Original Research Paper

Ethnobotanical investigation of traditional medicinal plants commercialized in the markets of Mashhad, Iran

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Abstract

Objective: An ethnobotanical survey on the medicinal plant species marketed in Mashhad city, northeastern Iran, was conducted in order to document traditional medicinal knowledge and application of medicinal plants.

Materials and Methods: This study was undertaken between 2011 and 2012. The indigenous knowledge of traditional healers used for medicinal purposes were collected through questionnaire and personal interviews during field trips. Ethnobotanical data was arranged alphabetically by family name followed by botanical name, vernacular name, part used, folk use, and recipe. Correct identification was made with the help of the various Floras and different herbal literature at the Ferdowsi University of Mashhad Herbarium (FUMH).

Results: The present investigation reported medicinal information for about 269 species, belonging to 87 vascular plant families and one fungus family. The most important family was Lamiaceae with 26 species, followed by Asteraceae with 23, Fabaceae with 20, and Apiaceae with 19. Herbal medicine uses reported by herbalists was classified into 132 different uses which show significant results to treat a wide spectrum of human ailments. Plants sold at the market were mostly used for digestive system disorders, respiratory problems, urological troubles, nervous system disorders, skin problems, and gynecological ailments.

Conclusion: This survey showed that although people in study area have access to modern medical facilities, a lot of them still continue to depend on medicinal plants for the treatment of healthcare problems. The present paper represents significant ethnobotanical information on medical plants which provides baseline data for future pharmacological and phytochemical studies.

Keyword: Ethnobotany, Iran, Market, Mashhad, Medicinal Plants

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Introduction

The usage of medicinal plants presents a very important aspect of the traditional medicine which is imbedded in the culture of people of developing countries (Kloucek et al., 2005). In many developing countries, medicinal plants have not been well studied, tested, or documented. Most of the information is still in the hands of traditional healers and knowledge of healers is either lost or passed to next generation by the word of mouth (Yirga, 2010). The extent of the knowledge of traditional medicine practice based on medicinal plants should be documented through botanical surveys. Botanical collection and documentation of the associated ethno-botanical knowledge should be carried out before such rich heritages are lost due to various anthropogenic and other natural causes (Martin, 1995).

Traditional herbal medicine has played an important role in Iran. Iran has a very honorable past in traditional medicine, which goes back to the time of Babylonian-Assyrian civilization. One of the most significant ancient heritages is sophisticated experience of people who have tried over the millennia to discover useful plants for health improvement and each generation added their own experience to this tradition (Naghibi et al., 2005). Today, medicinal plants are still widely used in Iran. In all cities and villages, there are specific stores (named Attari), which traditional healers (Attar) give receipts and sell medicinal plants. People use medicinal plants as curatives or palliatives of main health problems according to their cultural background. The notable use and commercialization of medicinal plants to alleviate and cure health problems and ailments in all cities of the country, points out the importance of these natural resources in the folk medicine and culture of the Iranian people (Emami et al., 2012). Despite the vast knowledge of medicinal plants existed in Iran, a few attempts have been carried out to document ethno-botanical knowledge. Some researchers have investigating the traditional pharmacopoeia and medicinal plants in different areas of the country (Amin, 2006; Amiri, 2012; Emami et al., 2012; Ghorbani, 2005; Hooper and Field, 1937; Miraldi et al., 2001; Mosaddegh et al., 2012; Naghibi et al., 2005; Rajaei, 2012; Safa et al., 2013; Zargari, 1989-1992;).

The objective of this work was to elicit data on the traditional uses of medicinal plants marketed in Mashhad city and preserve it to be used by the next generations. In addition, the present paper provides baseline data for future pharmacological and phytochemical studies.

Materials and Methods

Study area

Mashhad is located in the northeast of Iran. It is the second largest city in Iran and one of the holiest cities in the world. Its approximate geographic location is 35°43' to 37°8' north latitude and 59°15' to 60°36' east longitude, in the valley of the Khashaf River near Turkmenistan, between the two mountain ranges of Binalood and Hezar-masjed. It is located in the center of the Razavi Khorasan Province close to the borders of Afghanistan and Turkmenistan. The total area of the Mashhad is 270 km² and the population of the city is about 3 million people. There are also over 20 million pilgrims who visit the city every year.

The vast majority of the Mashhad people are ethnic Persians who form over 95% of the city's population. Other ethnic groups include Kurdish and Turkmen people who have immigrated recently to the city from the North Khorasan province. Among the non-Iranians, there are small immigrants from Afghanistan, Iraq, and Pakistan.
Methods
In order to gather information on medicinal species that were found in the markets of Mashhad, a survey was carried out during the years 2011-2012. Ethnobotanical interview was used as the basis for data gathering. A questionnaire was administered only to people who had knowledge of medicinal plants, through face to face interviews. Totally, more than 100 informants (Attar) with in the age of 37 to 82 were interviewed; these included males and females. Ethnobotanical information, including the various data such as name and age of informants, local names, purpose of usage, preparation procedure, and duration of the treatment were obtained through interviews and discussions. After collecting the specimens, we represented these specimens to different people to confirm the accuracy of the results. Subsequently, specimens of the reported medicinal plants were identified by specialist with the help of available Floras (Rechinger, 1963-2005; Assadi et al., 1988-2008) and consulting with different herbal literature (Amin, 1991; Hooper, 1937; Zargari, 1989-1992) at the Ferdowsi University of Mashhad Herbarium (FUMH). In this paper, scientific and author names of plant species were checked for accuracy according to the plant list (www.theplantlist.org).

Results
Markets have long been recognized as places that reflect regional trade and culture, and have been used to study the commercialization and utilization of natural products (Hooper and Field, 1937). During the present study, it was observed that 269 medicinal plant species distributed in 224 genera, belonging to 88 different families were sold in the markets of Mashhad which were used by the local inhabitants for curing various diseases. From the point of view of Taxonomy, plants that are being used for therapeutic purpose in this region belong to divisions of Pteridophyta (one species from Equisetaceae, Polypodiaceae, and Pteridaceae) and Spermatophyta with its two subdivisions: Coniferophyta (one species from Cupressaceae, Ephedraceae, and Pinaceae) and Magnoliophyta (with two classes Magnoliopsida and Liliopsida, including 81 families all together). Domination of Magnoliopsida has been very noticeable with its 69 families comprised of 232 species that are used in therapeutic purposes. Maximum number of medicinal plant species belongs to family Lamiaceae (26 species) followed by Asteraceae (23 species), Fabaceae (20 species), and Apiaceae (19 species). Class Liliopsida is represented by twelve families which the most important family was Zingiberaceae with 7 species, followed by Orchidaceae, Poaceae with 4 and Amaryllidaceae, Asparagaceae each with 3 species. The rest of the families are represented by one or two species only.

