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Indigenous Knowledge on Medicinal Plants Used by the People of Ghazni District, Afghanistan

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ABSTRACT

The indigenous knowledge on medicinal plants is scientifically and culturally crucial. Medicinal plants are used traditionally in different parts of Afghanistan since centuries but much of the information is not yet documented. Study on medicinal plants was conducted in 2023 in Ghazni district (center of Ghazni province) and documented different species of medicinal plants used traditionally by the different ethnic group of people in Ghazni district. The study was focused on 45 common medicinal plants under 42 genera with local and scientific names, families, diseases treated usually, methods of preparation, parts of plants used, route of administration and so on. The medicinal plants were trees, shrubs and herbs. The data was collected using structured questionnaires by selecting 8 healers or Hakims (Experienced elders and druggist) from 8 ethnic groups such as; Tajik, Pashtun, Sadat, Hazara, Bayat, Arab, Uzbek, Sikhs/ Hindus by using purposive sampling method. The targeted medicinal plants species were cultivated and wild. About 51% of the plants were cultivated where 49% were wild. Different parts of the plants prepared in different methods and used in various mode of administration. The most dominant part of the plants used was leaves (31%). The route of administration was oral administration (77%) and the most common method of preparation was decoction (29%). Local people were highly dependent to medicinal plants in Ghazni district and most of the medicinal plants were cheap and easily reachable. Uprooting, overgrazing and overexploitation were the main challenges for the local medicinal plants in the study area. It is recommended that proper conservation and suitable usages strategies should be considered by ministry of agriculture, irrigation and livestock in order to protect medicinal plants in Ghazni district and all over the country.

Keywords: Afghanistan, Ghazni District, Indigenous knowledge, Medicinal Plants

INTRODUCTION

Since ancient periods, medicinal plants or herbs have been uncovered and utilized in local medicinal practices. An herbal medicine is any manufactured medicine obtained exclusively from plants or plants parts (flowers, leaves, shoots, roots, seeds and other parts) as juices, oils, pastes, extracts and so on either in the crude state or as a pharmaceutical formulation (Rates, 2001). Plants synthesize hundreds of chemical compounds for various functions including diseases treatment (Gershenzon & Ullah, 2022). World Health Organization (WHO) confirmed that herbal medicines serve the health needs of about 80% of the world's population; especially for millions of people in the developing countries that are living to vast rural areas (WHO, 2005). In several ancient cultures plants products were consumed for biomedical curative and psychotherapeutic purposes (Halsberstein,

2005). Kumar and Jnanesha (2019) stated that Arabian medicine of Mesopotamia, Ayurveda of the Indus civilization, Chinese and Tibetan medicine of the Yellow River civilization of China and Kempo of the Japanese are a number of the oldest known medicinal systems in the world and all are based mostly on plants. Currently about 480,000 plants species exist on earth (Pullaiah *et al*., 2015). On the basis of WHO (2019) global demand for raw vegetable based medicine reaches to $14 billion at the moment and it may expand to $5 trillion in 2050 (Mirzoieva, 2020). The aim of this study is to make a rich document of medicinal plants which are using in Ghazni district by people commonly. There are other objectives in this study; transferring the elder's knowledge for new generation and also revival of the medicinal plants usages in the study area. Afghanistan as a mountainous country has a unique flora comprising around 5,000 plant species, out of which 25-30% is endemic to this country (Breckle *et al*., 2010). Most of these plants have medicinal values. Local people of Ghazni district have been using medicinal plants for treatment of their diseases since long back as well. Instead of medicinal purpose, people of Ghazni district often use the medicinal plants as fodder for cattle and fuel for their homes. As a whole, villagers who are directly dependent on ecosystem services are vulnerable to potential risks from the loss of biodiversity. As a result the medicinal plants have the same scenario (Mertz *et al*., 2007). Therefore, studies of medicinal plants in Ghazni district can be useful for the conservation of medicinal plants and also for the treatment of human diseases. The knowledge and skills of the elders and pharmacists about the medicinal plants of Ghazni district have not been written enough and will be easily forgotten. Therefore, the current study was conducted in order to evaluate and document the knowledge and use of medicinal plants utilized by healers to treat people's diseases in Ghazni district and furthermore in other parts of Afghanistan.

