ENUMERATION OF THE ETHNOBOTANIACAL USES OF SOME HERBS IN ASTORE VALLEY, GILGIT-BALTISTAN, PAKISTAN WITH PARTICULAR REFERENCE TO HEALTH CURE PURPOSES

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Abstract

An ethnobotanical survey was carried out to collect information regarding the various indigenous uses, particularly the traditional therapy by the plants in Astore valley. It was observed that 133 herbaceous species belonging to 112 genera and 41 families (33 dicotyledonous, 6 monocotyledonous and two pteridophytic) were used in the folk-medicine system *i.e.* eye disease, abdominal problems, joint pain, gynecological disease, diarrhea, fever, cough, abscesses, skin disease and aphrodisiac etc., livestock treatment and other purposes by the people of the valley. A number of locals and nomadic people were engaged in harvesting medicinal plants for their own use or to fetch huge amount to in market. The threatened and endangered plant species like *Saussurea costus, Picrorhiza kurrooa, Aconitum hetrophyllum* and *Angelica glauca* are also exploited. The plant resources are highly under threat and facing extinction risk. There is a need to conserve the indigenous knowledge and important resources equally.

Introduction

The usage of plants for the existence of human life on earth is as old as human life itself. Pakistan hosts about 6000 flowering plants, out of which about 2000 have ethnobotanical value (Williams & Ahmad, 1999). It was estimated that in the early 1950's up to 84 % of *the* Pakistani people depended on traditional system of medicine for all or most of their health cure remedy (Hocking, 1958) and this figure may be slightly lower now (Goodman & Ghafoor, 1992). According to an estimate about 35,000-70,000 plant species are used in folk medicine in the world (Lewington, 1990, Fransworth & Soejotaro, 1991). About 70-80 % of world population use traditional medicine for their illness and ailments (Pie, 2001), but it was estimated that the percentage of traditional medicine usage decreased in developing countries; 40-50 % in Germany, 42 % in the U. S. A., 48 % in Australia and 49 % in France (Titz, 2004) due to easy availability of allopathic medicine or unavailability of medicinal plants in the wild. Out of 5700 plants only 400-600 species are listed as medicinal plants in Pakistan (Khan *et al*., 2007), most of which are confined to the mountain areas (Ali & Qaiser, 1986).

Pakistan, especially Northern Areas, are the best sources for exporting the medicinal plants on sustainable basis, if proper understanding is developed among local communities and the end users. It may help in generating source of income for indigenous people. In Astore valley about 95 % of the medicinal plants are distributed as wild plants. The vegetation of Nanga Parbat is better known than other region in high Asia (Dickore & Nusser, 2000). Since the British era until now, Astore valley has been the largest exporting area of medicinal plants in Northern Areas (Khan, 2004). It is renowned as a realm of traditional medicinal plants (Kazmi & Siddiqui, 1953). Astore is hub of medicinal plants (Shinwari & Gilani, 2003). The mountainous region provides a natural conductive environment for the medicinal flora. Considerable number of drugs are extracted from the flora and still these areas possess a good potential for exploitation and utilization of plants (Khan & Khatoon, 2007). Kazmi & Siddiqui (1953) documented 83 medicinal plants of Astore and upper Guraiz Valley. Rasool (1998) described the medicinal uses of 63 taxa of Northern Areas. Shinwari & Gillani (2003) conducted ethnobotanical study of 33 plant species of Bulashbar nullah, Astore.

Therefore, the aim of present research work was to record the indigenous knowledge of plants and all possible ethnobotanical information of plant species used by people of the valley.

Materials and Methods

Field studies were conducted throughout the Astore valley, starting from April to October during 2005-2009. Plant specimens were collected from different localities of the study area. All the collected plant specimens were properly pressed, dried and mounted on herbarium sheets. The identification was carried out with the help of the pertinent literature and by comparing with the already authentically identified specimens present in Karachi University Herbarium (KUH). For nomenclature Flora of Pakistan (Nasir & Ali, 1970-1987;

Nasir & Ali, 1980-1989; Ali & Qaiser,1993-2009) and Flora Iranica (Rechinger, 1957-2001 were followed. The identified voucher specimens were deposited in Karachi University Herbarium (KUH).

For ethnobotanical investigation, a questionnaire was developed to gather ethnobotanical information from inhabitant. Importance was given to the knowledgeable people, local Hakims, particularly the aged men and women whose imperial knowledge was respected by the local people.

The collected information was rechecked by consulting the available literature (Rasool, 1998, Shinwari & Gilani, 2003, Khan, 2004, Qureshi *et al.,* 2006, Khan & Khatoon, 2007, 2008, Khan *et al*., 2007, Hayat *et al*., 2009 and Ashraf *et al.,* 2010).

Results

Medicinal plants found in Astore valley mostly in alpine and subalpine zones of study area. Total of 133 taxa are documented for their ethnobotanicl uses, belonging to 112 genera and 41 families (33 dicotyledonous, 6 monocotyledonous and two pteridophytic). In the habitat 93 perennial and 40 were annual herbs. Most species used were dicots and monocot, while the pteridophytes constitute only a minor fraction of the total listed taxa. The highest number of species (19) were recorded in family Asteraceae followed by Papilionaceae with 12 species, Apiaceae 11, Polygonaceae 9, Ranunculaceae 8, poaceae 6, Lamiaceae 5, Brassicaceae and Malvaceae (4 species each) while remaining 32 families have less than 4 species in each.

It was observed, that 12 taxa viz. *Bunium persicum, Angelica glauca, Aconitum hetrophyllum* var. *hetrophyllum, Saussurea costus, Picrorhiza kurrooa, Selinum vaginatum, Ferula assa-foetida, Arnebia benthamii, Allium* spp., *Fragaria nubicola, Rheum* spp. and *Eremurus himalaicus* were extensively exploited by the local people and nomads for their various ethnobotanical uses. Some of these species were harvested by the drug agencies for commercial purposes and export to other countries as raw material. *Saussurea costus, Picrorhiza kurrooa* are listed in IUCN CITIES II (Anonymous, 2008), but the harvesting of these valuable species are continue. Due to over exploitation and unsustainable uses, these taxa are rapidly disappearing from the valley. There is a great need to take immediate steps on urgent basis to conserve plants in this area. Some cultivated herbs are also documented due to their medicinal uses.

