's foot	16	69	1.00	69.0	Antipileptic	11	Int.(2,8)
185	*Lepidium sativum* L.	Cress	12	67	0.40	26.8	Antiscorbutic	8	Ext. (1, 3)
186	*Lilium Candidum* L.	White lily	05	60	0.17	10.2	Antispasmodic	3	ExtorInt.(7,9)
187	*Linaria cymbalaria* Mill	Toadflax	02	50	0.07	3.5	For hepatic disorder	1	Int. (3, 7)
188	*Linum usitassimum* L.	Flax	04	50	0.13	6.5	For skin diseases*	2	Ext. (4, 5)
189	*Lippia nodiflora* (L.) Rich	Lippia	01	100	0.03	3.0	For gout pain	1	Ext. (5, 8)
190	*Lolium tomulentum* L.	Darnel, rey grass	13	54	0.43	23.2	For headache and meningitis	7+7	Int. (6, 10)
191	*Loranthus acaciae* Zucc.	Strap flower	07	71	0.23	16.3	For abscesses and tumours	5+5	Ext. (7 , 9)
192	*Luffa cylindrica* L.	Sponge luffa	05	40	0.17	6.8	Cathartic, emetic	2+2	Int. (8, 10)
193	*Lupinus luteus* L.	Lupinus	02	50	0.07	3.5	For skin ulcerations, diabetes*	1+1	ExtorInt.(5,6)
194	*Lupinus albus* L.	Lupinus	02	50	0.07	3.5	For skin ulcerations, diabetes*	1+1	ExtorInt.(7,9)
195	*Lycopus europaeus* L.	Water hore	11	55	0.37	20.4	Astringent	6	Int. (4, 8)
196	*Lythrum salicaria* L.	Red sally	06	67	0.20	13.4	Healing of haemorrhoides, &internal bleeding.	4+4	Int.orExt(6,8)
197	*Malva neglecta* Wallr.	Low mallow	11	55	0.37	20.4	Antitussive, emollient, for intestinal mucose.	6+6+6	IntorExt.(5,9)
198	*Malva sylvestris* L.	Blue mallow	10	40	0.33	13.2	Antitussive, emollient , for intestinal mucose.	4+4+4	IntorExt.(4,9)
199	*Mandragora officinarum* L.	Satan's apple	04	50	0.13	6.5	Ointments for external use, purgative*.	2+2	IntorExt.(6,8)
200	*Mangifera indica* L.	Mango tree	06	33	0.20	6.6	Useful in uterine haemorrhage, laxative.	2+2	Int.(7, 10)
201	*Marrubium vulgare* L.	White hore hound	09	33	0.30	9.9	Useful for cough and cold, antiseptic for throat.	3+3	IntorExt.(6,8)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
202	*Matricaria chamomilla* L.	German camomile	24	63	1.00	63.0	For intestinal colic, hypnotic	15+15	Int. (6, 9)
203	*Medicago sativa* L.	Medick	12	58	0.40	23.2	Antiscorbutic, general tonic.	7+7	IntorExt.(6,9)
204	*Melia azedarach* L.	Bead tree	02	50	0.07	3.5	Anthelimintic, relieves cold headache*.	1+1	Int. (7, 8)
205	*Melilotus albus* Med.	White melilot	02	50	0.07	3.5	Anticoagulent in thrombosis	1	Int. (11, 12)
206	*Mentha longifolia* L.	Horse mint	03	67	0.10	6.7	Relieves spasms and flatulence.	2+2	Int. (4, 10)
207	*Mentha piperita* L.	Mint	02	50	0.07	3.5	Relieves spasms and flatulence.	1+1	Int. (5, 7)
208	*Mentha spicata* L.	Mint	02	50	0.07	3.5	Relieves spasms and flatulence.	1+1	Int. (3, 11)
209	*Mirabilis jalapa* L.	Four o'clock plant	05	60	0.17	10.2	Useful in epilepsy and chronic bronchitis.	3+3	Int. (1, 11)