MATERIALS AND METHODS

Study Area

Ghazni district is located in the southeastern of Ghazni province and one of its parts is Ghazni city. Its population is about 300000 people and different ethnic groups such as; Tajik, Pashtun, Sadat, Hazara, Bayat, Arab, Uzbek, Sikhs/ Hindus and others are living there (NSIA, 2003). Ghazni district has 380 km^2 areas on around 2200 meters above sea level and is located at 33°32′57″N 68°25′24″E. Ghazni province is situated in or near the cool temperate desert scrub biome according to the Holdridge life zones system of bioclimatic classification. It has a mid-latitude steppe/ semi-arid cool climate. It has four seasons with annual mean temperature 9.7 C˚ and total annual Precipitation average 297 mm. Different plant species are existed in Ghazni province (Köppen, 1900). According to Abasiar (2013) average annual precipitation in Ghazni district reaches to 286 mm.

Samples Collection

The data was collected using structured questionnaires by selecting 8 healers or Hakims (Experienced elders/ HAKIM and druggist/ ATTAR) from 8 ethnic groups such as; Tajik, Pashtun, Sadat, Hazara, Bayat, Arab, Uzbek, Sikhs/ Hindus by using purposive sampling method. The sample size is small because the entire reliable healers' population in the study area reaches to eight healers from eight ethnic groups.

Statistical Analysis

Eight healers were selected from eight popular ethnic groups (Tajik, Pashtun, Sadat, Hazara, Bayat, Arab, Uzbek and Sikhs) in Ghazni district by purposive sampling method. Every ethnic group has their own culture

and various perceptions from medicinal herbs. From every ethnic group one famous Hakim was selected to answer the questionnaires. One of the informants was female and seven other were males. All of the informants were more than 50 years old. These informants were herbalists, social workers, farmers and housewife. Informants were asked about every plant, ailment treated, methods of preparation, parts of plants used, route of administration and etc. Discussions were made with research respondents to expand information about the medicinal herbs. Ms. Excel was utilized to analyze the accumulated data.

RESULTS

Essential data related to the selected plants were accumulated. As a result all necessary information such as; local names, botanical names, therapeutic uses, part (s) used, preparation methods and mode of administration about all 45 medicinal plants is collected (Table 1). Informants tried their best to mention the best answers for questionnaires. The things we should consider to have a rich biodiversity in the aforementioned area and avoid medicinal plants from uprooting by people and animals.

Table 1. Shows 45 medicinal plants used traditionally by the local people of the Ghazni district.

Modes of administration	Preparation methods	Part (s) used	Therapeutic uses	Botanical names	Local names	No.
1. Orally 2. Orally and smelling 3. Orally	1. Extracting of juice 2. Boiling 3. Fresh	1. Bulbs 2. Bulbs 3. Bulbs	1. Gastric disorders, diuretic and expectorant 2. Antibacterial agent, respiratory problems, common cold and flu, digestive upsets 3. Stimulate sexual desire	*Allium cepa* L.	Pyaz-e Kolchaii	1
1. Orally	1. Fresh and cooked	1. Bulbs	1. Hypertension, cardiac disorders, urination control during sleeping	*Allium sativum* L.	Seer	2
1. Orally 2. Orally, gargling	1. Decoction 2. Infusion	1. Leaves 2. Flowers	1. Gastro – intestinal problems 2. Upper respiratory diseases, tonsillitis	*Amaranthus caudatus* L.	Taj-e Khorus	3
1. Orally 2. Orally	1. Decoction 2. Decoction	1. Fruits 2. Whole plant	1. Hypertension, abdominal flatulence, abdominal pain 2. Stimulant, carminative	*Anethum graveolens* L.	Shebet	4
1. Orally	1. Decoction	1. Fruits and whole plant	1. Diuretics	*Apium graveolens* L.	Karafs	5
1. Orally	1. Decoction, fresh	1. Fruits and seeds	1. Carminative, stimulant, aphrodisiac, refrigerant, colic pains, bleeding piles	*Coriandrum sativum* L.	Gashneez	6
1. Orally 2. Orally	1. Decoction 2. Extracting	1. Fruits and seeds 2. Roots	1. Diuretic 2. Kidney pain relief	*Daucus carota* L.	Zardak	7
1. Orally	1. Infusion	1. Flowers	1. Diarrhea, peptic ulcer, gastric diseases	*Dorema aitchisonii* Korov.	Gandah-Feroozah	8