Pteridophytes

Family: Equisetaceae

1. Bot. name: ***Equisetum arvense*** L. ,Vou. spec**.** # 389
   Habit: Annual herb, Locality: Godai
   Ver. name: Cheiow, Part used: Whole plant
   Ethnobotanical use: Whole plant is boiled in water and is used as remedy for urine and kidney problems, particularly for kidney and urinary bladder stones and also used as fodder.

Family: Dryopteridaceae

2. Bot. name**:** ***Dryopteris barbigera*** (Hook.) O .Ktze., Vou. spec. # 1709
   Habit: Perennial herb, Locality: Kalapani
   Ver. name: Potolow Jabaati, Part used: Root
   Ethnobotanical use: Root decoction is used for toothache.

Angiosperms- Dicots

Family: Amaranthaceae

3. Bot. name: ***Amranthus hybridus*** L. subsp. ***Hybridus,*** Vou. spec. # 1661
   Habit: Annual herb, Locality: Peerjot
   Ver. name: Ganhar, Parts used: Seeds, leaves and stem

Note: Bot.= Botanical, Vou. spec.= Voucher specimen, Ver.= Vernacular **.**

Saussurea costus

Podophyllum emodi

Pulsatilla wallichiana

Arnebia benthamii

Nepeta adenophyta

Picrorhiza kurrooa

Clematis orientalis

Primula denticulate

Dactylorhiza hatagirea

Rheum tibeticum

Plate: Some most threatened medicinal plants of Astore valley

Ethnobotanical uses: Seeds are semi cooked on iron pan and grindered "Sato" is used with water or tea for acidity, cooling agent and stomach disorder, flour is also used as bread for digestive problems. Thin bark's small balls locally called "Taage" kept on joint pain or dislocated place and burnt. Leaves are used as vegetable.

Note: Bot. name= Botanical name, Vou. spec= Voucher specimen, Ver. Name= Vernacular name.

Family: Apiaceae

4. Bot. name: ***Angelica glauca*** Edgew., Vou. spec: # 1445
   Habit: Perennial herb, Locality: Kalapani Jonedup Nullah
   Vernacular name: Choru, Parts used: Root
   Ethnobotanical uses: Decoction of root is used as remedy for abdominal pain, urine problems and cordial diseases, also useful in flatulence, cough and dyspepsia. Due to aromatic and pleasant taste used in vegetable as flavoring agent. The plant has high commercial market rate, block quantity of plant roots are exploited for fetching a high price in market. Due to over exploitation and grazing pressure this plant is rapidly disappearing from its habitat.
5. Bot. name: ***Bunium cylindricum*** (Boiss. & Hoh.) Drade, Vou. spec: # 1521
   Habit: Annual herb, Locality: Peerjot Village
   Ver. name: Pholosho hayo, Parts used: whole plant
   Ethnobotanical uses: Fresh and young stem with flower is eaten directly or crushed decoction is used for colic, abdominal pain and vomiting. Mature seeds are also used for same purpose.
6. Bot. name: ***Bunium persicum*** (Boiss.) Fedtsch., Vou. spec: # 1483
   Habit: Annual herb, Locality: Gorikot P.R.C.
   Ver. name: Kini hayo, Parts used: Seeds and bulbs
   Ethnobotanical uses: Seeds are directly used as condiment and a spice of the food and remedy for stomach disorder. Seeds are collected mainly for commercial purpose; bulbs are eaten by the children for refreshment. Due to grazing pressure, over exploitation and expansion for agriculture this species is rapidly disappearing from its natural habitat.
7. Bot. name: ***Caram carvi*** L. ,Vou. spec: # 377
   Habit: Annual herb, Locality: Godai
   Ver. name: Hayo, Parts used: Seeds
   Ethnobotanical uses: Seeds are used for stomach disorder, dysentery and internal wounds and also used as flavoring agent.
8. Bot. name: ***Coriandrum sativum*** L., Vou. spec: # 632
   Habit: Annual herb (cultivated), Locality: Peerjot Village
   Ver. name: Shamlik, Parts used: Whole plant
   Ethnobotanical uses: Seeds and leaves are used as condiment and spice. Decoction of plant is used for dysentery, vomiting, abdomen pain and also used as carminative.
9. Bot. name: ***Daucus carota*** L. ,Vou. spec: # 1758
   Habit: Annual herb (Cultivated), Locality: Peerjot Village
   Ver. name: Wafur, Parts used: Root
   Ethnobotanical uses: Root is used as an energetic and blood stimulator. It is also used as vegetable and salad.
10. Bot. name: ***Ferula assa-foetida*** L., Vou. spec: # 1310
    Habit: Perennial herb, Locality: Peerjot
    Ver. name: Sap, Parts used: Root, stem and gum resin
    Ethnobotanical uses: Gum resin (sapadod) obtained by incision in stem and covered by plastic as result whitish thick juice exudes from stem then dried and used for abdominal pain, vomiting, particularly for children when they crying continuously due to stomach problem. Root is used as remedy for swelling in women after delivery; root is also used for abortion, for blood purification, cough, asthma, gastric, fever and heart disease. It is also used as remedy for expulsion of placenta after laying child or abortion of cow. Young stem is eaten directly. Root is also used for increasing milk. Due to its extensive use and demand, local people are actively involved in overexploitation without sustainable and unscientific methods; consequently, this plant is rapidly disappearing and become threatened in its natural habitat.
11. Bot. name: ***Heracleum candicans*** Wall. ex DC., Vou. spec: # 237
    Habit: Perennial herb, Locality: Kalapani,
    Ver. name: Morou, Parts used: Root
    Ethnobotanical uses: Root decoction is used for asthma, cough, and pneumonia. It is good fodder to goats which increase milk.
12. Bot. name: ***Ligusticum thomsonii*** C. B. Clarke, Vou. spec: # 1482
    Habit: Perennial herb, Locality: Kamrot

Ver. name: Korshidone, Parts used: Root
Ethnobotanical uses: Powdered root is used for toothache and bleeding from gums.