According to Table 1, Astragalus belonging to family Fabaceae was found to be the largest genus in the market samples in the research area. The most important species of Astragalus which produce katira is Astragalus gummifer Labill and this popular herbal drug can also be obtained from other species of this genus (i.e., Astragalus cerasocrena, Astragalus echidna, Astragalus floccosus, Astragalus eriosphaerus, Astragalus hypsogeton, Astragalus turkmenorum, and Astragalus verus). The plants used for medicinal purposes in the various markets of Mashhad are arranged in alphabetical order of their family and botanical names, with the relevant information (Table 1).
Table 1. Medicinal plants used by the traditional healers for the treatment of various ailments in the markets of Mashhad, Iran.

| NO | Family       | Scientific name       | Local name  | Part used | Status | Medicinal uses                                      |
|----|--------------|-----------------------|-------------|-----------|--------|----------------------------------------------------|
| 1  | Acoraceae    | Acorus calamus L.     | Agir Torki  | Root      | Im     | Treatment of Urinary Incontinence, Diuretic, Carminative, Stimulant, Hematinic |
| 2  | Amaranthaceae| Amaranthus caudatus L. | Taj Khorus  | Aerial parts | In     | Disinfectant Treatment of Enteritis, Febrifuge, Antitussive, Anti-diarrhea, Laxative, |
| 3  | Amaranthaceae| Dysphania botrys (L.)  | Dermaneh Torki | Aerial parts | In     | Diabetes, Treatment of Sinusitis, Respiratory disorders, Anthelmintic, Antacid, Anti-diarrhea, Carminative, Urinary Antiseptic |
| 4  | Amaryllidaceae| Allium altissimum Regel | Musir  | Bulb      | In     | Anti-septic, Appetizer, Digestive |
| 5  | Amaryllidaceae| Allium cepa L.      | Piaz        | Seed       | In     | Treatment of Trichoptlosis |
| 6  | Amaryllidaceae| Allium sativum L.    | Sir         | Bulb       | In     | Hypoglycemic, Cardiac Diseases, Anti-septic, Toothache, Anti-hyperlipidemia, Anthelmintic, Anti-hypertensive |
| 7  | Anacardiaceae| Mangifera indica L.  | Anbeh       | Leaves     | Im     | Lung Cancer |
| 8  | Anacardiaceae| Pistacia atlantica Desf. ssp. kurdica | Saghez | Oleoresin | In     | Appetizer, Digestive, Antacid, |
| 9  | Anacardiaceae| Pistacia atlantica Desf. ssp. mutica | Baneh | Fruit | In     | Laxative, Tonic Stimulant, Treatment of Anaemia |
| 10 | Anacardiaceae| Pistacia lentiscus L. | Mastaki   | Gum        | Im     | Strengthening of Memory, Strengthening of Teeth Gum, Anti-haemorrhage, Flavoring |
| 11 | Anacardiaceae| Rhus coriaria L.      | Somagh     | Fruit      | Im     | Jaundice, Cholesterol Lowering, Anti-Dysmenorrhrea, Anti-diarrhea, Carminative, Anti-hemorrhage, Flavoring |
| 12 | Anacardiaceae| Semecarpus anacardium L. f. | Belador | Fruit | Im     | Tonic, Removal of Bad Foot's Odour |
| 13 | Apiaceae     | Anethum graveolens L. | Shevid    | Fruit      | In     | Abortion, Anti-Dysmenorrhrea, Galactogogue, Anti-hyperlipidemia, Carminative |
| 14 | Apiaceae     | Apium graveolens L.   | Karafs    | Fruit      | In     | Emmenagogue, Diuretic, Carminative |
| 15 | Apiaceae     | Bunium cylinricum (Boiss. & Hohen.) Drude | Zireh Siah | Fruit | In     | Carminative |
| 16 | Apiaceae     | Bunium persicum (Boiss.) B.Fedtsch. | Zireh Siah | Fruit | In     | Obesity, Galactogogue, Flavoring, Carminative, Calminative, Appetizer, Indigestion |
| 17 | Apiaceae     | Coriandrum sativum L. | Geshniz   | Fruit      | In     | Acne, Treatment of Flatulence, Appetizer, Aphrodisiac, Calminative, Jaundice, Anti-septic, Aromatic |
| 18 | Apiaceae     | Conium maculatum L.   | Shokaran   | Root       | In     | Cholagogue, Depilator, Treatment of Dermal Allergies |
| 19 | Apiaceae     | Cuminum cyminum L.    | Zireh Sabz (Keravieh) | Fruit | In     | Treatment of Colic, Galactogogue, Obesity, Digestive, Favoring, Anti-asetic |
| No. | Family     | Species                          | Plant Part | Use                                                                 |
|-----|------------|----------------------------------|------------|----------------------------------------------------------------------|
| 20  | Apiaceae   | *Daucus carota* L.               | Fruit      | In                      | Diuretic, Emmenagogue                                                 |
| 21  | Apiaceae   | *Dorema ammoniacum* D.Don        | Gum-Root   | In                      | Cystitis, Digestive, Treatment of Colic, Treatment of Furuncles, Expectorant, Anthelmintic, Emmenagogue, Anticoagulosis |
| 22  | Apiaceae   | *Falcaria vulgaris* Bernh.       | Leaves - Fruit | In                      | Treatment of Vitiligo, Cut, Wound                                    |
| 23  | Apiaceae   | *Foeniculum vulgare* Mill.       | Fruit      | In                      | Galactogogue, Digestive, Bronchitis, Appetizer, Antacid, Flatulence   |
| 24  | Apiaceae   | *Ferula foetida* (Bange) Regel   | Gum        | In                      | Anthelmintic, Treatment of Colic, Emmenagogue                        |
| 25  | Apiaceae   | *Ferula gummosa* Boiss.          | Gum-Root   | In                      | Anthelmintic Anticatarrhal, Antiallergic, Dyspepsia, Appetizer, Emmenagogue |
| 26  | Apiaceae   | *Heracleum persicum* Desf.       | Fruit      | In                      | Treatment of Hiccups, Appetizer, Flavouring, Carminative, Anthelmintic, Stomach Tonic |
| 27  | Apiaceae   | *Levisticum officinale* W.D.J.Koch | Angededane roomi | Fruit | Nerve Diseases, Heart Tonic, Indigestion |
| 28  | Apiaceae   | *Petroselinum crispum* (Mill.) Nyman ex A. W. Hill | Fruit | In | Emmenagogue, Diuretic, Carminative, Kidney Disorders |
| 29  | Apiaceae   | *Pimpinella anisum* L.           | Fruit      | In                      | Treatment of Flatulence, Anthelmintic, Treatment of Colic, Antacid, Stomachache, Antidiarrhea |
| 30  | Apiaceae   | *Trachyspermum ammi* (L.) Sprague | Fruit      | In                      | Carminative, Anthelmintic, Antidiarrhea, Treatment of Colic, Antacid, Galactogogue |
| 31  | Apiaceae   | *Zosima orientalis* Hoffm.       | Fruit      | In                      | Nerve Diseases, Indigestion                                          |
| 32  | Araliaceae | *Panax ginseng* C.A.Mey.         | Root       | In                      | Aphrodisiac, Nerve Tonic, Treatment of Dyspepsia                     |
| 33  | Arecaeae   | *Areca catechu* L.               | Seed       | In                      | Treatment of premature Ejaculation, Aphrodisiac, Tonic, Anti-hemorrhage, Antidiarrhea, Treatment of Postpartum Bleeding, Stomach Tonic |
| 34  | Arecaeae   | *Cocos nucifera* L.              | Fruit      | In                      | Tonic, Hair Tonic, Treatment of Anaemia                              |
| 35  | Aristolochiaceae | *Aristolochia rotunda* L. | Root       | In                      | Emmenagogue, Diuretic, Anti-Atherosclerosis, Tonic, Treatment of Rheumatism |
| 36  | Aristolochiaceae | *Asarum europaeum* L. | Root       | In                      | Tonic, Stimulant                                                      |
| 37  | Asparagaceae | *Aloe vera* (L.) Burm.f.          | Leaves - Latex | In                     | Obesity, Antihemorrhoids, Purgative, Antihistaminic, Treatment of burn |
| 38  | Asparagaceae | *Drimia maritima* (L.) Stearn   | Bulb       | In                      | Arthrodyinia, Emmenagogue, Hair Tonic                                |
| 39  | Asparagaceae | *Polygonatum orientale* Desf.    | Root       | In                      | Tonic, Diuretic, Nerve Tonic, Aphrodisiac                            |
| 40  | Asteraceae | *Achillea santolinoides subsp. wilhelmsii* (K.Koch) Gruter | Aerial parts | In                      | Antihemorrhoids, Antidiarrhea, Hypoglycemic, Anthelmintic, Mastitis, Antacid, Dyspepsia, Nerve Tonic, Treatment of Osteoarthritis, Treatment of Blood Flooding, Appetizer |
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| No. | Family   | Scientific Name                  | Part(s)          | Use(s)                                                                 |
|-----|----------|----------------------------------|------------------|----------------------------------------------------------------------|
| 41  | Asteraceae | *Anacyclus pyrethrum* (L.) Lag.   | Root             | Treatment of Sciatica, Treatment of Stuttering                      |
| 42  | Asteraceae | *Arctium lappa* L.               | Leaves - Root    | Duretic, Cholagogue, Depurative, Hypoglycemic,                       |
| 43  | Asteraceae | *Artemisia absinthium* L.         | Aerial parts     | Anthelminitic, Appetizer, Indigestion                               |
| 44  | Asteraceae | *Artemisia dracunculosa* L.       | Leaves           | Appetizer, Dyspepsia, Anthelminic, Antacid, Carminative              |
| 45  | Asteraceae | *Artemisia vulgaris* L.           | Baranjasef       | Nerve Tonic, Sexual Impotency, Menstral Regulator                    |
| 46  | Asteraceae | *Calendula officinalis* L.        | Hamishe Bahar    | Eczema, Treatment of Dermal Disorders, Sudorific, Blood cleanser    |
| 47  | Asteraceae | *Curhamus tinctorius* L.          | Flower - Seed    | Emmenagogue, Flavoring Luxative, Treatment of Rheumatism,           |
| 48  | Asteraceae | *Centauraea behen* L.            | Bahman Sefid     | Aphrodisiac, Anti-lithiasis                                         |
