

# Medicinal Plants Used Traditionally in Guldara District of Kabul, Afghanistan

**Amini MH<sup>1\*</sup> and Hamdam SM<sup>2</sup>**

<sup>1</sup>Department of Pharmacognosy, Faculty of Pharmacy, Kabul University, Afghanistan

<sup>2</sup>Fifth year student, Faculty of Pharmacy, Kabul University, Afghanistan

**\*Corresponding author:** Amini MH, Assistant Professor, Department of Pharmacognosy, Faculty of Pharmacy, Kabul University, Jamal mina, Kabul, Afghanistan, E-mail: m\_hamayon@yahoo.com

## Research Article

Volume 1 Issue 3

**Received Date:** October 09, 2017

**Published Date:** November 06, 2017

## Abstract

Medicinal plants are traditionally used in different parts of Afghanistan since long back. Guldara is one of the districts of Kabul province where numerous plants are traditionally used in treatment of a wide range of routine diseases such as; gastrointestinal disorders, urinary tract infections, respiratory problems, skin diseases, cardiovascular diseases, and so on. But, published records of folk and traditional health approaches practiced in Guldara as well as other parts of Afghanistan are still very scarce. Ethnopharmacological field studies not only contribute in the public health domain but also serve as the basis for further pharmaceutical and medical researchers. In such context, present field study aims to record the plant crude drugs used traditionally in eight villages of Guldara district. Data were collected through questionnaires replied by local healers or *Hakims*, experienced elder individuals and patients using herbal crude drugs. Botanical name, family, common Dari/Pushto names, parts used, preparations and administration route, and indications of total 68 plants belonging to 30 families, and used by Guldara residents are reported in this paper. Herbarium specimens of 20 species were also prepared, and after being authenticated, were deposited in herbarium of Pharmacy faculty, Kabul University, for further use. Additional researches are emphasized for phytochemical and pharmacological studies of these plants to prove their rational usages by the rural people. Similarly, more works are required for reporting medicinal plants traditionally used in other parts of Kabul, and those of entire Afghanistan.

**Keywords:** Afghanistan; Guldara district; Medicinal plants; Traditional usage

**Abbreviations:** MPs: Medicinal Plants; KUFs: Kabul University Faculty of Science

## Introduction

Mankind has been using medicinal plants (MPs) for treatment of their diseases, even in time immemorial. As per WHO, more than 80% of world population rely on MPs and natural drugs to solve their primary health problems [1,2]. Traditional medicine is used based on

previous generation's believes and practices of natural drugs, particularly of MPs. Traditional and complementary medicines are widely used in different countries of the world and valued for a number of reasons prominently for their cultural acceptability, accessibility and affordability [3,4]. As far as ascertained, a large number of MPs used traditionally, have been investigated for their pharmacological potential and secondary metabolites [5-7].

Around the world, people interest is growing toward usage of herbal remedies, since they are accounted as safe, cheap and accessible health care approaches [8,9]. In Afghanistan, herbal medication or more commonly natural medication is practiced under the name of Unani medication, since long back. In different part of Kabul city, there are numerous Unani or Loqmani pharmacies locally called "Attari or عطاری" where Hakims are prescribing herbal crude drugs and herbal preparations to the patients referring them.

Afghanistan as a mountainous country has a unique plant flora comprising around 5000 species out of which 25 - 30% are endemic to this country [10,11]. Various MPs growing wildly in this country, and also some imported crude drugs, has been traditionally used by Afghan people for treatment of a wide range of routine diseases, since long back. As, 215 medicinal plants including some imported crude drugs used traditionally in Afghanistan, have been already reported [12]. Likewise, some MPs used by indigenous people of Tajik and Afghan Pamirs are also reported [8]. But publications regarding MPs growing in different parts of Afghanistan are still very scarce. The long-lasting wars and conflicts in this country could be accounted as the main reason for lake of comprehensive researches and publications regarding MPs diversity, and their folklore and traditional uses in different parts of the country.

Guldara is one of the 15 districts of Kabul province, Afghanistan. It is located at around 1800 m altitude from sea level, in northwestern part at 20 km far from Kabul, at 69°, 1', 48" eastern longitude, and 34°, 41', 48" northern latitude [13]. The district is called Guldara (meaning valley of the flower) because of its beauty during spring season, when most of its land is covered by wildly grown flowers such as tulips. Guldara hosts more than 25000 residents, who are mostly farmers having moderate economic condition. Common agricultural products of the district are; wheat, maize, potato, apple, pear, peach, grape, mulberry, and walnut [14]. A diverse array of wild plants with high medicinal potential also grows in Guldara.

Guldara residents are culturally very eager to use herbal drugs for curing their routine ailments such as; gastrointestinal disorders, urinary tract infections, respiratory problems, skin diseases, cardiovascular diseases, etc. The people claim that MPs are easily accessible, freely available or of lower cost as compared with modern synthetic medicine (personal communication). Inevitably, in case of severe illnesses people ought to refer to the hospitals located in Kabul city, and would afford the high prices of synthetic medicine. Present study was aimed to document the plants used in traditional system of eight villages of

Guldara district namely; Dehnaw-e-Guldara, Deh bedack village, Jalwani village, Tulat village, Bagh ha-e-Dehnaw, Nassiri village, Qol-e-nemat village, and Deh bala village. The specific objectives of this study are:

- To record the plant species traditionally used in the aforesaid villages of Guldara district.
- To study taxonomy of the used plants and record their botanical families.
- To assess which part of the plant is used, how it is prepared and for which ailment it is administered.
- To assess the dominant health problems threaten the local residents of Guldara district.

Botanical name, common local names, parts used, medicinal usages, and mode of preparation and administration of the plants used in eight villages of Guldara district are reported for the first time in this paper. However, similar researches are emphasized to be performed for local health documentation and enlisting MPs used in other parts of Afghanistan, as well.

## Material and methods

Information was attained from eight villages of Guldara district. Local community healers called Hakims, and old individuals having enough experiences of herbal therapy and traditional medicines were interviewed and asked through open ended questions of a prepared questionnaire. Following information was gathered during the discussion or interview:

- Local name(s) (Dari or Pushto name) of the used plants (translation of the names are provided in Table 1).
- Parts of the plant that are used as drug.
- Used form (preparation) and administration route of the drug (how the drug is prepared and used or applied).
- Indication of the drug (purpose of use of the drug).