13. Bot. name: ***Prangos pabularia*** Lindl., Vou. spec: # 2093
Habit: Perennial herb, Locality: Shankerghar
Ver. name: palongus, Parts used: Seeds and leaves
Ethnobotanical uses: Informations about uses in human are not satisfactory, but the seeds are used as tonic for the sheep, goats and cows. Seeds are harmful to the horses, if the seeds are given to horse, eyes of horse become white and blind. Leaves are used as fodder for sheep and goats.
14. Bot. name: ***Selinum vaginatum*** (Edgew.) C. B. Clarke, Vou. spec: # 284
Habit: Perennial herb, Locality: Kalapani Motow Nullah
Ver. name: Botijat., Parts used: Root
Ethnobotanical uses: Root decoction is used for abdominal pain, vomiting, stomach disorder and gas troubles. And also used for aphrodisiac.

Family: Asclpiadaceae

15. Bot. name: ***Vincetoxicum stocksii*** Ali & S. Khatoon, Vou. spec: # 1489
Habit: Perennial herb, Locality: Gorikot P. R. C.
Ver. name: Khirkaliyo Kay, Parts used: Leaves
Ethnobotanical uses: Decoction of leaves is used for healing wounds especially in donkeys and horses.

Family: Asteraceae

16. Bot. name: ***Anaphalis nepalensis*** (Spreng.) Hand-Mazz., Vou. spec: # 410
Habit: Perennial herb, Locality: Rama near Lake
Ver. name: Chhiki, Parts used: Flower and leaves
17. Bot. name: ***Anaphalis virgata*** Thomson ex C. B. Clarke, Vou. spec: # 1719, Locality: Sangopaje,
Ethnobotanical uses: Both species are known locally as same name and uses are also same. The decoction of leaves and flowers is used for asthma, cough, delivery and abdominal pain of women. Flowers kepet in local caps, homes, mosques and in Holy Quran for their aromatic and pleasant smell.
18. Bot. name: ***Anthemis cotula*** L., Vou. spec: # 395
Habit: Perennial herb, Locality: Gorikot
Ver. name: Jebdajo, Parts used: Flower and leaves
Ethnobotanical uses: Decoction of leaf and flower is used for toothache, abdominal pain and gas troubles.
19. Bot. name: ***Arictum lappa*** L., Vou. spec: # 132
Habit: Perennial herb, Locality: Rattu
Ver. name: Chhero, Parts used: Root
Ethnobotanical uses: Decoction of root is used as tonic and for joint pain.
20. Bot. name: ***Artemisia brevifolia*** Wall. ex DC., Vou. spec: # 1766
Habit: Under shrub, Locality: Bunji Gah
Ver. name: Zoon, Parts used: Whole plant
Ethnobotanical uses: Fresh leaves, buds and flowers are collected and boiled in water; the extract is used for blood pressure, diabetics, abdominal pain and gastrointestinal problems. Also used as remedy for tap and ring worms. Stem with leaves are used for making brooms. Plant is used on mud roof to protect under line wood sheets and also used as firewood.
21. Bot. name: ***Artemisia japonica*** Thunb.**,** Vou. spec: # 570
Habit: Perennial herb, Locality: Dambabaho
Ver. name: Jay, Parts used: Whole plant
Ethnobotanical uses: Buds and flowers are boiled in water and used for fever and stomach problems. Stem with leaves is used as a mat for drying apricot and for making brooms.
22. Bot. name: ***Aremisia scoparia*** Waldst. & Kit., Vou. spec: # 1765
Habit: Perennial herb, Locality: Bunji Gah
Ver. name: Jay, Parts used: Whole plant
Ethnobotanical uses**:** Vernacular name is same as *''Artemisia japonica"* fresh flowers and buds are soaked in water and the extract is used for fever cough and abdominal pain for children. Stem with leaves is used for making brooms.
23. Bot. name: ***Artemisia sieversiana*** Ehrh**.,** Vou. spec: # 142
Habit: Perennial herb, Locality: Between Nasirabad & Rattu
Ver. name: Khakez, Parts used: Flowers and buds
Ethnobotanical uses: Flowers and buds are boiled in water and the extract is used for gastrointestinal problems, vomiting and for digestive system, particularly for children when the milk of mother was not digested. Extract is also used to children for intestinal worms.