| 49  | Asteraceae | *Centauraea depressa* M.Bieb.     | Gole Gandom      | Digestive, Febrifuge, Cholagogue, Blood Cleanser, Antigout          |
| 50  | Asteraceae | *Cichorium intybus* L.           | Kasni            | Treatment of Palpitation, Appetizer, Depurative, Treatment of Furuncles, Jaundice, Febrifuge, Antiallergic |
| 51  | Asteraceae | *Cynara scolymus* L.             | Kangar Farangi   | Liver Tonic, Digestive, Jaundice, Hepatitis                         |
| 52  | Asteraceae | *Doronicum pardalianches* L.      | Daroanj Aghrabi  | Diuretic, Treatment of Snake and Scorpion bites, Nerve Tonic        |
| 53  | Asteraceae | *Echinops cephalotes* DC.         | Shekar Tighal    | Antitussive, Anti-asthmatic, Pharyngitis, Febrifuge                 |
| 54  | Asteraceae | *Gundelia tournefortii* L.        | Kangar Aerial parts | Liver Tonic Treatment of Hepatitis                                 |
| 55  | Asteraceae | *Helichrysum graveolens* (M.Bieb) Sweet | Afsantin Aerial parts | Anodyne, Anthelmintic, Appetizer, Nerve Tonic                      |
| 56  | Asteraceae | *Lactua sativa* L.               | Kahu Seed        | Anti-thirst, Hypnotic                                              |
| 57  | Asteraceae | *Matricaria chamomilla* L.        | Gole babooneh    | Eczema, Antitussive, Anticatarhal, Hair Tonic, Treatment of Colic, Menstral Pains |
| 58  | Asteraceae | *Silybum marianum* (L.) Gaertn.   | Khare Maryam     | Jaundice, Febrifuge, Antihepatitis, Liver Tonic                     |
| 59  | Asteraceae | *Tagetes erecta* L.              | Gol Jafari       | Febrifuge, Treatment of Cut                                        |
| 60  | Asteraceae | *Tanacetum parthenium* (L.) Sch. Bip. | Gole babooneh    | Antitussive, Anticatarhal, Hair Tonic, Treatment of Colic, Menstral Pains |
| 61  | Asteraceae | *Tripleurospermum disciforme* (C. A. Mey.) Sch.Bip. | Gole babooneh    | Treatment of Cough, Febrifuge                                      |
| 62  | Asteraceae | *Tussilago farfara* L.           | Pa Khari         | Expectorant, Antitussive, Mouth Wounds, Treatment of Furuncles     |
| 63  | Berberidaceae | *Berberis integrina* Bunge       | Zeresht Kuhi    | Hypoglycemic, Antihypertensive, Blood and Liver Cleanser, Jaundice, Febrifuge, Antigout |
| No. | Family                  | Species                          | Part(s)    | In 1 | Uses                                                                 |
|-----|-------------------------|----------------------------------|------------|------|----------------------------------------------------------------------|
| 64  | Berberidaceae           | *Berberis sp.*                    | Fruit      | In 1 | Antigout, Blood and Liver Cleanser, Febrifuge, Anthelmintic; Treatment of Dysentry |
| 65  | Betulaceae              | *Corylus avellana* L.             | Fruit      | In 1 | Treatment of Anaemia, Depurative, Appetizer                           |
| 66  | Boraginaceae            | *Arnebia euchroma* (Royle) I.M.Johnst. | Root       | In 1 | Treatment of Dermal Disorders, Hair Tonic                             |
| 67  | Boraginaceae            | *Caccinia macranthera* (Banks & Sol.) Brand | Aerial parts | In 1 | Sedative, Treatment of Cough, Expectorant                              |
| 68  | Boraginaceae            | *Cordia myxa* L.                  | Fruit      | In 1 | Pharyngitis, Antitussive, Febrifuge, Laxative                         |
| 69  | Boraginaceae            | *Echium amoenum* Fisch. & C.A.Mey. | Flower     | In 1 | Antihypertensive, Nerve Tonic, Diuretic, Antistress, Blood Cleanser Cardiac Tonic |
| 70  | Boraginaceae            | *Trichodesma incanum* (Bunge) A.D.C. | Aerial parts | In 1 | Treatment of Bone Fracture                                           |
| 71  | Brassicaceae            | *Alyssum alyssoides* (L.) L.      | Seed       | In 1 | Pharyngitis, Antitussive, Febrifuge, Laxative, Treatment of Hoarseness |
| 72  | Brassicaceae            | *Anastatica hierochuntica* L.     | Aerial parts | In 1 | Bring Luck to Pregnant Women, Menstrual Regulator                      |
| 73  | Brassicaceae            | *Brassica napus* L.               | Seed       | In 1 | Antiseptic, Treatment of Cold, Tonic                                 |
| 74  | Brassicaceae            | *Brassica nigra* (L.) K.Koch      | Seed       | In 1 | Laxative                                                             |
| 75  | Brassicaceae            | *Capsella bursa-pastoris* (L.) Medik. | Seed       | In 1 | Period Regulator, Anti-hemorrhage, Antidiarrhea                        |
| 76  | Brassicaceae            | *Descurainia sophia* (L.) Webb ex Prantl | Seed       | In 1 | Blood and Liver Cleanser, Jaundice, Febrifuge, Treatment of Furuncles, Anti-thirst, Laxative |
| 77  | Brassicaceae            | *Eruca sativa* (L.) Mill.         | Seed       | In 1 | Sedative, Laxative Diuretic, Stomach Tonic,                           |
| 78  | Brassicaceae            | *Lepidium sativum* L.             | Seed       | In 1 | Appetizer, Anthelmintic, Laxative, Sore Throat                        |
| 79  | Brassicaceae            | *Nasturtium officinale* R. Br.    | Aerial parts | In 1 | Diabetes, Dyspepsia                                                   |
| 80  | Burseraceae             | *Boswellia sacra* Fluek.          | Gum        | In 1 | Memory Tonic Treatment of Premature Ejaculation,                      |
| 81  | Burseraceae             | *Commiphora mukul* (Hook. Ex Stocks) Engl. | Gum        | In 1 | Treatment of Joints Pain, Carminative                                 |
| 82  | Burseraceae             | *Commiphora myrrha* (Nees) Engl.  | Gum        | In 1 | Obesity, Hematinic, Carminative Antibacterial, Laxative, Stomachache  |
| 83  | Cannabinaceae           | *Cannabis sativa* L.              | Seed       | In 1 | Sedative, Tonic Treatment of Osteoarthritis, Treatment of Ear Pain    |
| 84  | Cannabinaceae           | *Humulus lupulus* L.              | Hops       | In 1 | Duretic, Treatment of Sleeplessness, Kidney Tonic, Calming, Sedative for Digestion |
| 85  | Capparaceae             | *Capparis spinosa* L.             | Fruit-Root | In 1 | Liver Tonic, Hepatitis, Appetizer, Anthelmintic, Stomach Tonic, Emmenagogue, Antigout |
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| No. | Family           | Scientific Name                                                                 | Part(s)        | Use(s)                                                                                          |
|-----|------------------|---------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------|
| 86  | Caprifoliaceae   | *Nardostachys jatamansi* (D.Don) DC.                                            | Root           | Nerve Tonic, Cardiac Tonic, Hypnotic, Anti-Stress, Antimigraine, Treatment of Incontinence        |
| 87  | Caryophyllaceae  | *Acanthopilos sordidum* Bunge ex Boiss.                                          | Root           | Warts, Washing                                                                                   |
| 88  | Colchicaceae     | *Colchicum autumnale* L.                                                          | Root           | Antigout, Calmative, Arthrodynia                                                                 |
| 89  | Combretaceae     | *Terminalia bellirica* (Gaertn.) Roxb.                                           | Fruit          | Laxative, Appetizer                                                                              |
| 90  | Combretaceae     | *Terminalia chebula* Retz.                                                        | Fruit          | Purgative, Treatment of Constipation, Liver Tonic, Antihemorrhoids                              |
| 91  | Combretaceae     | *Terminalia citrina* Roxb. ex Fleming                                             | Fruit          | Antidiarrhea, Anthelmintic, Digestive                                                            |
| 92  | Convolvolaceae   | *Cuscuta epithymum* Murray                                                        | Aftimun        | Laxative, Antihemorrhoids                                                                        |
| 93  | Convolvolaceae   | *Operculina turpethum* (L.) Silva Manso                                           | Root           | Treatment of Osteoarthritis, Duretic, Laxative, Febrifuge                                      |
| 94  | Cornaceae        | *Cornus max* L.                                                                  | Fruit          | Prostatichypertropy, Antihemorrhage, Antidiarrhea, Febrifuge                                   |
| 95  | Cucurbitaceae    | *Citrullus colocynthis* (L.) Schrad.                                              | Fruit-Seed     | Purgative, Anodyne, Hypoglycemic                                                                |
| 96  | Cucurbitaceae    | *Cucumis sativus* L.                                                             | Khiar          | Diuretic, Anti lithiases, Blood-cleansing, Febrifuge                                            |
| 97  | Cucurbitaceae    | *Cucurbita pepo* L.                                                              | Kadh Kaghazi   | Prostatichypertrophy                                                                           |