1. Orally	1. Powdered, decoction, fresh	1. Fruits and seeds	1. Digestive, treating gas in the digestive system, cough preventing	*Foeniculum vulgare* Miller	Badian	9
1. Orally 2. Apply 3. Orally 4. Apply	1. Decoction 2. Paste 3. Decoction 4. Paste	1. Leaves 2. Roots, barks 3. Whole plant 4. Barks	1. Skin diseases and piles 2. Snake bite and scorpion sting 3. Abortion 4. Leprosy	*Nerium indicum* Miller	Gul-e Gandiri	10
1. Orally 2. Orally	1. Extracting of juice 2. Extraction	1. Roots 2. Leaves	1. Toothache 2. Anticancer	*Rhazya stricta* Decne.	Gandelay	11
1. Orally 2. Orally 3. Apply 4. Orally	1. Decoction 2. Powdered 3. Paste 4. Grinding	1. Leaves 2. Leaves 3. Leaves 4. Dried leaves	1. Fever 2. Wounds, chronic sores and ulcers 3. Inflammation and rheumatisms 4. Expectorant and anthelmintic	*Calotropis procera* (Wild.) R. Br.	Spelmai	12
1. Orally	1. Powered	1. Whole plant	1. Dysentery, hypertension, jaundice, stomachache, hepatitis, diabetes, carminative	*Caralluma edulis* (Edgew.) Benth.	Pawane	13
1. Orally	1. Fresh and dried	Fruit	1. Laxative, stimulate evacuation of the bowels, tending to relieve constipation	*Phoenix dactylifera* L.	Khorma	14
1. Apply 2. Apply	1. Extracting of juice 2. Extracting	1. Leaves	1. Anti – arthritis and backache 2. Hepatitis and dermatitis	*Aloe vera*	Aloe vera	15
1. Orally	1. Powdered	1. Flowers	1. Stops bleeding, makes tissue contract, inhibits bacterial growth, ease menstruation, tissue heal, flatulence, nausea, dysentery, kidney stones, hypertension, dysmenorrheal	*Achillea filipendulina* Lam.	Bu Madara/ Zawil	16
1. Orally	1. Decoction	1. Whole plant, leaves	1. Abdominal pain, indigestion, diabetes, hypertension, spasm, gastritis	*Artemisia absinthium* L.	Afsantin	17
1. Orally	1. Decoction	1. Whole plant	1. Purgative, laxative, defecation	*Artemisia santolinifolia* Turcz. ex Krasch.	Terkh	18
1. Apply 2. Orally	1. Paste 2. Decoction	1. Whole plant 2. 1. Whole plant	1. Ear pain, burns 2. Diuretic & detoxifying	*Artemisia scoparia* Waldst. & Kit.	Jaroo Bota-e Kohi	19
1. Orally	1. Infusion	1. Leaves	1. Hepatitis, spleen enlargement control	*Calendula officinalis* L.	Gul-e Hamisha Bahar	20
1. Orally 2. Orally 3. Orally	1. Extracting of juice 2. Decoction 3. Grinding	1. Whole plant 2. Roots 3. Seeds	1. Jaundice, hepatitis, enlarged spleen, diarrhea, severe headache 2. Diuretic 3. Obstructed menstruation, bilious vomiting	*Cichorium intybus* L.	Kasni	21