210	*Mours albus* L.	White mulberry	07	43	0.23	9.9	Refrigerant for inflammation of throat	3	Ext. (2, 8)
211	*Morus nigra* L.	Black mulberry	11	56	0.37	20.7	Hypoglycemic, laxative	6+6	Int.(7,12)
212	*Musa paradisiaca* L.	Banana	05	40	0.17	6.8	Anthelimintic, unripe fruit used in diabetes	2+2	Int. (4,13)
213	*Myrtus communis* L.	Myrtle	02	50	0.07	3.5	Useful in epilepsy and chronic bronchitis	1+1	IntorExt.(8,9)
214	*Narcissus pseudo-narcissus* L.	Daffodil, Narcissus	02	100	0.07	7.0	Antispasmodic*	2	Int.(3, 8)
215	*Nasturtium officinale* R.Br	Water cress	01	100	0.03	3.0	Expectorant	1	IntorExt.(6,9)
216	*Nerium oleander* L.	Oleander	02	50	0.07	3.5	Cardiac tonic*	1	Int.(3, 8)
217	*Nicotiana tabacum* L.	Tobacco	01	100	0.03	3.0	Hypertensive*	1	Int. (7, 12)
218	*Nigella sativa* L.	Nigella	08	25	0.27	6.8	Relieves flatulence, increases milk secretion	2+2	Int. (6, 9)
219	*Ocimum basilicum* L.	Sweet basil	09	33	0.30	9.9	For cough, gonorrhoea	3+3	Int. (4, 9)
220	*Olea europea* L.	Olive tree	10	10	0.33	3.3	Antiseptic, laxative	1+1	Int.(6, 9)
221	*Ononis spinosa* L.	Gammock, resthorrow	02	50	0.07	3.5	Useful for renal disorders and skin diseases	1+1	IntorExt.(7,9)
222	*Onopordum acanthium* L.	Scotch thistle	02	50	0.07	3.5	Antipyretic, for gastric disorders.	1+1	Int. (2,12)
223	*Opuntia ficus-indica* L.	Barbary	07	43	0.23	9.9	Emollient	3	IntorExt.(4,9)
224	*Orchis miliataris* L.	Jersey orchid	02	50	0.07	3.5	Aphrodisiac for gastroentiritis.*	1	Int.(11,13)
225	*Orchis latifolia* L.	Soldier orchid	02	50	0.07	3.5	General tonic*	1	Int.(4,9)
226	*Origanum vulgare* L.	Organy	12	33	0.40	13.2	Expectorant and antispasmodic	4+4	Int.(5,9)
227	*Ornithogalum umbellatum* L.	White field onion	02	50	0.07	3.5	For gout and cardiac troubles*	1+1	IntorExt.(3,8)
228	*Oryza sativa* L.	Rice	02	50	0.07	3.5	For intestinal inflammation	1	Int.(7, 9)
229	*Oxalis corniculata* L.	Indian sorrel	06	33	0.20	6.6	For urinary inflammations and treating burns.	2+2	IntorExt.(5,8)
230	*Papaver rhoeas* L.	Poppy	02	50	0.07	3.5	Antidysenteric, antispasmodic	1+1	Int. (3, 6)
231	*Papaver somniferum* L.	Opium	02	50	0.07	3.5	Antidysenteric, antispasmodic	1+1	Int.(5, 12)
232	*Passiflora incrnata* L.	Passion flower	01	100	0.03	3.0	Purgative	1	Int.(12,13)
233	*Peganum harmala* L.	Wild rue	13	31	0.43	13.3	Astringent, febrifuge	4+4	Int.(11,13)
234	*Periploca graeca* L.	Silk Vine	12	50	0.40	20.0	Laxative, sedative	6+6	Int.(10,13)
235	*Petroselinum sativum* Hoffm.	Parsely	13	62	0.43	26.7	For intestinal colic	8	Eaten (7, 8)
236	*Phaseolus vuglaris* L.	Bean, Kindney	02	50	0.07	3.5	Anthelmintic	1	Eaten (3,7)
237	*Phoenix dactylifera* L.	Date plam	08	13	0.27	3.5	Laxative, diuretic	1+1	Eaten (3,7)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