| 98  | Cupressaceae     | *Juniperus sabina* L.                                                            | Fruit          | Diuretic, Anti lithiases, Food digestion, Urinary Antiseptic                                    |
| 99  | Cyperaceae       | *Cyperus rotundus* L.                                                            | Root           | Strengthening of Memory                                                                         |
| 100 | Elaeagnaceae     | *Elaeagnus angustifolia* L.                                                       | Fruit          | Arthrodynia, Anti diarrhea, Treatment of Rheumatism, Female Aphrodisiac                          |
| 101 | Ephedraceae      | *Ephedra major* Host                                                            | Aerial parts   | Treatment of Joints Pain                                                                       |
| 102 | Equisetaceae     | *Equisetum arvense* L.                                                           | Aerial parts   | Obesity, Anti lithiases, Antihypertensive, Prostate Disorders, Treatment of kidney Disorders     |
| 103 | Ericaceae        | *Vaccinium arctostaphylos* L.                                                     | Fruit          | Diabetes, Depurative, Antihypertensive, Calmative                                               |
| 104 | Euphorbiaceae    | *Ricinus communis* L.                                                            | Karchak        | Purgative                                                                                       |
| 105 | Fabaceae         | *Abrus precatorius* L.                                                           | Seed           | Contraceptive                                                                                   |
| 106 | Fabaceae         | *Chamaecrista absus* (L.) H.S. Irwin & Barneby                                   | Seed           | Pharyngitis, Antitussive, Obesity, Carminative                                                  |
| 107 | Fabaceae         | *Acacia senegal* (L.) Wild.                                                       | Gum            | Cystitis, Antitussive, Gastric ulcer, Anti-inflammatory, Hoarseness                             |
| 108 | Fabaceae         | *Alhagi gracorum* Boiss.                                                         | Manna          | Jaundice, Laxative, Febrifuge, Thirst, Aphthous Ulcers                                           |
| 109 | Fabaceae         | *Alhagi maurorum* Medik.                                                         | Aerial parts - Manna | Appetite Suppressant, Diuretic, Jaundice, Febrifuge    |
| 110 | Fabaceae | Astragalus adscendens | Gazangabin Manna | In | Laxative, Febrifuge Digestive |
| 111 | Fabaceae | Astragalus fasciculfolius subsp. arbusculinus (Bormm. & Gauba)Tietz | Anzerut Gum | In | Antitussive, Jaundice, Laxative, Anthelmintic |
| 112 | Fabaceae | Astragalus hamosses L. | Nakhonak Fruit | In | Anodyne, Repel of Kidney Stone, Diuretic, Arthrodynia, Carminative |
| 113 | Fabaceae | Astragalus sieversianus Pall. | Gol Sefid Fruit | In | Menstrual Disorders |
| 114 | Fabaceae | Astragalus spp. | Katira Gum | In | Mouth Wounds, Aphrodisiac, Cystitis, Hair Tonic |
| 115 | Fabaceae | Cassia fistula L. | Folus Fruit | In | Treatment of Leishmaniasis, Infant Colic, Febrifuge, Purgative, Jaundice |
| 116 | Fabaceae | Entada gigas (L.) Fawc. & Rendle | Ghorse Kamar Seed | In | Washing, Aphrodisia, Hair Tonic |
| 117 | Fabaceae | Glycyrrhiza glabra L. | Shirin Bayan Root | In | Antitussive, Antacid, Tonic, Gastric ulcer, Treatment of Hypotension, Treatment of Anaemia |
| 118 | Fabaceae | Indigofera argentea Burm.f. | Rang Leaves | In | Anti Fungal, Hair color, Hair Tonic |
| 119 | Fabaceae | Lupinus luteus L. | Baghelaye Mesri Seed | In | Anthelmintic, Emmenagogue, Carminative, Liver Tonic |
| 120 | Fabaceae | Medicago sativa L. | Yunjeh Aerial parts | In | Appetizer, Tonic, Osteomalacia, Anti hemorrhage |
| 121 | Fabaceae | Securigera securidaca (L.) Degen & Dortl. | Gandeh Talkheh Seed | In | Diabetes, Anti hyperlipidemia |
| 122 | Fabaceae | Senna italica subsp. italica Mill. | Senna Leaves | In | Purgative, Obesity, Treatment of Hemorrhoids |
| 123 | Fabaceae | Tamarindus indica L. | Tamr Hendi Fruit | In | Jaundice, Depurative, Pimples |
| 124 | Fabaceae | Trigonella foemun-graecum L. | Shanbalileh (Holbeh) Seed | In | Diabetes, Bronchitis, Osteomalacia, Anti hyperlipidemia, Tonic, Treatment of Anaemia |
| 125 | Fabaceae | Quercus infectoria Oliv. | Mazu ye sabz Insect gull | In | Nose-Bleed, Anti-Hemorrhage, Uterus Ailments, Mouth Wounds, Antihemorrhoids |
| 126 | Fabaceae | Quercus spp. | Bahut (Mazu) Fruit | In | Antidiarrhea, Anti-hemorrhage |
| 127 | Gentianaceae | Gentiana lutea L. | Jentiana Root | In | Aphrodisiac, Blood Tonic |
| 128 | Gentianaceae | Gentiana olivieri Griseb. | Suloo Flower | In | Cardiac Ailments |
| 129 | Grossulariaceae | Ribes khorasanicum Saghafi & Assadi | Ghareh Ghat Fruit | In | Antihypertensive, Diabetes, Depurative |
| 130 | Hypericaceae | Hypericum scabrum L. | Hufarighun Flower | In | Antimigraine, Gastric ulcer, Anti hemorrhage, Urinary Incontinence, Treatment of Headache |
| 131 | Iridaceae | Crocus sativus L. | Zaffaron Style | In | Tonic, Dysmenorrheal, Emmenagogue, Nerve Tonic, Premature ejaculation, Gastric ulcer, Aphrodisiac |
| 132 | Iridaceae | Iris spuria L. | Zanbagh Root | In | Arthrodynia, Diuretic |
| No. | Family          | Species                          | Part(s)       | In 1 | Uses                                                                 |
|-----|----------------|----------------------------------|---------------|------|----------------------------------------------------------------------|
| 133 | Juglandaceae    | *Juglans regia* L.               | Leaves        |      | Eczema, Antidiarrhea, Hair color                                      |
| 134 | Lamiaceae       | *Clinopodium graveolens* (M.Bieb.) Kuntze | Faranjmeshk   | Seed | Pharyngitis, Gastric Ulcer, Nerve Tonic                               |
| 135 | Lamiaceae       | *Hymenocrater spp.*              | Aerial parts  |      | Cardiac Tonic, Hypnotic, Antitussive, Carminative, Dyspnoea, Anti-stress Convulsion |
| 136 | Lamiaceae       | *Hyssopus officinalis* L.         | Zufa          | Aerial parts | Pulmonary Infections, Treatment of Cold, Expectorant                  |
| 137 | Lamiaceae       | *Lallemantia iberica* (M.Bieb.) Fisch. & C.A.Mey. | Tokhm Sharbati | Seed | Gastric Ulcer, Antitussive, Laxative, Hoarseness, Anti-thirst         |
| 138 | Lamiaceae       | *Lavandula angustifolia* Mill.    | Aerial parts  |      | Treatment of Insomnia, Treatment of cold, Nerve Tonic, Cardiac Tonic  |
| 139 | Lamiaceae       | *Marrubium vulgare* L.           | Ferasion      | Aerial parts | Liver Tonic, Antitussive                                              |
| 140 | Lamiaceae       | *Melissa officinalis* L.         | Aerial parts  |      | Nerve Tonic, Cardiac Tonic, Hypnotic, Antitussive, Carminative, Anti-tress, Convulsion |
| 141 | Lamiaceae       | *Mentha longifolia* (L.) Hudson  | Aerial parts  |      | Herpes, Anthelmintic, Antacid, Carminative, Antidiarrhea, Digestive   |
| 142 | Lamiaceae       | *Mentha spicata* L.              | Naana         | Aerial parts | Appetizer, Antacid, Carminative, Antidiarrhea, Digestive, Anodyne, Anthelmintic |
| 143 | Lamiaceae       | *Nepeta binaloudensis* Jamzad    | Aerial parts  |      | Treatment of Cold, Carminative, Nerve Tonic, Treatment of Sinusitis, Pulmonary Infections, Treatment of Rheumatism, Antiasthmatic, Antitussive, Cardiac Tonic |
| 144 | Lamiaceae       | *Nepeta bracteata* Benth.        | Zufa          | Aerial parts | Pulmonary Infections, Antiasthmatic, Treatment of cold, Febrifuge, Treatment of Colic, Antitussive |
| 145 | Lamiaceae       | *Nepeta menthoides* Boiss. & Buhse | Ostokodus     | Aerial parts | Treatment of Cold, Nerve Tonic, Expectorant                           |
| 146 | Lamiaceae       | *Ocimum basilicum* L.            | Aerial parts  |      | Aphthous Ulcers, Antiseptic, Antidiarrhea, Antitussive, Carminative, Laxative, Digestive, Antacid |
| 147 | Lamiaceae       | *Origanum vulgare* L.            | Marzanjush    | Aerial parts | Treatment of Colic, Treatment of Sinusitis, Sedative, Cardiac Tonic, Nerve Tonic, Treatment of Dyspnoea |
| 148 | Lamiaceae       | *Perovskia abrotanoides* Kar.    | Aerial parts  |      | Treatment of Sinusitis, Treatment of Toothache, Antitussive, Nerve Tonic, Carminative, Sedative, Antiseptic, Anthelmintic, Treatment of Colic |
| 149 | Lamiaceae       | *Rosmarinus officinalis* L.      | Leaves - Flower |      | Treatment of Joints Pain, Hair Loss, Depression, Nerve Tonic, Appetizer, Hypnotic |
| 150 | Lamiaceae       | *Salvia leriifolia* Benth.       | Noruzak       | Aerial parts | Diabetes, Period Regulator                                            |
| 151 | Lamiaceae       | *Salvia macrosiphon* Boiss.      | Kenocheh      | Seed | Jaundice, Antitussive, Febrifuge, Gastric ulcer, Pharyngitis, Laxative |
| 152 | Lamiaceae       | *Salvia officinalis* L.          | Aerial parts  |      | Female Fertility, Hypoglycemic, Menopause, Stomach Tonic              |