24. Bot. name: ***Cichorium intybus*** L., Vou. spec: # 713
    Habit: Perennial herb, Locality: Eidgah
    Ver. name: Chityiskanaji , Parts used: Stem, flowers and leaves
    Ethnobotanical uses: Decoction plant is used for fever, vomiting, diarrhea, spleen enlargement, and joint pains.
25. Bot. name: ***Echinops cornigerus*** DC., Vou. spec: # 25
    Habit: Perennial herb, Locality: Ranghat
    Ver. name: Hapuch, Parts used: Whole plant
    Ethnobotanical uses: Spines on stem and leaves are burnt then used as fodder. Root contained resin or gum, it is used as fodder and tonic for cattle.
26. Bot. name: ***Hieracium vulgatum*** Fries, Vou. spec: # 877
    Habit: Perennial herb, Locality: Rama on way to lake
    Ver. name: Choki, Parts used: Stem and leaves
    Ethnobotanical uses: Young plant is used as vegetable and also eaten as raw for its taste and considered as blood purifier. Mature plant is used as fodder.
27. Bot. name: ***Jurinea himalaica*** R. R. Stewart, Vou. spec: # 578
    Habit: Perennial herb, Locality: Dambabho
    Ver. name: Gogoldup, Parts used: Root
    Ethnobotanical uses: Dried root is burned and smoke is created in house for repletion of evils and eye disease.
28. Bot. name: ***Ligularia jacqemontiana*** (Decne.) M. A. Rau, Vou. spec: # 269
    Habit: Perennial herb, Locality: Kalapani
    Ver. name: Matakhashe, Parts used: Root
    Ethnobotanical uses: Root decoction is used for women after delivery to control bleeding and other related gynecological problems.
29. Bot. name: ***Saussurea ceratocarpa*** Decne. var. ***depressus*** **(**C. B. Clarke ex Hook. f.) Lipschitz, Vou. spec: # 1282
    Habit: Perennial herb, Locality: Rama kinithone
    Ver. name: Baibari powner, Parts used: Whole plant
    Ethnobotanical uses: Decoction of plant is used as remedy for asthma, fever and bronchitis.
30. Bot. name**:** ***Saussurea costus*** (Falconer) Lipschitz, Vou. spec: # 1473
    Habit: Perennial herb, Locality: Gorikot P. R. C.
    Ver. name: Minaal, Parts used: Root
    Ethnobotanical uses: Root is used for toothache and aphrodisiac. Powdered root is used for heart, gallbladder, spleen and urine disease of cattle. Root is also used for dysentery and stomach disease of cattle. The root has high value in the market, export to other countries so overexploitation and unsustainable usage, the plant rapidly disappearing from its natural habitat and become threatened (Plate).
31. Bot. name: ***Scorzonera divericata*** Hook., Vou. spec: # 1230
    Habit: Perennial herb, Locality: Kalapani
    Ver. name: Dondaly, Parts used: Stem and leaves
    Ethnobotanical uses: Young leaves and stem are eaten as raw for its taste and considered energetic and power stimulant.
32. Bot. name: ***Sonchus asper*** (L.) Hill, Vou. spec: # 1884
    Habit: Perennial herb, Locality: Hercho
    Ver. name: Koishaa, Parts used: Leaves
    Ethnobotanical uses: Young leaves are used as vegetable and considered as energetic.
33. Bot. name: ***Taraxacum stewartii*** Soesl, Vou. spec: # 266
    Habit: Perennial herb, Locality: Kalapani Motow Nullah
    Ver. name: Lakanay, Parts used: Leaves
    Ethnobotanical uses: Leaves of all species of ‘’*Taraxacum*” are used as vegetable and remedy for blood purifier, digestive disorder and skin diseases.
34. Bot. name: ***Tragopogon dubius*** Scop., Vou. spec: # 1535
    Habit: Perennial herb, Locality: Rahmanpur Salmanihet
    Ver. name: Garganay, Parts used: Whole plant
    Ethnobotanical uses: Young plant is eaten as raw and considered as energetic and power stimulant and used as fodder also.

    Family: Balsaminaceae
35. Bot. name: ***Impatiens thomsonii*** Hook.f., Vou. spec: # 811
    Habit: Annual herb, Locality: Between Chugam and Nasirabad
    Ver. name: Foutongi, Parts used: Seed

Ethnobotanical uses: Seeds are eaten as raw considered general tonic and power stimulator.

Family: Boraginaceae

36. Bot. name: ***Arnebia benthamii*** (Wall. ex G. Don) I. M. Johnston, Vou. spec: 1798
Habit: Perennial herb, Locality: Kalapani Kamari top
Ver. name: Zogipasha, Parts used: Stem and leaves
Ethnobotanical uses: Stem with leaves is boiled in water, filtered extract is used for abdominal pain, swelling of woman after delivery and bleeding control. Decoction is also used for asthma, cough, and typhoid.
37. Bot. name: ***Onosma dichroantha*** Boiss., Vou. spec:#1594
Habit: Perennial herb, Locality: Bulashbar Nullah
Ver. name: Sharong, Parts used: Root and stem
Ethnobotanical uses: Root and lower part of stem contain red dye is crushed and mixed with water and mixture is used as colour for woolen cloths and carpets. Root is also used as nail polish.

Family: Brassicaceae

38. Bot. name: ***Brassica napus*** L., Vou. spec:# 982
Habit: Annual herb (cultivated), Locality: Mirmalik
Ver. name: Kadumshah, Parts used: Whole plant
Ethnobotanical uses: Root and leaves are used as vegetable and considered as tonic and blood stimulator.
39. Bot. name: ***Capsella bursa-pastoris*** (L.) Medike., Vou. spec:# 445
Habit: Annual herb, Locality: Gorikot
Ver. name: Jarjali, Parts used: Whole plant
Ethnobotanical uses: Fresh plant is used as vegetable. Medicinally, it is used for abdominal pain and stomach disorder.
40. Bot. name: ***Raphanus sativus*** L.**,** Vou. spec:# 1821
Habit: Annual herb (Cultivated), Locality: Peerjot Village,
Ver. name: Khamolo, Parts used: Whole plant
Ethnobotanical uses: Whole plant is used as vegetable. Medicinally, it is used for digestion, jaundice, skin diseases and blood purification.
41. Bot. name: ***Thlaspi arvense*** L., Vou. spec:# 1524
Habit: Annual herb, Locality: Peerjot Village
Ver. name: Bregah, Parts used: Stem leaves and seeds
Ethnobotanical uses: Stem and leaves are used as vegetable. Seeds are boiled in water, extract is used for burning of urine and other urine diseases.

Family: Campanulaceae

42. Bot. name: ***Codonopsis ovata*** Benth., Vou. spec:# 2007
Habit: Perennial herb, Locality: Kalapani Jonedup nullah
Ver. name: Iudut, Parts used: Leaves
Ethnobotanical uses: Decoction of leaves is used for wounds and ulcer.

Family: Cannabiaceae

43. Bot. name: ***Cannabis sativa*** L., Vou. spec:# 508
Habit: Annual herb, Locality: Bunji
Ver. name: Bung, Parts used: Whole plant
Ethnobotanical uses: Decoction is used as remedy for cough, joint pain and as nerve tonic. It is also used as fodder.