Convenient sampling and snowball sampling methods were used in selection of Hakims and experienced individuals, respectively. Meanwhile, appropriate discussions were carried out with local villagers and patients in respect of traditional use of plants in their villages. If necessary, the informants were asked to indicate the target MPs growing in their surrounding area. If required and applicable, specimens of the shown plants were also collected for herbarium preparation and botanical authentication. Most of the common and known plants were botanically identified by the authors, while the confused plants were identified by Prof. MN Sediqi, Head of Pharmacognosy Dept. faculty of Pharmacy, Kabul University. Voucher specimens of Kabul University, Faculty of Science (KUFS) herbarium, the sheets existed in herbarium of Pharmacy Faculty, and the book *Field Guide Afghanistan: Flora and Vegetation*

written by Breckle, et al. [10] were used as references for botanical authentication of the collected plant samples. After being authenticated, specimens of the plants were deposited in herbarium of Pharmacy Faculty, Kabul University, for further use as references.

All of the collected data including plants' local (Dari/Pushto) names, English name, botanical name and family, parts used, preparation mode, and indications were summarized and tabulated in Table 1. Microsoft

excel package was used for calculations and graphical presentation of the collected data.

## Results and Discussion

### Overall Results of the Number of Used Plants and their Botanical Families

Present study revealed that totally 68 plants belonging to 62 genera and 30 families are used traditionally and as folk medicines in Guldara district, as shown in Table 1.

No.	Plant botanical name	Family	Local Dari/Pushto names	English name	Parts used	Preparations & Administration route	Indications
1	<i>Amaranthus retroflexus</i> L.	Amaranthaceae	Taj khorosak (تاج خروسک)	red-root amaranth, redroot pigweed	Flowers	Infusion is taken orally or gargled	Treatment of tonsillitis, and upper respiratory diseases
2	<i>Achillea millefolium</i> L. and <i>Achillea santonina</i>	Asteraceae	Zarsarak, bomadaran, Zawal (زردسراک، بومادران، زول)	Yarrow	Flowering tops	Powdered flowers taken orally	Treatment of flatulence, nausea, dysentery, kidney stones, hypertension, dysmenorrhea
3	<i>Artemisia absinthium</i> L.	Asteraceae	Mastar, afsanthin (مستار، افسنطین)	absinthe, wormwood	Herb, leaves	Decoction is taken orally	Treatment of ascariasis, abdominal pain, indigestion, gastritis, constipation, anorexia, diabetes, hyperlipidemia, hypertension, spasm, typhoid, anemia, and as general tonic
4	<i>Artemisia cina</i> Berg.	Asteraceae	Terkh, drowna (ترخ، درونه)	Wormwood	Flowering tops	Powdered drug is taken orally	As anthelmintic
5	<i>Chamomilla recutita</i> L.	Asteraceae	Gul-e-baboona (گل بابونه)	Chamomile	Flowers	Decoction/infusion of dried flowers is taken orally	Treatment of hypertension, pain, rheumatism, malaria, abdominal pain, flatulence, joint pain, face spot
6	<i>Cichorium intybus</i> L.	Asteraceae	Kasni (کاسنی)	Chicory	Roots	Decoction of roots, macerates of dried coarsely powdered roots is taken orally	As cholagogue, febrifuge, painkiller, for treatment of kidney pain, sunstroke, typhoid, jaundice, severe headache,

							and prevention of malaria
7	<i>Berberis vulgaris</i> L.	Berberidaceae	Zerk (زرک)	common barberry	Herb	Decoction is taken orally	Treatment of liver diseases, indigestion, and traumatic pain
8	<i>Brassica hirta</i> Moench..	Brassicaceae	Awri (اوري)	Mustard	Seeds	Decoction and as spice	Treatment of body pain, wounds
9	<i>Brassica oleracea</i>	Brassicaceae	Karam (کرم)	Cabbage or cauliflower	Condensed leaves	Uncooked leaves are eaten	Treatment of obesity, hyperlipidemia, hypertension
10	<i>Lepidium sativum</i> L.	Brassicaceae	Taratizak (تراتیژک)	Cress or garden cress	Leaves	Fresh leaves are eaten	As appetizer, cholagogue, aphrodisiac, and cleaning of blood
11	<i>Raphanus napus</i> L.	Brassicaceae	Shalgham (شلغم)	Turnip	Root	Decoction is taken orally	Treatment of pneumonia, cough, cold, flu
12	<i>Raphanus sativus</i> L.	Brassicaceae	Moli safid, torb (ملی سفید، ترب)	Radish	Root	Uncooked root is eaten	Treatment of jaundice, hepatitis, anorexia,
13	<i>Sisymbrium sophia</i> L.	Brassicaceae	Khakshir (خاکشیر)	Flixweed	Seeds	Infusion taken orally	Treatment of fever, sunstroke, typhoid, dysentery
14	<i>Chenopodium botrys</i> L.	Chenopodiaceae	Ganda shorak (گنده شورک)	Jerusalem Oak	Herb	Powder is taken orally with some water	Treatment of dysentery, urticaria,
15	<i>Convolvulus arvensis</i> L.	Convolvulaceae	Peachak (پیچک)	Field bindweed	Herb	Infusion of herb taken orally	Treatment of cardiovascular diseases
16	<i>Citrullus colocynthis</i>	Cucurbitaceae	Tarbooz abojehl, hanzal (تربوژ ابو جهل، حنظل)	Colocynth	Fruits	Decoction is taken orally	Treatment of diabetes
17	<i>Elaeagnus angustifolia</i> L.	Elaeagnaceae	Senjed (سنجد)	Russian olive	Fruits, seeds, roots, bark	Decoction is taken orally	Treatment of sunburn, wounded skins, peptic ulcer, and dysentery
18	<i>Ephedra</i> sp.	Ephedraceae	Bandak (بندک)	Ephedra	Herb, young stems	Infusion and powdered drug is taken orally, Locally for wounds dressing	Treatment of kidney disease, gonorrhea, UTI, bleeding, wounds, hypotension, gastrointestinal disorders
19	<i>Alhagi pseudoalhagi</i> L.	Fabaceae	Shuturkhar, zoz (شترخار، زوز)	Camelthorn	Herb (young stem and leaves)	Decoction of dried herb is taken orally	Treatment of gastrointestinal diseases (dysentery, diarrhea), kidney stones, jaundice, skin wounds, and