1. Apply	1. paste	1. Leaves	1. Wound healing and anti - septic	*Launaea platyphylla* Rech. f	Anzarut	22
1. Orally 2. Orally 3. Orally	1. Powdered 2. Decoction 3. Fresh	1. Leaves 2. Roots and barks 3. Fruits	1. Jaundice 2. Purgative, blood purifier, febrifuge, anti – septic 3. Kidney problem	*Berberis integerrima* Bunge	Zerk/ Zereshk	23
1. Apply	1. Paste	1. Seeds	1. Backache	*Heliotropium arguzioides* Kar. & Kir.	Gazdom Bota	24
1. Orally	1. Fresh	1. Leaves	1. Hypertension, hyperlipidemia, obesity	*Brassica oleracea* L.	Kalam	25
1. Orally	1. Decoction	1. Whole plant	1. Fever	*Descurainia Sophia* (L.) Webb ex Prantl	Khakshir	26
1. Orally	1. Fresh	1. Whole plant	1. Stomachic and tonic	*Lipidium sativum* L.	Taratezak	27
1. Orally 2. Orally	1. Fresh 2. Powdered	1. Leaves 2. Roots	1. Diuretic and laxative 2. Jaundice, liver ailment, urinary complaints and piles	*Raphanus raphanistrum* L.	Mooli/ Turb	28
1. Smoking and orally	1. Decoction	1. Aerial parts	1. Sedative, analgesic, antispasmodic, insomnia, neuralgia, asthma, glaucoma, cooling agent, tonic, urinogenital diseases	*Cannabis sativa* L.	Bota-e Chars	29
1. Orally 2. Orally	1. Powdered 2. Extraction of juice	1. Whole plant 2. Whole plant	1. Anthelmintic, jaundice, liver diseases, appetite, diuretic, aphrodisiac, abdominal pain 2. Kidney stone	*Chenopodium album* L.	Shorak	30
1. Apply 2. Apply	1. Extraction of juice 2. Oil	1. Fruits 2. Seeds	1. Dropsy, skin problems like leukoderma, purgative and used for cattle intestinal disorder 2. Snake bite	*Citrullus colocynthis* (L.) Schrad.	Tarbooz-e Abujehl	31
1. Orally	1. Decoction	1. Fruits, seeds, barks, roots	1. Sunburn, dysentery, wounded skin, peptic ulcer	*Elaeagnus angustifolius* L.	Senjed	32
1. Orally 2. Orally	1. Powdered 2. Decoction	1. Aerial parts 2. Roots	1. Diaphoretic, expectorant, laxative, anti diarrheal, anti septic agent 2. Kidney stone	*Alhagi pseudalhagi* (M. Bieb) Desv.	Oshtorkhar	33
1. Orally 2. Apply	1. Decoction 2. Paste	1. Leaves and young shoots 2. Leaves and young shoots	1. Blood pressure, carminative 2. Wounds, cuts, insect bites	*Medicago sativa* L.	Rshqa	34
1. Orally	1. Cooked and fresh	1. Leaves and young shoots	1. Dysentery, abdominal pains	*Trifolium repens* L.	Shabdar	35
1. Orally	1. Extraction of juice	1. Whole plant	1. Antipyretic, anthelmintic	*Fumaria cf. vaillantii* Loisel.	Shahtara	36