238	*Pinus halepensis* Miller.	Aleppo pine	09	22	0.30	6.6	Astringet, Antidysenteric.	2+2	Eaten (4,12)
239	*Pistacia lentiscus,* L.	Mastic, lentisk	03	67	0.10	6.7	Astringent.	2	Eaten(12,13)
240	*Plantago major* L.	Plantain	18	61	1.00	61.0	Anti-inflammatory	11	Int. (6, 8)
241	*Plantago ovata* Forssk.	Rib grass	12	83	0.40	33.2	Anti-inflammatory	10	Int. (3, 8)
242	*Plantago Lanceoloata* L.	Ispaghula	14	50	0.47	23.5	Antitussive, for biliary stones.	7+7	Int. (5, 7)
243	*Plantago Psyllium* L.	Flea seed	12	33	0.40	13.2	For rheumatism and haemorroids*.	4+4	Int. (1, 4)
244	*Plantanus orientalis* L.	Oriental plane tree	11	27	0.37	10.0	Soothing inflamed eye and sour throat.	3+3	Ext. (2, 8)
245	*Polygonum Persicaria* L.	Peachwort	20	60	1.00	60.0	For treating gastric disturbances	12	Int. (4, 6)
246	*Populus alba* L.	Abbey, poplar	17	65	1.00	65.0	Stops bleeding, antidysenteric	11	Int. (7, 13)
247	*Portulaca oleraceae* L.	Purslane	02	50	0.07	3.5	For urinary inflammations and treating burns.	1+1	Int.orExt(3,5)
248	*Potentilla reptans* L.	Five leaf grass	04	25	0.13	3.3	Antidysenteric, antispasmodic	1+1	IntorExt.(4,7)
249	*Prosopis farcta* (B&S) Eig	Locust pods	09	33	0.30	9.9	Antidysenteric, antispasmodic	3+3	Int.(4, 11)
250	*Prunus armeniaca L.*	Apricot	04	50	0.13	6.5	Purgative	2	Eaten(11,12)
251	*Prunus domestica* L.	Plum	06	33	0.20	6.6	Astringent, febrifuge	2+2	Eaten(11,13)
252	*Prunus persica* (L.) Stock	Peach	08	38	0.27	10.3	Laxative, sedative	3+3	Eaten (5, 8)
253	*Pulicaria dysenterica* L.	Flea bane	01	100	0.03	3.0	For intestinal colic	1	Int. (3, 9)
254	*Punica granatum* L.	Pomegrant	15	07	1.00	7.0	Anthelmintic	1	Eaten(10,12)
255	*Pyrus communis* L.	Pear	09	22	0.30	6.6	Laxative, diuretic	2+2	Eaten(11,13)
256	*Pyrus malus* L.	Apple tree	09	22	0.30	6.6	Astringet, Antidysenteric.	2+2	Eaten(11,12)
257	*Quercus infectoria* Oliv.	Nutgall	03	33	0.10	3.3	Astringent.	1	Int.(10,12)
258	*Quercus aegilops* L.	Oak	09	33	0.30	9.9	Anti-inflammatory	3	Int.(11, 13)
259	*Quercus coccifera* L.	Oak	06	33	0.20	6.6	Anti-inflammatory	2	Int. (9, 12)
260	*Raphanus Sativus* L.	Radish	12	25	0.40	10.0	Antitussive, for biliary stones.	3+3	Eaten (7,12)
261	*Ranunculus arvensis* L.	Buttercup	02	50	0.07	3.5	For rheumatism and haemorroids*.	1+1	Int.(1,8)
262	*Retama reatam* (Frossk) Webb.	Ratame	06	33	0.20	6.6	Soothing inflamed eye and sour throat.	2+2	Ext. (2, 6)
263	*Rheum ribes* L.	Fruited rhubar	14	36	0.47	16.9	For treating gastric disturbances	5	Int.(4, 7)
264	*Rosa centifolia* L.	Pale rose	01	100	0.03	3.0	Antiseptic for wounds and burns	1+1	IntorExt.(5,8)
265	*Rosmarinus officinalis* L.	Rosemary	27	74	1.00	74.0	Antispasmodic , antiepileptic	20+20	Int.(4, 11)