							as appetizer, cholagogue,
20	<i>Glycyrrhiza glabra</i> L.	Fabaceae	Sherinboya (شرین بویه)	Licorice	Rhizome	Decoction is taken orally	Treatment of respiratory diseases, typhoid, jaundice, osteoporosis, kidney pain, diabetes, cardiovascular diseases, gastritis, and as general tonic and expectorant
21	<i>Medicago sativa</i> L.	Fabaceae	Reshqa (رشقه)	Alfalfa	Leaves and herb	As poultice applied topically	Treatment of wounds, cuts, and insect bites
22	<i>Trifolium repens</i> L.	Fabaceae	Shabdar, Shawtal (شیدر، شوتل)	white clover	herb	Fresh herb uncooked or cooked	Treatment of dysentery and abdominal pain
23	<i>Fumaria officinalis</i> L.	Fumariaceae	Shahtara (شاهتره)	Fumitory	Leaves and flowering tops	Infusion and decoction, fresh herb is grinded and applied on spotted skin	Treatment of skin diseases (acne, rashes, skin spots), fever, hypertension, liver diseases, peptic ulcers
24	<i>Cynodon dactylon</i> L.	Graminae	Kabal (کبل)	Grass	Rhizome or underground stolones	Decoction is taken orally	As diuretic for treatment of kidney stones, gonorrhea
25	<i>Hordeum vulgare</i> L.	Graminae	Jaw (جو)	Oat	Seeds	Decoction, and milky juice of the fruits taken orally	Treatment of urinary tract disorders
26	<i>Zea mays</i> L.	Graminae	Jwar, Jwari (جوار، جوارى)	Maize	Styles	Decoction of dried styles	Treatment of kidney pain and as diuretic
27	<i>Juglans regia</i> L.	Juglandaceae	Charmaghz (چهارمغز)	Walnut	Septa of fruit, flowers and leaves	Decoction and infusion of flowers, leaves, and septa	Treatment of kidney pain and UTI, dental plaque, hyperlipidemia
28	<i>Mentha piperata</i> L.	Lamiaceae	Nana (نعناع)	Peppermint	Leaves and young stem	Powder	Treatment of peptic ulcer, indigestion, anorexia, nausea
29	<i>Mentha pulegium</i>	Lamiaceae	Poodina, welanay (پودینه، ویلنی)	Pennyroyal	Leaves and young stem	Powder is taken orally	Treatment of nausea, peptic ulcer, diarrhea, rheumatism
30	<i>Perovskia</i> sp.	Lamiaceae	Gurbakhorak (گربه خورک)	Russian sage	Flowering tops and flowers	Decoction is taken orally	As diuretic, and for treatment of kidney pain, kidney and bladder stones, hemorrhoid,

							gynecological diseases,
31	<i>Salvia rhytidea</i> Benth.	Lamiaceae	Malangan, Gandabaghal (ملنگان، گنده بغل)	Sage	Flowering tops	Infusionis taken orally	Treatment of respiratory ailments (pneumonia, cough), and as expectorant and emollient
32	<i>Allium cepa</i> L.	Liliaceae	Piaz (پیاز)	Onion	Bulb (underground stem)	Fresh onion, cooked onion in the fire or under charcoal, decoction of fresh onion	Treatment of respiratory problems e.g. pneumonia, cough, digestive upsets, common cold, flu, and as antibacterial agent and aphrodisiac
33	<i>Allium sativum</i> L.	Liliaceae	Seer, ooga (سیر، هوگه)	Garlic	Bulb	Fresh bulb, cooked bulb (with egg) is eaten	Treatment of hypertension, cardiac disorders, urination of children during sleeping at night
34	<i>Tulipa</i> sp.	Liliaceae	Gul-e-lala (گل لاله)	Tulip	Flowers	Infusionis taken orally	Treatment of stomachache, constipation, earache, and gonorrhea
35	<i>Althaea officinalis</i> L.	Malvaceae	Khatmi (خطمی)	Marshmallow	Flowers and roots	Decoction of flowers and roots is taken orally	Treatment of pneumonia, asthma, dry cough, typhoid, kidney pain, hypertension, gastritis, and as emollient
36	<i>Malva neglecta</i> Wallr.	Malvaceae	Panirak (پنیرک)	Mallow	Leaves, stems, and roots	Decoction is taken orally	Treatment of skin diseases (abscess and acne), dry coughs, gastric diseases, constipation
37	<i>Ficus johaniss</i> Boiss.	Moraceae	Anjeer, enzer (انجیر، انخر)	Fig	Fruits and leaves	Decoction is taken orally	Treatment of skin wounds, abdominal pains, constipation, kidney pains, dry coughs
38	<i>Morus nigra</i> L.	Moraceae	Shahtoot (شاتوت)	black mulberry	Fruits	Fruit is taken orally	Treatment of diarrhea, and also as stomach lavage
39	<i>Plantago major</i> L.	Plantaginaceae	Zoof, barheng (زوف، بارهنگ)	Plantain	Seeds, herbs	Entire seeds or decoction of herb is taken orally	Treatment of pneumonia, flu, cough, gastritis