Family: Caryophyllaceae

44. Bot. name: ***Lepyrodiclis holosteoides*** *(*C. A. Mey.) Fenzl ex F. & M., Vou. spec: #542
Habit: Annual herb, Locality: Kharium
Ver. name: Burgar, Parts used: Stem and leaves
Ethnobotanical uses: Young stem and leaves are used as vegetable, considered appetizer and laxative, and also used as fodder.
45. Bot. name: ***Silene vulgaris*** (Moench) Garcke, Vou. spec:# 45
Habit: Perennial herb, Locality: Peerjot
Ver. name: Gigio shah, Parts used: Leaves and stem
Ethnobotanical uses: Young stem and leaves are used as vegetable. Medicinally, it is used for constipation and also used as fodder.

Family: Chenopodiaceae

46. Bot. name: ***Chenopodium album*** L., Vou. spec:# 119
    Habit: Annual herb, Locality: Peerjot
    Ver. name: Konoshah, Parts used: Stem and leaves
    Ethnobotanical uses: Young plant is used as vegetable. Decoction is used as detergent for washing hairs of women. Medicinally, it is used for constipation, abdominal pain, heart disease, piles and spleen.
47. Bot. name: ***Chenopodium botrys*** L., Vou. spec: #123
    Habit: Annual herb, Locality: Peerjot
    Ver. name: Hamoshah, Parts used: Stem and leaves
    Ethnobotanical uses: Uses are more or less same as ***"Chenopodium album"*** decoction is used for asthma, catarrh and joint pain.

Family: Convolvulaceae

48. Bot. name: ***Convolvulus arvensis*** L., Vou. spec: # 473
    Habit: Perennial herb, Locality: Dashkin
    Ver. name: Hergoli, Parts used: Whole plant
    Ethnobotanical uses: Whole plant is boiled in water and extract is used as detergent for washing hairs and clothes. Used as fodder also.

Family: Cucurbitaceae

49. Bot. name: ***Cucurbita maxima*** Duch. ex Lam.,Vou. spec: # 1662
    Habit: Annual herb (cultivated), Locality: peerjot
    Ver. name: Wone, Parts used: Fruit
    Ethnobotanical uses: Fruit is used as vegetable, ripped fruit cut in to small pieces and boiled, inner subsistence spread from outer hard bark and mixed with milk along with gargle, spices. Then kept for few days in a covered pot, called ''Dodalo" eaten with bread or directly. It is considered as appetizer. Fruit also used for jaundice, diabetes, and blood pressure. Seeds are eaten as tonic.

Family: Datiscaceae

50. Bot. name: ***Datisca cannabina*** L., Vou. spec: # 1761
    Habit: Perennial herb, Locality: Doian
    Ver. name: Phoscolo, Parts used: Fruit
    Ethnobotanical uses: Fruit is boiled in water and extract is used for hair colour.

Family: Euphorbiaceae

51. **Bot. name:** ***Euphorbia thomsoniana*** Boiss., Vou. spec: # 1415
    Habit: Perennial herb, Locality: Peerjot
    Ver. name: Shinophoto, Parts used: Leaves and seed
    Ethnobotanical uses: Leaves and seeds are boiled in water, and decoction is used for constipation.

Family: Fumariaceae

52. Bot. name: ***Corydalis govaniana*** Wall., Vou. spec: # 346
    Habit: Perennial herb, Locality: Kalapani, Jojati
    Ver. name: Zulfain, Parts used: Root
    Ethnobotanical uses: Root decoction is used for hair colour, shining and elongation. It is also used for eye diseases.
53. Bot. name: ***Fumaria indica*** (Hausskn.) Pugsley, Vou. spec: # 523
    Habit: Perennial herb, Locality: Bunji
    Ver. name: Pithpapadah, Parts used: Whole plant
    Ethnobotanical uses: Whole plant is boiled in water and decoction is used for fever, cough, and constipation.

Family: Gentianaceae

54. Bot. name: ***Gentianodes tianschanica*** (Ruer. ex Kusn.) Omer, Ali & Qiser., Vou. spec: # 324
    Habit: Perennial herb, Locality: Kalapani
    Ver. name: NilKach, Parts used: Stem and leaves
    Ethnobotanical uses: Crushed paste of plant is used for wound and cuts externally.
55. Bot. name: ***Swertia cardata*** (G.Don) Clarke, Vou. spec: # 1665
    Habit: Perennial herb, Locality: Peerjot

Ver. name: Laylowjabati, Parts used: Whole plant
Ethnobotanical uses: Boiled extract is used for headache, blood pressure, vomiting and heart diseases.

Family: Geraniaceae

56. Bot. name: ***Geranium himalayense*** Klotzsch, Vou. spec: # 1129
Habit: Perennial herb, Locality: Kalapani
Ver. name: Laljohari, Parts used: Root
Ethnobotanical uses: Decoction of root is used for diabetes, sciatic pain, toothache and eye diseases.

Family: Hypericaceae

57. Bot. name: ***Hypericum perforatum*** L., Vou. spec: # 1794
Habit: Perennial herb, Locality: Derala Bala
Ver. name: Not known, Parts used: Whole plant
Ethnobotanical uses: Boiled decoction is used for piles, uterine problems and also recommended for dysentery, nervous depression and jaundice.