266	*Rubia tinctorum* L.	Robbia	13	77	0.43	33.1	Amenorhoea	10	Int.(6, 7)
267	*Rumex dentatus* L.	Sour douk	17	18	1.00	18.0	Purgative, stimulates secretion	3+3	Int.(5, 11)
268	*Rumex vesicarius* L.	Soprrel	16	25	1.00	25.0	Purgative, stimulates secretion	4+4	Int.(6,12)
269	*Ruta chalepensis* L.	Rue	25	56	1.00	56.0	Antispasmodic , antiepileptic	14+14	IntorExt.(6,9)
270	*Salix alba* L.	White willow	24	54	1.00	54.0	For arthritis and rheumatic pain	13 +13	Int.(10,12)
271	*Salix babylonica* L.	Chinese willow	26	54	1.00	54.0	For arthritis and rheumatic pain	14+14	Int.(11,13)
272	*Salix fragilis* L.	Crack willow	20	55	1.00	55.0	For arthritis and rheumatic pain	11+11	Int.(4,12)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
273	*Salvia officinalis* L.	White sage	28	57	1.00	57.0	Antiseptic, anti- inflammatory	16+16	Syrup (6,8)
274	*Salvia triloba* L.	Sage, Clary	28	64	1.00	64.0	Sedative, for wounds healing	18+18	Syrup (5,11)
275	*Sambucus nigra* L.	Black elder	07	57	0.23	13.1	For rheumatism	4+4	Eaten (5, 8)
276	*Sarcopoterium spinosa* (L.) Spach.	Thorny burnet	21	71	1.00	71.0	Useful in renal calculi, antidiabetic	15+15	Int.(7, 13)
277	*Schinus molle* L.	American pepper	05	60	0.17	10.2	Expectorant, emmenagogue	3+3	Int (6, 12)
278	*Scilla autumnalis* L.	Hyacinth	02	50	0.07	3.5	Cardiac stimulant*	1	Int. (2, 9)
279	*Senecio vulgaris* L.	Ragwort	02	50	0.07	3.5	Stops bleeding*	1	Int. (7, 11)
280	*Sesamum indicum* L.	Sesame	02	50	0.07	3.5	Emollient	1	IntorExt(4,9)
281	*Silybum marianum* (L.) Gaertn.	Milk thistle	01	100	0.03	3.0	Antispasmodic	1	Eaten (4 , 9)
282	*Sisymbrium officinale* L.	Bank cress	09	33	0.30	9.9	Antitussive, cardiac tonic	3+3	Int.(5, 12)
283	*Spartium junceum* L.	Spanish broom	04	75	0.13	9.8	For bludder and kindney inflammations	3+3	Int. (4, 8)
284	*Smilax aspera* L.	Smilax	02	50	0.07	3.5	Aphrodisiac, tonic	1+1	Eaten (7,11)
285	*Solanum nigrum* L.	Black night shade	10	10	0.33	3.3	Antispasmodic, antirheumatic*	1+1	Int.(5,12)
286	*Spergularia rubra* J .et. Prestl.	Tissa, sand spurry	01	100	0.03	3.0	Antiseptic	1	Int.(6,13)
287	*Spinacia oleracea* L.	Spinach	04	50	0.13	6.5	Laxative, useful in anemia	2+2	Eaten(8,12)
288	*Sorbus aucuparia* L.	White beam, rowam	02	50	0.07	3.5	Leucorrhoea, emmenagogue	1+1	Int.(8,13)
289	*Stachys lavandulaefolia* Vahl	Woundwort	01	100	0.03	3.0	Astrigent for gastric disturbances	1	Int.(9,13)
290	*Stellaria media* L.	Starweed	02	50	0.07	3.5	For renal troubles and skin disease	1+1	Int.(10,13)
291	*Styrax officinale* L.	Storax	14	64	0.47	30.1	Expectorant for diptheria, leucorrhoea	9+9	Int.(3,8)