| 153 | Lamiaceae       | *Satureja hortensis* L.          | Marzeh        | Aerial parts | Indigestion, Anthelmintic, Appetizer, Antacid, Antidiarrhea           |
| Page | Family | Species | Part | Use |
|------|--------|---------|------|-----|
| 154  | Lamiaceae | Stachys lavandulifolia Vahl | Flower | Nerve Tonic, Treatment of cold, Cardiac Tonic, Treatment of Colic |
| 155  | Lamiaceae | Teucrium polium L. | Aerial parts | Antacid, Indigestion, Diabetes, Treatment of Colic, Antidiarrhea |
| 156  | Lamiaceae | Vitex negundo L. | Fruit | Menstrual regulator, Obesity, Treatment of Sinusitis |
| 157  | Lamiaceae | Zataria multiflora Boiss. | Aerial parts | Treatment of Sinusitis, Menstrual Pains, Dysmenorrhea, Anthelmintic, Antacid, Treatment of Colic, Antiasthmatic, Dyspnoea, Arthrodynia, Carminative |
| 158  | Lamiaceae | Ziziphus clinopodioides Lam. | Aerial parts | Kidney Pain, Antacid, Carminative, Treatment of Colic, Anthelmintic, Antitussive, Antidiarrhea, Digestive |
| 159  | Lamiaceae | Ziziphus tenisur L. | Aerial parts | Digestive, Treatment of Colic, Calefacient, Antacid, Antiseptic |
| 160  | Lauraceae | Cinnamomum camphora (L.) J. Presl | Gum | Antiaphrodisiac, Anodyne, Treatment of Toothache |
| 161  | Lauraceae | Cinnamomum zeylanicum Nees | Bark | Treatment of Headache, Calmative, Urinary Incontinence, Digestive, Flavor, Hypoglycemic, Carminative |
| 162  | Lauraceae | Laurus nobilis L. | Leaves | Carminative, Appetizer, Flavor |
| 163  | Liliaceae | Fritillaria imperialis L. | Root | Treatment of Joints Pain |
| 164  | Linaceae | Linum usitatissimum L. | Seed | Cholesterol Lowering, Antitussive, Laxative, Obesity |
| 165  | Loganiaceae | Strychnos nux-vomica L. | Seed | Antiallergic, Eczema, Sedative |
| 166  | Lythraceae | Lawsonia inermis L. | Leaves | Hair color Treatment of headache, Hair Tonic, Washing, Anti Fungal, Antiseptic |
| 167  | Malvaceae | Abelmoschus esculentus (L.) Moench | Seed | Anti-inflammatory, Diuretic, Laxative |
| 168  | Malvaceae | Alcea spp. | Flower | Antitussive, Febrifuge, Treatment of pimples, Laxative, Depurative, Treatment of gum swelling |
| 169  | Malvaceae | Althaea officinalis L. | Root | Antitussive, Febrifuge, Treatment of pimpls, Laxative, Depurative, Treatment of gum swelling |
| 170  | Malvaceae | Helicteres isora L. | Fruit | Antidiarrhea, Antispasmodic |
| 171  | Malvaceae | Hibiscus sabdariffa L. | Flower | Hypoglycemic, Antihypertensive, Obesity, Blood-cleansing, Calmative, Cardiac Tonic |
| 172  | Malvaceae | Hibiscus syriacus L. | Flower | Antitussive |
| 173  | Malvaceae | Malva neglecta Wallr. | Flower - Fruit | Sore Throat, Antitussive, Febrifuge |
| 174  | Malvaceae | Malva sylvestris L. | Flower - Fruit | Pharyngitis, Furuncles, Aphthous Ulcers, Febrifuge, Antitussive, Jaundice, Laxative, Gastric ulcer, Treatment of Wounds |
| 175  | Malvaceae | Theobroma cacao L. | Fruit | Tonic, Flavoring |
| No. | Family         | Genus and Species                          | Part(s)       | Uses                                                      |
|-----|----------------|--------------------------------------------|---------------|-----------------------------------------------------------|
| 176 | Malvaceae      | *Tilia cordata* Mill.                      | Leaves, Fruit | Nerve Tonic, Sudorific, Diuretic, Calmative               |
| 177 | Menispermaceae | *Anamira cocculus* (L.) Wight & Arn.       | Root          | Fishering                                                 |
| 178 | Moraceae       | *Ficus carica* L.                          | Fruit         | Anti-hemorrhoids, Laxative, Tonic                         |
| 179 | Moraceae       | *Morus nigra* L.                           | Root          | Abortion                                                  |
| 180 | Myristicaceae  | *Myristica fragrans* Houtt.                | Seed          | Anti-Hemorrhage, Tonic, Appetizer, Treatment of Colic    |
| 181 | Myrtaceae      | *Eucalyptus sp.*                          | Leaves, Fruit | Treatment of Sinusitis, Treatment of Cold, Treatment of Headache |
| 182 | Myrtaceae      | *Myrtus communis* L.                       | Leaves, Fruit | Psoriasis, Treatment of Sinusitis, Mouth Ulcers, Anti Fungal, Treatment of Cold, Strengthening of Hair, Herpes |
| 183 | Myrtaceae      | *Syzygium aromaticum* (L.) Merr. & L.M.Perry | Flower       | Toothache, Antiseptic, Digestive, Aphrodisiac, Carminative, Stimulant |
| 184 | Nitrariaceae   | *Peganum harmala* L.                       | Seed          | Diabetes, Antiseptic, Hypnotic, Treatment of Rheumatism and Sciatica Disorders, Anthelmintic, Emmenagogue |
| 185 | Nymphaeaceae   | *Nymphaea alba* L.                         | Flower        | Expectorant, Hypnotic, Antitussive, Calmative             |
| 186 | Oleaceae       | *Fraxinus excelsior* L.                    | Fruit         | Aphrodisiac, Treatment of Stammering                      |
| 187 | Oleaceae       | *Olea europaea* L.                         | Fruit, Leaves | Anti-hemorrhoids, Antihyperlipidemia, Hypoglycemic, Laxative, Treatment of Dermal Allergic |
| 188 | Orchidaceae    | *Anacamptis morio* (L.) R. M. Bateman       | Root          | Tonic                                                     |
| 189 | Orchidaceae    | *Dactylorhiza umbrosa* (Kar. & Kir.) Nevski | Root          | Treatment of Sexual Impotency, Tonic                     |
| 190 | Orchidaceae    | *Orchis morio* L.                          | Root          | Cardiac Tonic, Arthrodynia, Tonic, Hypnotic, Insecticide  |
| 191 | Orchidaceae    | *Vanilla planifolia* Jacks. ex Andrews     | Fruit         | Stimulant, Tonic, Carminative, Flavoring                  |
| 192 | Paeoniaceae    | *Paeonia officinalis* L.                   | Root          | Antiepileptic, Carminative, Treatment of Colic           |
| 193 | Papaveraceae   | *Fumaria vaillantii* Loisel.               | Aerial parts  | Pimples, Febrifuge, Blood-cleansing Psoriasis, Appetizer, Antiacid, Jaundice, Treatment of Addiction , Calmative, Sleeplessness, Sedative, Expectorant, Antitussive, Antiasthmatic |
| 194 | Papaveraceae   | *Papaver rhoesas* L.                       | Flower        | Anodyne, Laxative, Tonic, Hypnotic                        |
| 195 | Papaveraceae   | *Papaver somniferum* L.                    | Fruit, Seed   | Treatment of Insomnia, Anti-Stress, Calmative             |
| 196 | Passifloraceae | *Passiflora caerulea* L.                   | Flower        | Blood Tonic, Hair Loss, Strengthening of Memory, Increase Sperm Count, Treatment of Skin’s Split, Laxative |
| 197 | Pedaliaceae    | *Sesamum indicum* L.                       | Seed          | Jaundice, Forgetfulness, Cardiac Tonic Appetizer, Hair Tonic, |
| 198 | Phyllanthaceae | *Phyllanthus emblica* L.                   | Fruit         |                                 |
| No. | Family     | Scientific Name          | Medicinal Parts | Part Used     | Uses                                                                 |
|-----|------------|--------------------------|-----------------|---------------|----------------------------------------------------------------------|
| 199 | Pinaceae   | *Pinus gerardiana* Wall. ex D.Don | Fruit           | Chalghooz     | Aphrodisiac, Blood Tonic                                             |
| 200 | Piperaceae | *Piper cubeba* L.         | Fruit           | Kababeh Chini | Appetizer, Tonic, Carminative                                      |
| 201 | Piperaceae | *Piper longum* L.         | Fruit           | Darfelfel     | Carminative, Tonic, Food Digestion                                  |
| 202 | Piperaceae | *Piper nigrum* L.         | Fruit           | Felfel Siah   | Stimulant, Tonic, Appetizer, Favorsing                                |
| 203 | Plantaginaceae | *Plantago major* L.      | Seed-Leaves     | Barhang       | Eczema, Antiallergic, Febrifuge, Jaundice, Antitussive, Antidiarrhea, Toothache, Depurative, Gastric ulcer |
| 204 | Plantaginaceae | *Plantago ovata* Forssk. | Seed            | Esfarzeh      | Obesity, Depilator, Tonsilitis, Antacid, Antitussive, Gastric ulcer, Febrifuge, Laxative, Jaundice, Antihemorrhoids |
| 205 | Platanaceae | *Platanus orientalis* L.  | Fruit           | Chenar        | Prostate Diseases                                                    |
| 206 | Poaceae    | *Arundo donax* L.         | Latex           | Tabashir gham | Aphthous Ulcer, Anti Thirst, Depurative, Treatment of Pimples, Febrifuge |
| 207 | Poaceae    | *Avena sativa* L.         | Seed            | Jo dosar      | Treatment of Acne                                                    |
| 208 | Poaceae    | *Oryza sativa* L.         | Seed coat       | Chaltooke Berenj | Hair Tonic, Treatment of Anaemia                                    |
| 209 | Poaceae    | *Zea mays* L.             | Style           | Kakole Zorat  | Obesity, Anti-inflammatory, Aantilihiasis, Kidney Disorders, Prostate Disorders, Duretic |
| 210 | Polygonaceae | *Persicaria bistorta* (L.) Samp. | Root            | Anjebar       | Antidiarrhea, Anti-hemorrhage, Vulnerary                             |
| 211 | Polygonaceae | *Polygonum aviculare* L. | Aerial parts    | Alaf Haftband | Diabetes, Treatment of Colic, Antidiarrhea                           |