							and peptic ulcer, constipation. Nutrition for infants
40	<i>Platanus orientalis</i>	Platanaceae	Panja chinar ( پنجه چنار )	oriental plane tree	Leaves and bark	Poultice made of powdered drugs used topically	Treatment of skin wounds and leishmaniosis
41	<i>Rumex crispus</i> L.	Polygonaceae	Shelkha ( شلخه )	Curly Dock	Roots and flowers	Decoction (root) and Infusion (flower) ins taken orally	Treatment of diarrhea, kidney pain, sunstroke, typhoid, cold and fever
42	<i>Punica granatum</i> L.	Punicaceae	Anar ( انار )	Pomogranate	Fruit peel	Decoction taken orally	Treatment of diarrhea and ascariasis
43	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Aunab, chilan ( عناب چيلان )	Jujube	Fruits and seeds	Decoction is taken orally	Treatment of diabetes, acne, dry cough
44	<i>Amygdalus communis</i>	Rosaceae	Badam ( بادام )	Almond	Seed kernel	Entire kernel is eaten	Treatment of nervous weakness and dementia
45	<i>Crataegus songarica</i> K. Koch.	Rosaceae	Dolana ( دولانه )	Asian Hawthorn	Fresh fruits	Fresh fruits and macerated dry fruits are eaten	Treatment of cardiovascular diseases, diabetes, constipation
46	<i>Cydonia oblonga</i> Miller.	Rosaceae	Bohi ( بهي )	Quince	Fruits, seeds, and leaves	Fresh fruit, and decoction of seeds and leaves taken orally	Treatment of pneumonia, bronchitis, cough, flu, common cold, gastritis, diarrhea, vomiting
47	<i>Malus domestica</i> L.	Rosaceae	Seb, mana ( سيب، منه )	Apple	Leaves	Fresh leaves are put in shoes	As deodorant of feet bad smell
48	<i>Persica vulgaris</i> Mill.	Rosaceae	Shaftaloo ( شفتالو )		Leaves	Decoction is taken orally	Treatment of wounds, and as anthelmintic
49	<i>Pronus cerasus</i> L.	Rosaceae	Aalobaloo, Gilass ( آلوبالو، گيلاس )	Sour Cherry	Fruits stalk	Infusion and decoction of the grinded stalk of the fruits is taken orally	To relief kidney pains, treatment of gonorrhoea
50	<i>Rosa damascena</i> Mill.	Rosaceae	Gulab ( گلاب )	Rose	Flowers (Petals)	Infusion/decoction for bathing	Treatment of abdominal pain, anorexia, pneumonia, earache
51	<i>Citrus limonum</i> Risso.	Rutaceae	Lemo ( ليمو )	Lemon	Fruit and fruit peel	Fruit juice, infusion of peel taken orally	Treatment of gastrointestinal diseases
52	<i>Citrus aurantium</i> L.	Rutaceae	Narenj ( نارنج )	Orange	Fruit Peel	Powdered peel	Treatment of digestive diseases, anorexia, indigestion, anemia, diabetes
53	<i>Verbascum thapsus</i> L.	Scrophulariaceae		great mullein or common mullein	Leaves and young stalks	Infusion of leaves and stalks taken orally, sometimes	Treatment of Cardiovascular diseases

			Gosh kharak (گوش خړک)			infusion and powder is used topically	(hypertension), respiratory problems, common cold, and as emollient and wound healing agent
54	<i>Capsicum annum</i> L.	Solanaceae	Morch (مرچ)	Pepper	Fruits	Powdered fruits is eaten with meal	Treatment of anorexia, dyspepsia
55	<i>Hyoscyamus nigra</i> L.	Solanaceae	Bangak dewana (بنګک دیوانه)	Henbane	Leaves	Decoction is taken orally	Treatment of abdominal pain, stomach spasm, toothache,
56	<i>Solanum nigrum</i>	Solanaceae	Sag angoorak (سګ انګورک)	Black Nightshade	Fruits	Entire ripen fruits, Decoction is taken orally	As cholagogue
57	<i>Datura stramonium</i> L.	Solanaceae	Datura, Daltura (داتوره، دالتوره)	Datura	Seeds and leaves	Decoction, powdered seeds is taken orally	Treatment of spasm, constipation, and as aphrodisiac
58	<i>Anethum graveolens</i> L.	Umbelliferae	Shebet (شبت)	Dill	Fruits	Decoction is taken orally	Treatment of hypertension, abdominal flatulence, abdominal pain
59	<i>Apium graveolens</i> L.	Umbelliferae	Karafs (کرفس)	Celery	Herb and fruits	Infusion and Decoction is taken orally	As diuretic
60	<i>Carum carvi</i> L.	Umbelliferae	Zira syah (زیره سیاه)	Caraway	Fruits	Entire fruits is taken orally	As digestive, appetizer, carminative
61	<i>Carum copticum</i>	Umbelliferae	wani, sperkai (جوانی، سپیرکی)	Ajouan	Fruits	Entire fruits is taken orally	Treatment of flatulence and other gastrointestinal diseases
62	<i>Daucus carota</i> L.	Umbelliferae	Zardak, gazar (زردک، گازر)	Carrot	Fruits and roots	Decoction, and juice of fresh roots taken orally	As diuretic and kidney pain relief
63	<i>Dorema ammoniacum</i>	Umbelliferae	Ganda ferooza (گنده فیروزه)	Ammoniacum	Flowers	Decoction is taken orally	Treatment of diarrhea, peptic ulcer, and other gastric diseases
64	<i>Foeniculum vulgare</i> Mill.	Umbelliferae	Badyan (بادیان)	Fennel	Fruits	Entire fruits, powdered fruits, decoction	As carminative, digestive and antitussive
65	<i>Urtica dioica</i> L.	Urticaceae	Sharanak, Gazenda bota (شرانک، گزنده بته)	Common nettle, Stinging nettle	Leaves and roots	Infusion and decoction taken orally	As diuretic, for treatment of kidney and bladder diseases, leg pains, diabetes,
66	<i>Vitis vinifera</i> L.	Vitaceae	Angoor (انګور)	grape	Fruits, seeds, terminal twigs	Juice of grape fruits mixed with water is drink.	For treatment of kidney pains, kidney infections,



						Infusion/decoction of dried twigs is taken orally	infusion of dried twigs is used for treatment of cholera.
67	<i>Peganum harmala</i> L.	Zygophyllaceae	Espanid, spelanai (اسپند، سپلانی)	Harmal or Syrian rue	Fruits and seeds	Decoction of seeds and powdered	Treatment of abdominal pain and worms
68	<i>Tribulus terrestris</i>	Zygophyllaceae	Khar mughelan, markondai (خار مغیلان، مارکوندی)	Caltrop, Puncturevine and Goat's Head	Fruits and leaves	Decoction is taken orally	Treatment of kidney stones, and gastrointestinal diseases

Table 1: Data showing the list of plants used in Guldara district for treatment of various routine ailments.

As shown in Figure 1. The dominant families were found to be Rosaceae and Umbelliferae, each comprising 10.29% (7 species) of the used plants. Next dominant family is Brassicaceae embracing 8.82% (6 species), followed by Asteraceae which includes 7.35% (5 species)

of the used plants. While each of the Fabaceae, Lamiaceae and Solonaceae families includes 5.88% (4 species) of the total plants. The remaining families stand in lower ranks in respect of plant species they embrace.