Family: Lamiaceae

58. Bot. name: ***Mentha longifolia*** (L.) L., Vou. spec: # 18
Habit: Perennial herb, Locality: Peerjot
Ver. name: Philil/Filil, Parts used: Leaves and flowers
59. Bot. name: ***Mentha royleana*** Benth., Vou. spec: # 1494, Locality: Kalapani
Ethnobotanical uses: Both species are locally known by same name and their ethnobtanical uses are also same. Decoction is used as carminative. Powdered leaves with flowers are used for acidity, gastric trouble, headache and vomiting. Leaves are soaked in water gives an infusion which is taken as a cooling medicine. Decoction is used as remedy for pyorrhea and toothache. Fresh crushed leaves are mixed with fragmented milk and are used as remedy for diarrhea and as a cooling agent.
60. Bot. name: ***Nepeta adenophyta*** Hedge, Vou. spec: # 180
Habit: Perennial herb, Locality: Peerjot
Ver. name: Cherchoomoro, Parts used: Whole plant
Ethnobotanical uses: Plant boiled in water and filtered extract is used for abdominal pain, kidney pain, urine problems and diarrhea. Decoction is also used for disturbed manses and to control bleeding. It is used for cattle for dysentery, stomach problems and general weakness.
61. Bot. name: ***Salvia nubicola*** Wall. ex Sweet, Vou. spec: # 742
Habit: Perennial herb, Locality: Rama
Ver. name: Kallijarii, Parts used: Whole plant
Ethnobotanical uses: Root decoction is used for cough and fever. Leaves decoction is used for guinea-worm, skin diseases and wounds. Seeds are also used for colic, dysentery and hemorrhoids.
62. Bot. name: ***Thymus linearis*** Benth., Vou. spec: # 953
Habit: Perennial herb, Locality: Mirmalik
Ver. name: Toomuro, Parts used: Stem, leaves and flowers
Ethnobotanical uses: Stem, leaves and flowers are boiled in water and decoction is used for cough, asthma, fever, respiratory inflammation, and stomach problems. Decoction is also used as green tea for control cholesterol, acidity, and for easy digestion

Family: Linaceae

63. Bot. name: ***Linum usitatissimum*** L., Vou. spec: # 1831
Habit: Annual herb (Cultivated), Locality: Gorikot
Ver. name: Homen, Parts used: Seeds
Ethnobotanical uses: Seeds are used for urine problems and toothache.

Family: Malvaceae

64. Bot. name: ***Alcea rosea*** L., Vou. spec: # 729
Habit: Perennial herb, Locality: Eidgah
Ver. name: Chama Poshay, Parts used: Leaves
Ethnobotanical uses: Crushed leaves decoction is used for skin disease and itching externally.
65. Bot. name: ***Malva mohileviensis*** Downar, Vou. spec: # 545
Habit: Annual herb, Locality: Kharium
Ver. name: Shani, Parts used: Stem and leaves
Ethnobotanical uses: Young stem and leaves are used as vegetable and useful for constipation.
66. Bot. name: ***Malva neglecta*** Wallr., Vou. spec: # 621

Habit: Perennial herb, Locality: Minimarg
Ver. name: Jaroi Shani, Parts used: Leaves
Ethnobotanical uses: Fresh leaves are crushed and the paste is applied on boils and abscesses for maturation and expel of pus.

67. Bot. name: ***Malva verticillata*** L. var. ***verticillata,*** Vou. spec: # 631
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Shani, Parts used: Stem, leaves and flowers
Ethnobotanical uses: Stem and leaves with flowers are used as vegetable. Medicinally, it is used for constipation, gastric trouble. Young stem and leaves are dried and stored for winter and used as vegetable also used as laxative for nurse when her child is suffer in constipation.

Family: Orobanchaceae

68. Bot. name: ***Orobanche cernua*** Loefl. var. ***pseudo-clarki*** Jaferi, Vou. spec: # 1539
Habit: Annual herb, Locality: Rehmanpur
Ver. name: Taarey , Parts used: Stem
Ethnobotanical uses: Stem is eaten after removing the thin bark for its taste and considered as energetic.

Family: Papaveraceae

69. Bot. name: ***Meconopsis latifolia*** (Prain) Prium, Vou. spec: # 1950
Habit: Perennial herb, Locality: Kalapani Reyat
Ver. name: Not known, Parts used: Root
Ethnobotanical uses: Root decoction is used for fatigue and considered as narcotic.
70. Bot. name: ***Papaver somniferum*** L., Vou. spec: # 707
Habit: Annual herb (Cultivated), Locality: Eidgah
Ver. name: Afium, Parts used: Seeds
Ethnobotanical uses: Seeds decoction is used with milk or water as remedy for chronic cough, asthma, bronchitis, respiration troubles and fever. The seeds are also used for diarrhea.

Family: Papilionaceae

71. Bot. name: ***Astragalus strobiliferus*** Royle ex benth., Vou. spec: # 2117
Habit: Perennial herb, Locality: Peerjot Dagidar
Ver. name: Hapouche , Parts used: Whole plant
Ethnobotanical uses: Spines on stem and leaves are removed then used as fodder. Root contained resin or gum is used as fodder and considered as tonic for cattle.
72. Bot. name: ***Cicer microphyllum*** Benth., Vou. spec: # 149
Habit: Perennial herb, Locality: Peerjot
Ver. name: Khokoni, Parts used: Whole plant
Ethnobotanical uses: Seeds are eaten as raw for its taste and considered energetic. Whole plant used for increasing milk and as general tonic for cows and also used as fodder for livestock.
73. Bot. name: ***Hedysarum falconeri*** Baker, Vou. spec: # 803
Habit: Perennial herb, Locality: Rama near lake
Ver. name: Haloskar, Parts used: Stem and leaves
Ethnobotanical uses: Young stem is eaten as raw for its taste, after removing bark and considered as energetic. Plant is used as fodder also.
74. Bot. name: ***Lablab purpureus*** (L.) Sweet subsp. ***Purpureus***, Vou. spec: # 1660
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Ragum, Parts used: Fruit and seeds
Ethnobotanical uses: Young fruit with seed is used as vegetable. Whole plant is used as fodder.
75. Bot. name**:** ***Lathyrus sativus*** L., Vou. spec: # 754
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Garaash, Parts used: Whole plant
Ethnobotanical uses: Fruit is used as vegetable. Seeds are mixed with wheat and grindered, flour is used as food item. Seeds are also used with mixing other cereals for cattle as general tonic and for increasing milk. Plant is used as fodder also.
76. Bot. name: ***Lens culinaris*** Medic., Vou. spec: # 1700
Habit: Annual herb (Cultivated), Locality: Peerjot,
Ver. name: Mozer, Parts used: Whole plant
Ethnobotanical uses: Seeds are used as vegetable and plant is used as fodder.
77. Bot. name: ***Medicago sativa*** L., Vou. spec: # 126
Habit: Perennial herb, Locality: Nasirabad

Ver. name: Ishpit, Parts used: Whole plant
Ethnobotanical uses: Young shoots are used as vegetable and considered as tonic; seeds are used for joint pain. It is cheap and preferable source of fodder. If the cattle are over grazed on fresh shoots, it is harmful even going to death.