| 212 | Polygonaceae | *Rheum palmatum* L.       | Root            | Rivand Chini  | Liver Diseases, Cardiac Tonic, Antitihiasis, Backache, Appetizer, Purgative |
| 213 | Polygonaceae | *Rheum ribes* L.          | Fruit-Petiole   | Rivas         | Jaundice, Urinary Antiseptic, Diuretic, Depurative, Liver Tonic, Antiseptic, Hair Tonic |
| 214 | Polygonaceae | *Rheum turkestanicum* Janisch. | Root           | Eshghan       | Diabetes, Antihypertensive, Anticancer, Depurative                   |
| 215 | Polygonaceae | *Rumex acetosella* L.     | Root            | Sagh Torshak  | Jaundice, Febriuge                                                  |
| 216 | Polypodiaceae | *Polypodium vulgare* L.  | Root            | Baspayak      | Expectorant, Jaundice, Digestive                                    |
| 217 | Polyporaceae | *Polyporus officinalis* Fries | Fruiting body   | Gharighun     | Anti-hemorrhage, Laxative                                           |
| 218 | Portulacaceae | *Portulaca oleracea* L.   | Seed-Leaves     | Khorfeh       | Antitussive, Febrifuge, Anti-Thirst, Food digestion, Depurative, Duretic, Anti-hemorrhoids |
| 219 | Primulaceae | *Embelia ribes* Burm.f.   | Fruit           | Barang Kaboli | Jaundice, Anthelmintic, Antidiarrhea                               |
| 220 | Pteridaceae | *Adiantum capillus-veneris* L. | Aerial parts    | Parsivashan   | Antitussive, Antihemorrhoid, Treatment of Sore Throat, Febrifuge, Jaundice, Laxative, Antithirst, Treatment of Orchitis, |
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| 221 | Punicaceae | Punica granatum L. | Gole Anar | Flower - Root | In1 | Anti-hemorrhage, Blood flux, Anthelmintic |
| 222 | Ranunculaceae | Delphinium semibarbatum | Zarir | Flower | In1 | Treatment of Dermal Allergies, Coloring |
| 223 | Ranunculaceae | Nigella sativa L. | Siah Daneh | Seed | In1 | Kidney Stone, Carminative, Antacid, Galactogogue, Anthelmintic, Food Digestion, Antitussive, Treatment of Colic |
| 224 | Ranunculaceae | Thalictrum sultanabadense | Parsiavashan | Aerial parts | In2 | Antitussive, Febrifuge |
| 225 | Rhamnaceae | Ziziphus jujuba Miller | Annab | Fruit | In1 | Depurative, Febrifuge, Laxative, Jaundice, Antitussive, Treatment of Thirst |
| 226 | Rhamnaceae | Ziziphus spina-christi (L.) Wild. | Sedr | Leaves | In1 | Eczema, Hair Tonic, Anti Fungal, Antipruritic, Washing |
| 227 | Rosaceae | Cerasus avium (L.) Moench | Dome Gils | Pedicel | In1 | Antilithiasis, Prostate Disorders Kidney Stone, Anti-inflammatory, |
| 228 | Rosaceae | Crataegus sp. | Sorkhe Valik | Fruits - Leaves | In1 | Depurative, Repairs Blood Vessel |
| 229 | Rosaceae | Cotoneaster mammularis Fisch. & C.A.Mey. | Shir Khesht | Manna | In1 | Jaundice, Febrifuge |
| 230 | Rosaceae | Cydonia oblonga Mill. | Beh Daneh | Seed - Leaves | In1 | Cardiac Diseases, Antitussive, Sore Throat, Laxative, Febrifuge |
| 231 | Rosaceae | Rosa beggeriana Schrenk | Nastaran | Fruit | In1 | Antihypertensive, Diuretic, Kidney Stone |
| 232 | Rosaceae | Rosa damascena Mill. | Gole Mohammadi | Flower | In1 | Antihemorrhoid, Laxative, Calmative |
| 233 | Rosaceae | Rosa foetida Herrm. | Gole Zard | Flower | In1 | Ovary Tonic, Emmenagogue |
| 234 | Rubiaceae | Coffea arabica L. | Ghalveh | Seed | In1 | Obesity, Sleeplessness, Antidiarrhea |
| 235 | Rubiaceae | Cinchona officinalis L. | Ganeh Ganeh | Bark | In1 | Treatment of Joints Pain, Febrifuge, Antimalaria |
| 236 | Rubiaceae | Ruta graveolens L. | Ronas | Root | In1 | Strengthening of Hair, Hair color |
| 237 | Rutaceae | Citrus aurantifolia (Christm.) Swingle | Limu Amani | Fruit | In1 | Antihypertensive, Calmative |
| 238 | Rutaceae | Citrus aurantium L. | Bahar Naranj | Flower | In1 | Anti-Stress, Cardiac Tonic, Food Digestion, Antihypertensive |
| 239 | Rutaceae | Ruta graveolens L. | Sodab | Aerial parts | In1 | Abortion, Sedative, Emmenagogue |
| 240 | Rutaceae | Todalia asiatica (L.) Lam. | Dahan baz-Dahan basteh | Fruit | In1 | Diabetes, Febrifuge, Blood flux |
| 241 | Salicaceae | Salix alba L. | Bid | Leaves - Bark | In1 | Menstrual Pains, Anodyne, Jaundice, Antitussive |
| 242 | Salicaceae | Salix aegyptiaca L. | Bidmeshk | Flower | In1 | Calmative, Cardiac Tonic, Painful Menstruation |
| 243 | Salicaceae | Salix excelsa J.F.Gmel. | Biddhesht | Manna | In1 | Febrifuge, Jaundice, Laxative |
| 244 | Santalaceae | Santalum album L. | Sandal | Wood | Im1 | Aromatic, Duretic Antidiarrhea, |
| 245 | Schisandraceae | Illicium verum Hook.f. | Badian Khatai | Fruit | In1 | Carminative, Galactogogue, Appetizer |
| 246 | Schrophulariaceae | Digitalis purpurea L. | Gol Angoshtaneh | Flower | Im1 | Cardiac Tonic |
| Status                        | specimen               | Plant Family | Part | Sample Type | Use(s)                                                                                                  |
|------------------------------|------------------------|--------------|------|-------------|--------------------------------------------------------------------------------------------------------|
| Imported sample              | Mokhallaseh            | Scrophulariaceae | Aerial parts | In¹          | Kidney Troubles, Antidiarrhea, Treatment of Colic, Carminative, Treatment of Joints Pain                |
| Indigenous sample            | Dome Gav               | Scrophulariaceae | Aerial parts | In¹          | Dyspepsia, Antidiarrhea, Expectorant, Antiacid, Stomach Tonic                                          |
| Authentic sample             | Beladon                | Solanaceae | Leaves | In¹          | Antispasmodic, Sedative                                                                                 |
| Adulterated or Substituted   | Felfel Ghermez         | Solanaceae | Fruit   | In¹          | Appetizer, Spice, Treatment of Osteoarthritis, Tonic, Stimulant, Aphrodisiac                           |
| Sedative, Treatment of       | Tatureh                | Solanaceae | Seed    | In¹          | Addiction, Treatment of Colic                                                                            |
| Treatment, Treatment of      | Bangdaneh              | Solanaceae | Seed    | In¹          | Sedative, Treatment of Addiction, Treatment of Toothache, Treatment of Headache, Antigout               |
| Treatment of Osteoarthritis  | Arusak Posht Pardeh    | Solanaceae | Fruit   | In¹          | Emmenagouge Treatment of Kidney Stones, Blood Cleansing,                                               |
| Stomach Tonic                | Tajrizi                | Solanaceae | Fruit   | In¹          | Treatment of Osteoarthritis, Mastitis, Expectorant, Hypnotic, Sedative, Treatment of Gastritis           |
| Obesity, Anticancer,         | Chai Sahz              | Theaceae | Leaves  | In¹          | Hypoglycemic, Enlarged Prostate, Anaemia, Anti-inflammatory, Digestive                                   |
| Antihypertensive, Hepatitis, | Gazaneh                | Urticaceae | Whole plant | In¹          | Laxative, Treatment of Cough                                                                             |
| Antihyperlipidemia           | Anjareh                | Urticaceae | Seed    | In¹          | Dyspepsia, Nerve Tonic, Appetizer, Carminative, Calmative                                               |
| Beh Limu                     | Shahpasand             | Verbenaceae | Aerial parts | In¹          | Appetizer, Indigestion                                                                                  |
| Banafsheh                   | Eremurus spectabilis M.Bieb. | Xanthorrhoeaceae | Root  | In¹          | Eczema, Febrifuge, Antiallergic, Blood Cleansing, Jaundice, Treatment of Cold, Expectorant             |
| Serish                      | Alpinia galanga Wild.  | Zingiberaceae | Root    | In¹          | Treatment of Bloody Diarrhea, Treatment of Osteoarthritis                                              |
| Ghost Shirin                | Alpinia officinarum Hance | Zingiberaceae | Root    | In¹          | Treatment of Rheumatism, Tonic, Carminative, Digestive, Aphrodisiac                                      |
| Kholanjan                   | Amomum subulatum Roxb. | Zingiberaceae | Fruit   | In¹          | Carminative, Flavoring, Treatment of Colic, Flavoring                                                  |
| Serish                      | Curcuma longa L.       | Zingiberaceae | Root    | In¹          | Treatment of Gall Stones, Treatment of Bruises, Digestive, Emmenagouge                                  |
| Zard Chubeh                 | Curcuma zedoaria (Christm.) Roscoe | Zingiberaceae | Root    | In¹          | Liver Tonic, Carminative, Tonic, Indigestion, Obesity, Flavoring                                       |
| Zorombad                    | Elettaria cardamomum Maton | Zingiberaceae | Fruit   | In¹          | Flavoring, Treatment of Flatulence, Appetizer, Tonic                                                    |
| Hel                         | Zingiber officinale Roscoe | Zingiberaceae | Root    | In¹          | Increase of Sperm Count, Obesity, Carminative, Tonic, Flavoring, Treatment of Joints Pain, Treatment of Toothache |
| Kharkhasak                  | Tribulus terrestris L. | Zygophyllaceae | Aerial parts | In¹          | Duretic, Kidney Stone, Tonic, Treatment of Prostate Hypertrophy, Antihelminitic, Jaundice, Treatment of Flooding, Treatment of Dysuria, Urinary Antiseptic |
**Discussion**