292	*Tagetes patula* L.	African marigold	02	50	0.07	3.5	Stops bleeding from stomach and intestine	1+1	Int.(4, 7)
293	*Taraxacum cyprium* H.Lindb	Taraxacum	06	67	0.20	13.4	Stimulates bile secretion	4	Int.(5,11)
294	*Teucrium polium* L.	Cat thyme	14	21	0.47	9.9	Anti-inflammatory for stomach and intestine	3+3	Int.(6, 11)
295	*Thuja occidentalis* L.	Cedar	02	50	0.07	3.5	Sudorific, uterine stimulant	1+1	Int. (10,11)
296	*Thymus capitatus* (L.) Hof.	Thyme	12	33	0.40	13.2	Antispasmodic, antitussive	4+4	Syrup(4,7)
297	*Thymus serphllum* L.	Thyme	23	30	1.00	30.0	Antispasmodic, antitussive	7+7	Syrup(7, 11)
298	*Tribulus terrestris* L.	Burra, gookerou	01	100	0.03	3.0	Aphrodisiac	1	Int.(5, 8)
299	*Trifolium arvense* L.	Rabbit foot, clover	02	50	0.07	3.5	Used for rheumatism and gout	1+1	Int.orExt(7,9)
300	*Trigonella foenum- graceum* L.	Fenugreek seed	12	33	0.40	13.2	For boils and abcesses	4+4	Int. (4, 9)
301	*Ulmus campestris* L.	Common elm	02	50	0.07	3.5	Useful in skin diseaeses (eczema), arthritis and rheumatism	1+1+1	IntorExt.(2,3)
302	*Urginea martitma* Barker	Squil white	01	100	0.03	3.0	Cardiotonic*	1	Int. (8, 11)
303	*Urtica urens* L.	Large nettle	06	50	0.20	10.0	Stypitc, useful against reheumatism	3+3	Eaten (6, 8)

Table-1: Continued

Plant no.	Plant species	Common name	I_u	FL	RPL	ROP	Major therapeutic effects	I_P	Adminst ,dur. of intake,& reco .place
304	*Urtica pilulifera* L.	Roman nettle	02	50	0.07	3.5	Stypitc, useful against reheumatism	1+1	Eaten (4, 8)
305	*Verbascum sinuatum* L.	Mullein	01	100	0.03	3.0	Used for neuralgic pain and bronchitis.	1+1	Int. (6, 8)
306	*Verbena officinalis* L.	Hors whip	13	31	0.43	13.3	For menstrual flow and milk secretion	4+4	Int. (5, 8)
307	*Vinca officinalis* L.	Periwinkle	12	58	0.40	23.2	Exhibits anti-cancer properties.	7	Int. (3, 9)
308	*Vinca resea* L.	Herbaceous periwinkle	11	64	0.37	23.7	Beneficial for cardio vascular system.	7	Int. (5, 12)
309	*Viola odorata* L.	Sweet violet	06	67	0.20	13.4	Stimulates glandular secretion	4	Int. (6, 8)
310	*Viola tricolor* L.	Wild pansy	08	50	0.27	13.5	Sudorific for catarrh and rheumatism	4+4	Int. (8, 9)
311	*Viscum crucatum* Sieb et Boiss	Mistletoe	12	25	0.40	10.0	Tumour inhibition, antihypertensive.	3+3	Int. (4, 8)
312	*Vitex angus-castus* L.	Chaste tree	14	57	0.47	26.8	For eye diseases	8	Ext.(7, 12)
313	*Withania samnifera* (L.) Dunel	Winter chirry	23	70	1.00	70.0	Useful for impotency, narcotic*	16+16	Int. (6, 8)
314	*Xanthium strumarium* L.	Clatobur	02	50	0.07	3.5	For small pox, useful in cancer	1+1	Int. or Ext(5,11)
315	*Zea mays* L.	Zea, corn	02	50	0.07	3.5	Hypoglycemic, for kidney and bladder	1+1	Int. (5, 8)

- FL: Fidelity level; ROP: Rank Order priority; RPL: Relative Popularity level.