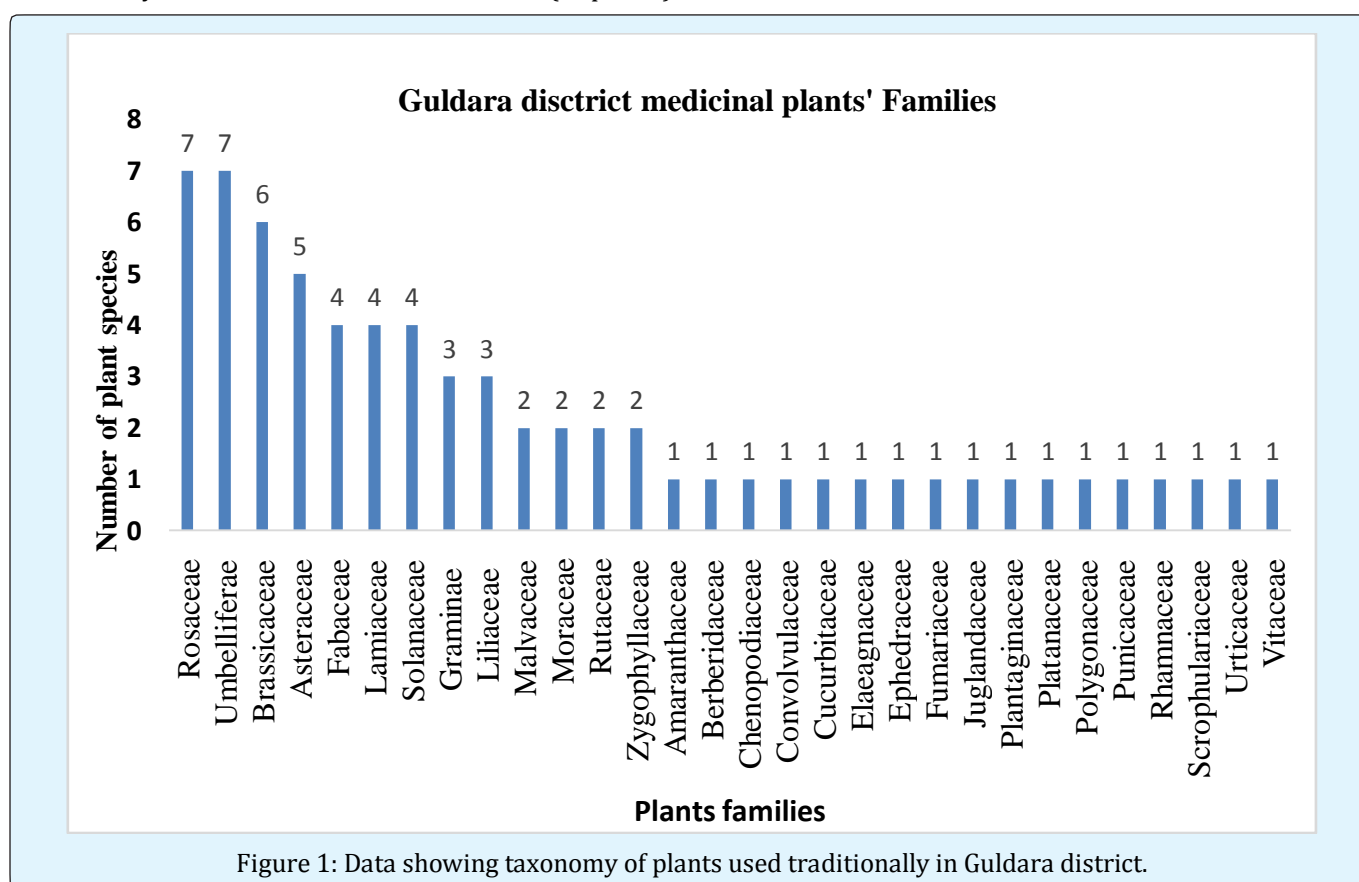


Figure 1: Data showing taxonomy of plants used traditionally in Guldara district.

The data indicate that Guldara district would be more suitable for growth and cultivation of Rosaceae, Umbelliferae, Brassicaceae, and Asteraceae members. Meanwhile, further studies would be necessary in order to provide more accurate information regarding medicinal plants diversity of Guldara district. According to a similar study conducted in the northwest of the Basque Country, Iberian Peninsula, 139 plants belonging

to 58 families are used traditionally. The important botanical families were recorded to be Asteraceae, Liliaceae, and Urticaceae [15]. As per another review, the members of Asteraceae stand first, followed by Rosaceae and Liliaceae, for the MPs used traditionally in boreal forest of Canada [16]. An ethnobotanical survey of MPs used in Zangelanlo district of Iran indicates that 52 herbs belonging to 48 genera and 26 botanical families are