78. Bot. name: ***Pisum sativum*** L. var. ***sativium***, Vou. spec: # 750
Habit: annual herb (Cultivated), Locality: Peerjot
Ver. name: Khkoon, Parts used: Whole plant
Ethnobotanical uses: Seeds are eaten as raw and also used as vegetable. Plant is used as fodder. Seeds are also used for goats and sheep for increasing milk and as a general tonic.
79. Bot. name: ***Trifolium resupinatum*** L., Vou. spec: # 509
Habit: Annual herb (Cultivated), Locality: Bunji
Ver. name: Shaptal, Parts used: Whole plant
Ethnobotanical uses: Young plant is used as vegetable and it is a best source of fodder.
80. Bot. name: ***Vicia faba*** L., Vou. spec: # 752
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Badrag, Parts used: Whole plant
Ethnobotanical uses: Seeds are eaten as raw and used as vegetable. It is used for gastric trouble and diarrhea. Ripped seeds are boiled and eaten. Flour is used both medicinal and food purposes. Flour is also used as detergent for washing of woolen blankets and woolen coats which are made by wool. Boiled seeds are given for goats and sheeps as general tonic and for increasing milk quantity. Plant is used as fodder also.
81. Bot. name: ***Vicia monantha*** Retz., Vou. spec: # 520
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Khokon, Parts used: Whole plant
82. Bot. name: ***Vicia sativa*** L., Vou. spec: # 573
Habit: Annual herb (Cultivated), Locality: Peerjot
Ethnobotanical uses: Both plant species are locally known by same name and its uses are also same. Seeds are eaten as raw for its taste and used as vegetable. Used as food with mixed other cereals. Seeds are used for cattle as general tonic and for increasing milk quantity.

Family: Plantagenaceae

83. Bot. name: ***Plantago lancoelata*** L., Vou. spec: # 140
Habit: Perennial herb, Locality: Rattu, Ver. name: Khapaypato
84. Bot. name: ***Plantago major*** L., Vou spec: # 378
Locality: Godai, Parts used: Leaves, seeds and root
Ethnobotanical uses: Uses and vernacular name of both species are same, local people did not differentiate to each other. Fresh leaves are crushed and paste is used for healing of wounds and it is also used for boils maturation for expel of pus. Seeds are also used for constipation and as a cooling agent. Root is useful for toothache.

Family: Podophyllaceae

85. Bot. name: ***Podophyllum emodi*** Wall. ex Royle, Vou. spec: # 230
Habit: perennial herb, Locality: Kalapani
Ver. name: Ishmandy / Ishmanay, Parts used: Whole plant
Ethnobotanical uses: Decoction of root and rhizome is used as hepatic stimulant, tonic, and hair elongation. Fruit is eaten as raw for its taste and considered as tonic. It is also used for loose motion and diarrhea. This plant is mostly grow under trees shade, due to cutting of forest and over exploitation becoming threatened in its natural habitat.

Family: Polygonaceae

86. Bot. name: ***Aconogonon alpinum*** (All.) Schar, Vou. spec: #225
Habit: perennial herb, Locality: Kalapani Chore Nullah
Ver. name: Lamay, Parts used: Whole plant
Ethnobotanical uses: Young stem is eaten or chewed as raw for its taste and also used for fever and heart problems. Whole plant is used as fodder.
87. Bot. name: ***Bistorta affinis*** (D.Don) Green, Vou. spec: # 178
Habit: perennial herb, Locality: Peerjot, Ver. name: Titery
88. Bot. name: ***Bistorta vivipara*** (L.) S. F. Gray, Vou. spec: # 601, Locality: Domail Gah,
Parts used: Root and stem

Ethnobotanical uses: Both plant species are locally known by same name, local people cannot differentiate between two species and uses are also same. Root decoction is used for chest infection, piles, rhinitis, vomiting, chronic bronchitis, wounds and abdominal pain.

89. Bot. name: ***Fagopyrum esculentum*** Moench, Vou. spec: # 129
Habit: Annual herb, Locality: Nasirabad
Ver. name: Baraow , Parts used: Whole plant
Ethnobotanical uses: Young leaves are used as vegetable; seeds are used for making bread. Medicinally, it is used for jaundice, constipation and piles. Whole plant is used as fodder.
90. Bot. name: ***Oxyria digyna*** (L.)Hill, Vou. spec: # 383
Habit: Perennial herb, Locality: Godai
Ver. name: Chorko, Parts used: Stem
Ethnobotanical uses: Young stem is eaten as raw for its taste and considered as remedy for fever and blood purification.
91. Bot. name: ***Polygonum aviculare*** L., Vou. spec: # 1701
Habit: Perennial herb, Locality: Peerjot
Ver. name: Droup, Parts used: Whole plant
Ethnobotanical uses: Decoction of plant is used for wounds of donkeys. It is also used as fodder.
92. Bot. name: ***Rheum tibeticum*** Maxim. ex Hook. f., Vou. spec: # 1911
Habit: Perennial herb, Locality: Terzay
Ver. name: Markochal, Parts used: Root
Ethnobotanical uses: Root extracted is used for internal wounds, blood purification and cardiac diseases.
93. Bot. name: ***Rheum webbianum*** Royle, Vou. spec: # 1474
Habit: Perennial herb, Locality: Peerjote
Ver. name: Chotel, Parts used: Stem
Ethnobotanical uses: Young stem is eaten as raw for its taste and considered as appetizer, blood purifier, cardiac tonic and power stimulant.
94. Bot. name: ***Rumex thjanschanicus*** (tianschanicus) Losinsk**.**, Vou. spec: # 32
Habit: Perennial herb, Locality: Peerjot
Ver. name: Hubabel, Parts used: Whole plant
Ethnobotanical uses: Young leaves are used as vegetable. Ripped seeds are boiled in water after removing the seed bark and used as food. Medicinally used for constipation and abdomen pain. Obtained thin bark by a sharp knife or blade from dry stem and made small balls. The balls locally called ‘’Taage” kept on joint pain or dislocated place and burnt for reducing pain. This method of treatment is very effective for joint pain and dislocation of joints.