- I_p: Number of informants for specific medicinal effect; I_u: Number of informants for any medicinal effect.
- Adminstr. : Administration; Dur. : Duration; Reco. : Record
- Ext.: External; Int.: Internal.
- *Toxic in large quantities

Table-2: List of verified highly ranked medicinal plants categorized into 9 groups with ROP values of 50 or more.

Group	Plant species	ROP	Medicinal uses
1	*Achillea santolina* L., *Achillea tomentosa* L. *Adiantum capillus* - veneris L. *Aloe vera* L. *Ammi visnaga* (L.)Lam. *Foeniculum vulgare* (L.)Mill. *Glaucium corniculatum* (L.)Curt. *Leontice leontopetalum* L. *Rosmarinus officinalis* L. *Ruta chalepensis* L. *Salvia trilob*a L. *Withania somnifera* (L.)Dunel.	69 68 67 63 50 53 58 69 74 56 64 70	Expectorant, Astringent, Muscular relaxant of uterus and arteries, Carminative, Antispasmodic, Antiepileptic, For impotency, and Antitussive.
2	*Aaronsohnia factorovsky*i Warb. Et Eig. *Lavandula officinalis* L *Matricaria chamomilla* L. *Polygonum persicaria* L. *Populus alba* L Sarcopoterium spinosa (L.)Spach.	71 63 63 60 65 71	Anilithic, for intestinal colic, For gastric disturbances, Antidysentric, and renal calculi
3	*Aesculus hippocastanum* L. *Anchusa italica* Retz. *Anchusa strigosa* Lab. *Citrullus colocynthis* (L.) Sch. *Hyoscyamus albus* L. *Hyoscyamus aureus* L. *Laurus nobilis* L.. *Salix alba* L. *Salix babylonica* L. *Salix fragilis* L.	63 78 68 69 63 58 53 54 54 55	Narcotic, Antipyretic, Anirheumatic, Diaphoretic, Cathartic, Hypnotic and Antiarthritis:
4	*Allium sativum* L. *Artemisia herba* – alba L. *Clematis recta* L. *Echinochloa crusgalli*(L)P.Beauv. *Plantago major* L. *Salvia officinalis*	53 67 53 73 61 57	Skin diseases, Antiscabies, Antiseptic, For pleurisy, Antisyphilitic, and For eye diseases
5	*Coriandrum sativum* L. *Digitalis purpurea* L.	53 58	Aphrodisiac, Diuretic and Cardiac tonic
6	*Helianthus tuberosus* L.	60	Hypoglycemic and Antidiabetic
7	*Ephedra transitoria* Riedl. *Eucalyptus bicolor* (A.) Cunn. *Inula viscosa* (L.) Ait.	67 62 67	Asthma, Bronchodilator, Anti-inflammatory for upper respiratory tract, Lactagogue, and For lung disorder
8	*Cucurbita maxima* Duch.	53	Anthelmintic
9	*Allium.cepa* L. *Artemisia arborescens* L. *Ecballium elaterium* (L.)A.Rich. *Glycyrrhiza glabra* L.	60 67 59 58	Emmenagogue, Stomachic, For fluid retention, jaundice, Spleen disorder, and Peptic ulcers