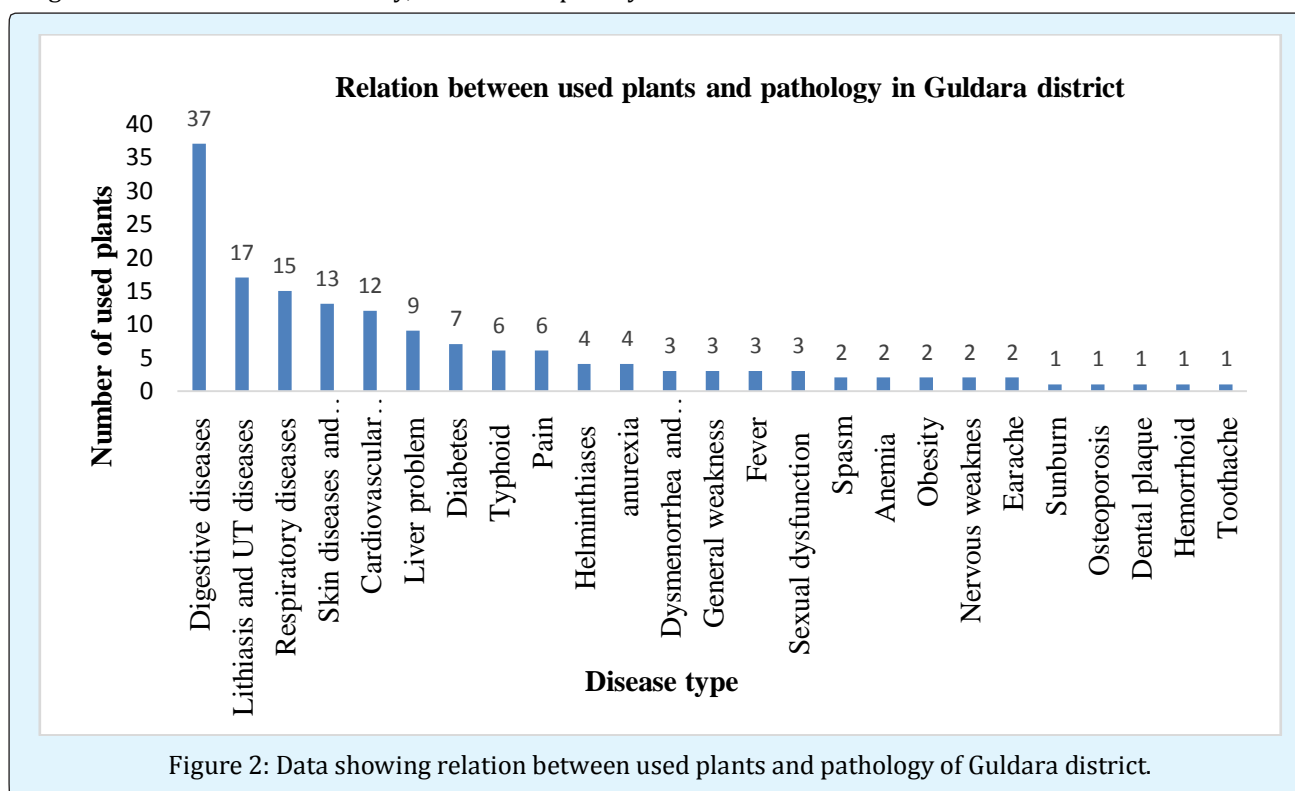
traditionally used by the people. The dominant families are reported to be Lamiaceae (9 spp.), Asteraceae (8 spp.), and Apiaceae (4 spp.) [17]. As per Naghibi, et al. Asteraceae and Fabaceae were the frequent plant families for the MPs traditionally used in two villages of Hamedan, Iran [18]. A recent study reported 60 MPs belonging to 30 families used traditionally in Qampaya District of Bolivia, where dominant families were Asteraceae (14 spp.), and Lamiaceae (7 spp.) [19]. Unsurprisingly, plants biodiversity could be diverse for different regions, based on geo-climatic variations therein.

As shown in Table 1 some of the plants serve as curing agent for different ailments. For instance, licorice root is used for treatment of respiratory diseases, dry cough (as expectorant), gastritis, jaundice, diabetes, typhoid, osteoporosis, kidney pain, cardiovascular diseases, and as general tonic. Scientifically, multidisciplinary

applications of an ideal medicinal plant could be justified based on its diverse secondary metabolites. For instance, licorice roots contain proteins, aminoacids, flavonoids, terpenoids, saponins, coumarins, vitamins B1., B2., B6., C., and E., and minerals such as; aluminium, calcium, iron, magnesium, sodium, silicone, potassium, phosphorus, cobalt, zinc, etc. Licorice roots have been used as expectorant, aphrodisiac, galactagogue, antiviral, anti-inflammatory, anti-diabetic, anti-diuretic, laxative, and to relief gastritis, gout, sore throat, tonsillitis, bronchial catarrh, fever, bronchitis and cold, and skin diseases [20,21].

### Medicinal Use Categories

As summarized, the plants listed for Guldara district are used traditionally either in treatment or in prevention of 25 disease types, as shown in Figure 2.



It was also found that, several herbs are used for treatment of a same type of ailment. As Figure 2 indicates, 37 out of 68 plant species are used in treatment of digestive system disorders. For curing kidney and urinary tract disorders, respiratory disorders, skin problems, and cardiovascular ailments, 17, 15, 13, and 12 species of the listed plants are used, respectively. Remarkably, the data shown in Figure 2 show some clear relationship between the used plants and pathology in Guldara district. The more number of plants species used in treatment of a disease, will denote the dominance of the same diseases, and the vice versa.

Hence, the dominant disease in Guldara district could be digestive system ailments, followed by kidney and urinary tract problems, respiratory diseases, skin and wound problems, hypertension and cardiovascular diseases, liver problems, diabetes, typhoid, pain, helminthiasis, anorexia, gynecological complaints, sexual dysfunction, weakness, fever, anemia, obesity, and so forth. Our finding is in close agreement with that reported by Younos, et al. who found digestive and respiratory diseases, respectively as the first and second dominant health problems in Afghanistan [12]. However, in present study, urinary tract diseases were ranked

second in term of dominance. This could be attributed to either water pollutions in Guldara district, or to unfair hygienic condition of the local residence therein. Indeed, further epidemiological studies are required to figure out the pathological profile of Guldara residents.

Similar studies have been done in different countries. Our findings correspond with a study reported 546MPs used traditionally by Aboriginal peoples of the Canadian boreal forest for 28 ailment categories. Most of the plants were used as remedies for digestive problems [16]. However, our findings disagree with that reported by Spanish authors who recorded the most used plants for skin problems followed by digestive and respiratory systems disorders [15]. This could probably be attributed to both the more humid climate and to spread of skin diseases in those regions. Another study revealed that most of the plants used traditionally in Dastena city of Iran were for treatment of digestive problems followed by respiratory disorders [22]. More recently, an ethnobotanical study of MPs used in a district of Bolivia reported that the predominant health problems treated by majority of the used plants were urological problems and digestive disorders [19].

### Parts Used, Preparation Mode and Administration Route

As analyzed, leaves were the most common used plant part for the MPs used in Guldara district, followed by fruits, roots/rhizome, herb, seed, flower, flowering tops, fruit peel, bulb, stem, bark, fruit stalk, stigma, seed kernel, and twigs, as shown in Figure 3 Several previous studies also revealed that leaves are the abundant used plant part [15,17-24]. Nonetheless, another review about MPs used in boreal forest of Canada, indicated that roots is the predominant used part, followed by leaves, whole plants, and fruits [16].

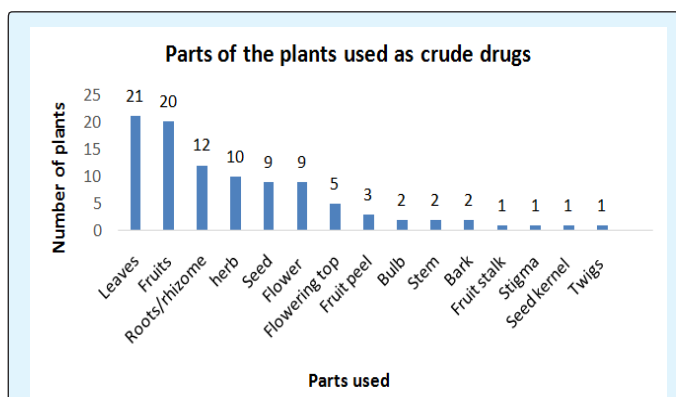


Figure 3: Data showing the plant parts used in Guldara district.