1. Orally 2. Orally	1. Fresh and dried 2. Infusion	1. Fruits 2. Flowers, leaves, fruits, septa of fruits	1. Tonic 2. Kidney pain, hyperlipidemia	*Juglans regia* L.	Darakht-e Charmaghz	37
1. Orally	1. Powdered, fresh, extraction and infusion	1. Leaves	1. Carminative, astringent, anti rheumatic, nausea, diarrhea, dysentery	*Mentha longifolia* (L.) Hudson	Naana	38
1. Orally	1. Decoction	1. Leaves	1. Stomach problem, laxative	*Malva neglecta* Wallr.	Panerak	39
1. Orally	1. Fresh and dried	1. Fruits	1. Laxative, treatment of small pox	*Ficus carica* L.	Darakht-e Angeer	40
1. Orally	1. Fresh and dried	1. Fruits	1. Laxative, diarrhea	*Morus alba* L.	Darakht-e Tut	41
1. Smell 2. Orally	1. Extraction of juice 2. Fresh	1. Leaves 2. Leaves	1. Flu 2. Anti diabetic	*Eucalyptus cf globulus* Labill.	Darakht-e Ocalyptus	42
1. Apply 2. Orally	1. Paste 2. Fresh	1. Leaves 2. Fruits	1. Anti septic 2. Tonic	*Olea ferruginea* Royle	Darakht-e Zaitoon	43
1. Orally 2. Orally 3. Apply	1. Infusion 2. Extraction of juice 3. Powdered	1. Leaves 2. Seeds 3. Leaves	1. Expectorant, emollient, demulcent, cough, bronchitis 2. Purgative, laxative 3. inflamed wounds	*Plantago lanceolata* L.	Zuf	44
1. Orally 2. Orally	1. Decoction 2. Infusion	1. Roots 2. Flowers	1. Diarrhea, kidney pain 2. Cold, fever	*Rumex crispus* L.	Shelkhi/ Torshak	45

Different parts of the plants such as; leaves, flowers, fruits, seeds, roots, aerial parts, septa of fruits, whole plants and bulbs are used for remedies of different diseases by the local people (Figure 1). Considering to the figure (1) leaves, whole plants and fruits 31%, 17% and 15% form the majority parts of the medicinal plants in the study area respectively.

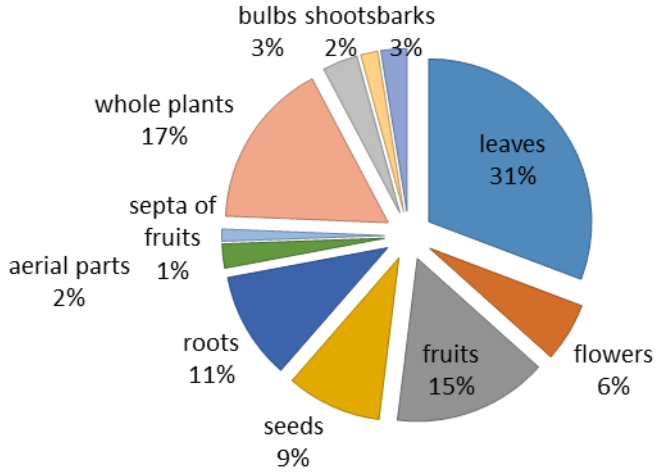

Figure 1. Shows parts of medicinal plants that used by the local people of Ghazni district.

Local people of Ghazni district prepare their medicines from medicinal plants in different ways in order to achieve a better result on patients (Figure 2). As indicated in figure (2) more than half (66%) are decoction, fresh and extraction methods which are the medicinal plants prepared by people in the study area. Where 34% of the plants are used as powdering, infusion, paste, drying, grinding, cooked and oil forms.