The survey indicated that the study area has plenty of medicinal plants to treat a wide spectrum of human ailments. Herbal medicine uses reported by herbalists can be classified into 132 different uses. Traditional knowledge of phytotherapy of this region provides excellent results in the treatment of jaundice, diarrhea, kidney stones, eczema, obesity, psoriasis, arthritis, diabetes, bone fracture, stomachache, cancer, migraine, joints pains, asthma, headache, skin problems, urinary troubles, wound, toothache, purification of blood, constipation, intestinal worms, pimples, and many other ailments. The highest number of species and applications were reported for digestive system disorders (38.4 %). Significant results are noticed in terms of treatments of respiratory system disorders such as sinusitis, asthma, and bronchitis.

The most efficient medicinal plants are *Perovskia abrotanoides*, *Dysphania botrys*, *Coriandrum sativum*, *Vitex negundo*, and *Ziziphora clinopodioides*. Diseases such as jaundice, diarrhea, anemia, rheumatism, joints pains, and dysmenorrhea were obviously easily diagnosed by the old herbalists. General physical condition and tongue or eyes color of the patient are used as indicators of the patient’s problem. Through the analysis of records of plant-based medicinal treatments (Table 1), it becomes obvious that some of the plants are being used more frequently than others (*Achillea santolinoides*, *Astragalus gummifer*, *Bunium persicum*, *Cichorium intybus*, *Echium amoenum*, *Glycyrrhiza glabra*, *Malva sylvestris*, *Nardostachys jatamansi*, *Plantago ovate*, and *Ziziphora clinopodioides*). Aerial parts (stem, leaves, and flowers) are the most frequently used parts in medicinal purposes. Present investigation showed that the traditional drugs sold in herbal shops in the city of Mashhad may be adulterated or substituted with quite unrelated plant materials. Due to some morphological similarities of the plant parts and their improper identification by the consumers and herbal plant sellers and lack of a standard identification system, the crude medicinal plants and their parts are often adulterated or substituted in commerce which may result in the loss of their efficacy. For instance, *Alcea spp.* especially (*Alcea rosea*, *Alcea aucheri*, *Alcea angulata*, *Alcea rhyticarpa*, and *Alcea lavateriflora*) are known as Gol-e-khatmi in different parts of study area and *Hibiscus syriacus* L. adulterated or substituted instead of them and also *Thalictrum sultanabadense* Stapf are sold instead of *Adiantum capillus-veneris* L. in some market samples.