Taking into account the plant preparation types, decoction was ranked first, since 39 crude drugs were

used in this form, as shown in Figure 4 The remaining preparation mode were respectively, infusion (16 items), powdered form (10 items), juice (4 items), entire seeds (4 items), cooked form (3 items), fresh fruits (3 items), and so on.

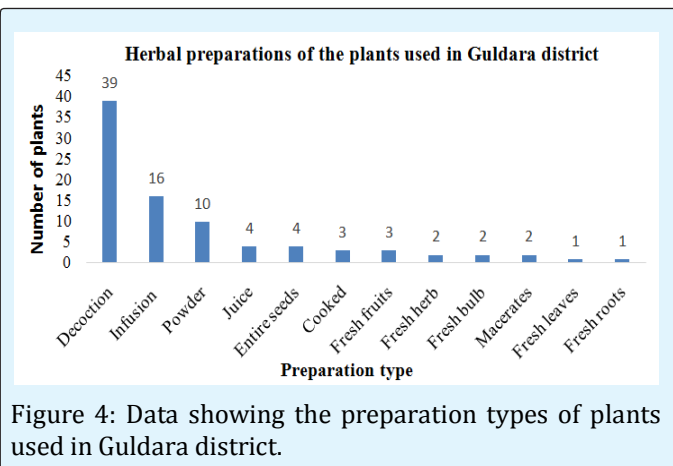


Figure 4: Data showing the preparation types of plants used in Guldara district.

In a similar study, infusion and decoction were reported as the dominant preparation types for the ten medicinal plants used traditionally in Imo state of Nigeria [25]. Uprety, et al. reported decoction and infusion as the major herbal formulations used in boreal forest of Canada [16].

In term of routes of administration, out of the 68 plants, 61 species were administered orally, 5 species topically, 1 species as bathing and gargle, as shown in Figure 5 Previous publications also indicate that the principle mode of administration for herbal preparations is oral as drink, followed by topical application [15,19,24].

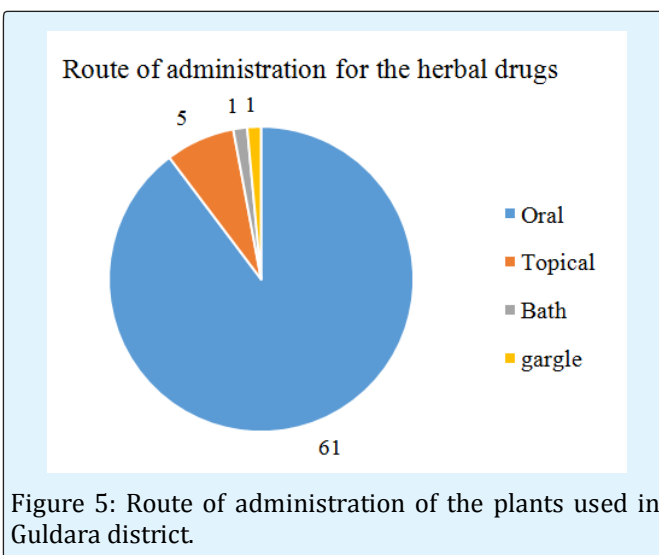


Figure 5: Route of administration of the plants used in Guldara district.

Talking about the rational use of medicinal plants, some plants were found to be irrationally used by Guldara people. For example; Guldara residents use

Datura seeds as antispasmodic, aphrodisiac and for constipation. Similarly, they used henbane leaves for treatment of abdominal spasm and toothache. While both of the plants usage is limited in other countries because of their toxicity due to tropan alkaloids present in these plants [26,27]. In another case, putting apple fresh leaves in shoes as a deodorant is practiced by the local people of Guldara, but this application is not scientifically proved so far. Interestingly, some strange cases are always found in traditional or folk medicine systems of different countries, and it could be attributed to the cultural difference among diverse populations of the world. For example, we reported that the dried styles of corn (*Zea mays* L.) is used for treatment of kidney and urinary tract problems, but in Iberian Peninsula, located in southwest corner of Europe, the same drug is used for relief of respiratory problems, while corn flour boiled in wine is used for curing undefined urine and kidney disorders [15]. Cultural and religious issues would also play a crucial role in evolution and practices of folk and traditional system of medicines in different societies of the world. As there are about 2000 ethnic groups all over the world and every group may have different cultures and its own traditional medical knowledge and practices [28].

Indeed, Afghanistan owing to its diverse geo-climatic condition, owns a diverse plant flora, hundreds of which are traditionally used. Unfortunately, because of the continuous war and conflicts, traditional medicine practiced in different parts of Afghanistan is not studied so far. Hence, publications regarding Afghans' local health documentation are still very scarce. However, 215 medicinal plants used traditionally in different regions of Afghanistan were reported in 1987 [12], but the authors failed to collect data from all provinces and districts of Afghanistan. Therefore, more efforts are required not only for listing medicinal plants traditionally used in different parts of Afghanistan, but also for their phytochemical and pharmacological evaluation, as well. As few recent studies revealed that endemic plants of Afghanistan are rich in potent secondary metabolites that would serve as promising precursors for developing potent medicines of plant origin [7,29].

## Conclusion

Traditional herbal medicines are, even in this modern age, used for prevention and treatment of a wide range of ailments. Present study revealed that 68 plants are used by Guldara residents for treatment of several routine diseases. However, some residents having more knowledge about traditional system of medication in Guldara district might be missed during the data collection period. That is to say, all of the plants used traditionally in Guldara district would not be listed

during the research work. Nonetheless, the data presented through this study would best serve for performing further phytochemical and pharmacological research is to verify rational use of the listed plants used traditionally in Guldara district. Meanwhile, similar researches are also recommended for documentation of the local health traditions and MPs growing and used in other provinces and districts of Afghanistan.

## Acknowledgment

The authors are highly thankful of Prof. M. N. Sediqi, head of pharmacognosy department of Pharmacy Faculty, Kabul University, who made his best efforts in identification of the plants.