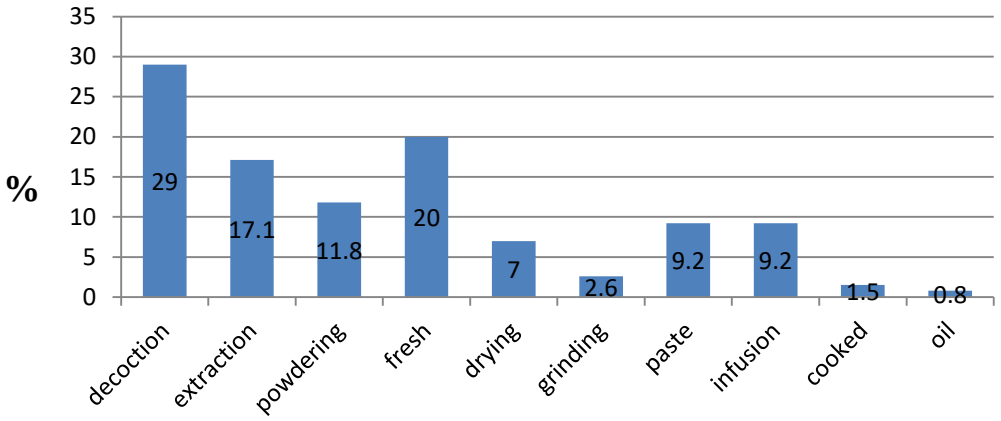

Figure 2. Shows percentages of different methods for preparation of medicines from medicinal plants by the local people.

Every medicinal plant uses in various ways by local people of Ghazni district in order to achieve a better result on patients (Figure 3). As showed in figure (3) oral administration is the most dominant way (77%) for taken the herbal medicine by local people in Ghazni district.

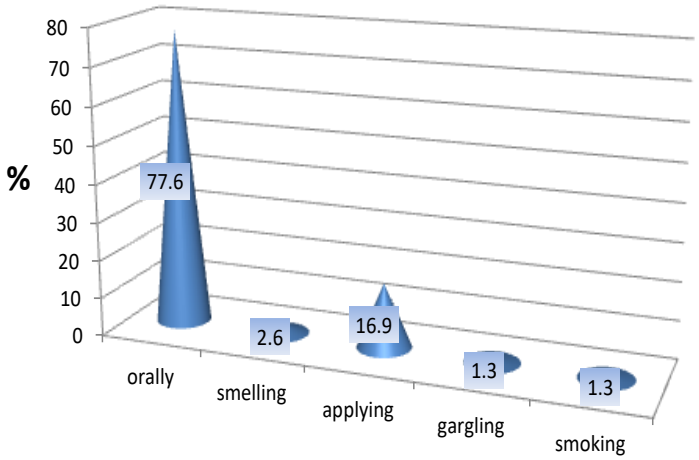

Figure 3. Shows percentage of mode of administration for medicinal plants which are used by local people.

DISCUSSION

This study reveals that the people of Ghazni district extremely rely on medicinal herbs for treatment of their various ailments. Also it is found that medicinal plants in the study area are cheap and easily reachable. On the

other hand; the methods of preparation and usages of medicinal plants were easily understood. Additionally it was believed that the medicinal plants are harmless with no side effects. Therefore, the local people are depended on medicinal plants. Findings of this study go in line with (Kumar and Jnanesha, 2019) that about 80% of people in developing countries depends on traditional medicines to meet their primary health care needs. Results of this study is also approved by (Smith-Hall, 2012) that in modern medicine, around a quarter of the drugs prescribed to patients are derived from medicinal plants, and they are rigorously tested.

CONCLUSION

In this study local knowledge and common methods of usages of the 45 medicinal plants are documented. It was uncovered that the people of Ghazni district extremely rely on medicinal plants for treatment of their various diseases. Also it is found out that medicinal herbs in the study area are inexpensive and easily reachable. On the other hand; the methods of preparation and usages of medicinal plants were well-understood. Additionally, it was believed that the medicinal plants are harmless. Therefore, the local people are strongly depended on medicinal plants. It is mentionable that younger generations are less interested to traditional therapy than elders in Ghazni district. Findings of this study can be useful in terms of documentation for the treatment of diseases and health problems.

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