Distinction and identification of medicinal plants are very important because the adulterants, although belonging to the same genus as the drug, does not possess the medicinal properties of the drug. For example, *Bunium cylindricum* are mixed with real Zire-e-siah (*Bunium persicum*) and are sold in the market resulting in the degrading of the quality and efficacy of the drug. Correct identification of herbal drugs is the foundation of safe use of herbal medicines and products. Therefore, in order to ensure safety, therapeutic potency and efficacy of herbal medicines, correct identification, authentication, and elimination of adulteration are essential and the drugs should only be authenticated by a panel of experts including taxonomists (Joharchi and Amiri, 2012).

This investigation indicated that 269 medicinal plant species belonging to 88 families were found in the research area. Among them, 193 species were indigenous of Iran and 76 species were imported from other countries. These plants are used in the treatment of many diseases. Market survey revealed that there are more than 600 herbalist shops trading natural medicinal products in the Mashhad markets. By comparing present applications of medicinal plants with available literature reported from other...
regions of Iran, it appears that there are many medicinal uses for the treatment of various ailments in the study area which were rarely demonstrated before this. To our knowledge, the use of *Anastatica hierochuntica*, *Gentiana olivieri*, *Helichrysum graveolens*, *Mangifera indica*, *Platanus orientalis*, *Rheum turkestanicum*, *Strychnos nux-vomica*, and *Trichodesma incanum* to cure different illnesses, have never been reported before. Further research should be carried out in the field of pharmacology, phytochemistry, and biotechnology of these resources which may lead to the development of new plant-based medicines. From this study, it is concluded that although the people in research area have access to modern medical facilities, a lot of them still use traditional medicine for their healthcare problems. This represents a medicinal alternative for healing health problems which remains closer to the cultural and social context of this society.

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Conflict of interest

There is not any conflict of interest in this study.

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