## References

1. Sadeghi-Nejad B, Saki J, Khademvatan S, S Nanaei (2011) In Vitro antileishmanial activity of the medicinal plant - *Satureja khuzestanica* Jamzad. *Journal of Medicinal Plants Research* 5(24): 5912-5915.
2. Raju GS, Moghal MMR, Dewan SMR, Amin MN, Billah M (2013) Characterization of phytoconstituents and evaluation of total phenolic content, anthelmintic, and antimicrobial activities of *Solanum violaceum* Ortega. *Avicenna J Phytomed* 3(4): 313-320.
3. WHO (2013) WHO Traditional Medicine Strategy: 2014-2023.
4. Bhaargavi V, Jyotsna GSL, Tripurana R (2014) A Review on hepatoprotective activity. *Int J Pharm Sci Res* 5(3): 690-702.
5. Shaaban HAE, El-Ghorab AH, Shibamoto T (2012) Bioactivity of essential oils and their volatile aroma components: Review. *Journal of Essential Oil Research* 24(2): 203-212.
6. Al-Snafi, Esmail A (2015) Therapeutic properties of medicinal plants: A Review of Plants with Antifungal Activity (Part 1). *International Journal of Pharmacy Review & Research* 5(3): 321-327.
7. Amini MH (2015) Phytochemical and biological evaluation of *Heracleum afghanicum* Kitamura, Master Thesis. Lovely Professional University, Punjab, India.
8. Kassam KA, Karamkhudoeva M, Ruelle M, Michelle Baumflek (2010) Medicinal plant Use and Health Sovereignty: Findings from the Tajik and Afghan Pamirs. *Hum Ecol Interdiscip J* 38(6): 817-829.

9. Talaviya PA, Rao SK, Vyas BM, Shashipal P Indoria , Rakesh K Suman et al. (2014) A Review on: Potential antidiabetic herbal medicines. *Int J Pharm Sci Res* 5(2): 302-319.
10. Breckle SW, Dittmann A, Rafiqpoor MD (2010) *Field Guide Afghanistan: Flora and Vegetation*. Bonn: Scientia Bonnensis.
11. Dittmann A (2013) *Vascular Plants of Afghanistan: an augmented Checklist*. Germany: Scientia Bonnensis.
12. Younos C, Fleurentin J, Notter D (1987) Repertory of drugs and medicinal plants used in traditional medicine of Afghanistan. *Journal of Ethnopharmacology* 20: 245-290.
13. OCHA, (2014). *Afghanistan Kabul Province District Atlas*. OCHA.
14. Madras A (2012) Geographical situation of Guldara district. *Mahnamah-e-Kohdaman* 1(2): 18-19.
15. Menendez-Baceta G, Aceituno-Mata L, Molina M, Reyes-García V, Tardío J et al. (2014) Medicinal plants traditionally used in the northwest of the Basque Country (Biscay and Alava), Iberian Peninsula. *Ethnopharmacol* 152(1): 113-134.
16. Uprety Y, Asselin H, Dhakal A Nancy Julien (2012) Traditional use of medicinal plants in the boreal forest of Canada: review and perspectives. *Journal of Ethnobiology and Ethnomedicine* 8: 7.
17. Amiri MS, Jabbarzadeh P, Akhondi M (2012) An ethnobotanical survey of medicinal plants used by indigenous people in Zangelanlo district, Northeast Iran. *Journal of Medicinal Plants Research* 6(5): 749-753.
18. Naghibi F, Esmaeili S, Malekmohammadi M, Hassanpour A, Mosaddegh M (2014) Ethnobotanical survey of medicinal plants used traditionally in two villages of Hamedan, Iran. *Research Journal of Pharmacognosy* 1(3): 7-14.
19. Cussy-Poma V, Fernandez F, Rondevaldova J, Hana Foffová, Daniela Russo (2017) Ethnobotanical inventory of medicinal plants used in the Qampaya District, Bolivia. *Bol Latinoam Caribe Plant Med Aromat* 16 (1): 68-77.
20. Mohammadi H, Sajjadi SE, Noroozi M, Mahmoud Mirhosseini (2016) Collection and assessment of traditional medicinal plants used by the indigenous people of Dastena in Iran. *J Herb Med Pharmacol* 5(2): 54-60.
21. Mahmoud T, Gairola S (2013) Traditional knowledge and use of medicinal plants in the Eastern Desert of Egypt: a case study from Wadi El-Gemal National Park. *Journal of Medicinal Plants Studies* 1(6): 10-17.
22. Karami Z, Mirzaei H, Emam-Djomeh Z (2013) Effect of harvest time on antioxidant activity of *Glycyrrhiza glabra* root extract and evaluation of its antibacterial activity. *International Food Research Journal* 20(5): 2951-2957.
23. Damle M (2014) *Glycyrrhiza glabra* (Liquorice) - a potent medicinal herb. *International Journal of Herbal Medicine* 2(2): 132-136.
24. Bussmann RW and Glenn A (2010) Medicinal plants used in Peru for the treatment of respiratory disorders. *Rev peru biol* 17(2): 331-346.
25. Nwachukwu CU, Umeh CN, Kalu IG, Okere Sylvester, Nwoko Magnus C (2010) Identification and traditional uses of some common medicinal plants in Ezinihitte Mbaise L.G.A., of Imo state, Nigeria. *Imo State: Report and Opinion* 2(6).
26. Bouzidi A, Mahdeb N, Kara N (2011) Toxicity studies of alkaloids of seeds of *Datura stramonium* and synthesis alkaloids in male rats. *Journal of Medicinal Plants Research* 5(15): 3421-3431.
27. Devi MR, Bawari M, Paul SB, GD Sharma (2011) Neurotoxic and Medicinal Properties of *Datura stramonium* L. - Review. *Assam University Journal of Science & Technology* 7(1): 139-144.
28. Ahvazi M, Khalighi-Siqaroodi F, Charkhchiyan MM, Faraz Mojab, Vali-Allah Mozaffarian et al. (2012) Introduction of Medicinal Plants species with the most traditional usage in Alamut Region. *Iran J Pharm Res* 11(1): 185-194.
29. Karimi AG, Ito M (2012) Sedative effect of vapor inhalation of essential oil from *Heracleum afghanicum* Kitamura seeds. *Journal of Essential Oil Research* 24(6): 571-577.