Family: Primulaceae

95. Bot. name: ***Primula denticulata*** W. W. Smith, Vou. spec: # 282
Habit: Perennial herb, Locality: Kalapani Motaw nullah
Ver. name: Momiran, Parts used: Powder
Ethnobotanical uses: In plant Shoot among the leaves a powdery substance is formed in a cone like structure, it is mixed with milk or water and poured in eyes for eye redness, pain and other opthalmatic diseases.

Family: Ranunculaceae

96. Bot. name: ***Aconitum chasmanthum*** Stapf ex Holmes, Vou. spec: # 907
Habit: Perennial herb, Locality: Kkalapani
Ver. name: Baroboma, Parts used: Root
Ethnobotanical uses: Pulverized root decoction is used for fever, cough, and asthma. Decoction is also used for rheumatism.
97. Bot. name: ***Aconitum hetrophyllum*** Wall. ex Royle, Vou. spec: # 627
Habit: Perennial herb, Locality: Minimarg
Ver. name: Shaowboma, Parts used: Root
Ethnobotanical uses: Decoction of root is used for fever, pneumonia, typhoid, cough, vomiting, abdomen pain and asthma. Root also used as aphrodisiac and antiperiodic agent. Due to its market value over exploitation and smuggling by nomads “Gujar” is the major cause that this valuable plant is rapidly disappearing from its habitat.
98. Bot. name: ***Aconitum violaceum*** Jacq. ex Stapf. var. ***violaceum,*** Vou. spec: # 644
Habit: Perennial herb, Locality: Deosai Plateau
Ver. name: Bezhumolo, Parts used: Root

Ethnobotanical uses: Root decoction is used with milk or ghee (butter oil) for fever, asthma, cough, and rheumatism. Root decoction is mixed with oil and used as ointment for abscess, boils and other skin diseases. It is highly poisonous plant very small quantity root is used otherwise very harmful for life, may cause death.

Bot. name: ***Actaea spicata*** L.**,** Vou. spec: # 1121
Habit: Perennial herb, Locality: Kalapani Reyat Nullah
Ver. name: Ishiajaly, Parts used: Root and fruit
Ethnobotanical uses: Pulverized decoction of fruit is used for nervous problems, joint pain, lumbago and rheumatic fever. It is also said that bear consumed this plant for winter dormancy.

99. Bot. name: ***Clematis orientalis*** L., Vou. spec: # 1769
Habit: Perennial herb, Locality: Bunji Gah
Ver. name: Not known, Parts used: Stem and leaves
Ethnobotanical uses: Plant decoction is used externally for joint pain. It is also used for diarrhea and dysentery.

100. Bot. name: ***Pulsatilla wallichiana*** (Royle) Ulbr**.,** Vou. spec: # 1572
Habit: Perennial herb, Locality: Bulasherbar Nullah Machkoathet
Ver. name: Mokhoty, Parts used: Root
Ethnobotanical uses: Root decoction is used for abdomen pain, menstrual disturbance and fever. It is very rare species in study area.

101. Bot.name: ***Ranunculus chaerophyllos*** L., Vou. spec: # 19
Habit: Perennial herb, Locality: Peerjot
Ver. name: Jabidajo, Parts used: Whole plant

102. Bot. name**:** ***Ranunculus laetus*** Wall. ex Hook., Vou. spec: # 1491, Locality: Kalalot
Ethnobotanical uses: Both species are known by same name and uses are also same. Pulverized paste of leaves is used for joint pain externally and also used as fodder.

Family Rosaceae

103. Bot. name: ***Fragaria nubicola*** (Hook. f.) Lindl. ex Lacaita, Vou. spec: # 835
Habit: Perennial herb, Locality: Rama near Lake
Ver. name: Borsey, Parts used: Root and fruit
Ethnobotanical uses: Fruit are edible and considered as blood purifier, blood stimulator and general tonic. Root is used for preparing tea and is also used as remedy for asthma, heart problems, blood pressure and digestive problems.

104. Bot. name: ***Geum elatum*** G. Don, Vou. spec: # 579
Habit: Perennial herb, Locality: Between Dombabaho and Domail
Ver. name: Not known, Parts used: Root
Ethnobotanical uses: Root decoction is used for diarrhea, dysentery and considered as astringent.

Family: Sambucaceae

105. Bot. name: ***Sambucus wightiana*** Wall. ex Weight & Arn., Vou. spec: # 619
Habit: Perennial herb, Locality: Chichiri Paje
Ver. name: Gandulei, Parts used: Whole plant
Ethnobotanical uses: Whole plant or leaves kept in house as anti insecticide; to kill bug, flea, mosquitoes and other insects.

Family: Saxifragaceae

106. Bot. name: ***Bergenia ciliata*** (Haw.) Sterneb., Vou. spec: # Ast. 6
Habit: Perennial herb, Locality: Rama near Lake
Ver. name: Shapur / Sapur

107. Bot. name: ***Bergenia stracheyi*** (Hook. f. & Thom.) Engle, Vou. spec: # 316, Locality: Peerjot, Lotigali.
Ethnobotanical uses: Both species are known by same name and also same uses. Leaves decoction is used for prepare tea and considered as blood purifier and analgesic. It is also used for wounds both internal and external. Root and leaves decoction is used for abdominal pain also.

Family: Scrophulariaceae

108. Bot. name: ***Picrorhiza kurroa*** Royle ex Benth., Vou. spec: # 1488
Habit: Perennial herb, Locality: Gorikot P. R. C.
Ver. name: Karou, Parts used: Root
Ethnobotanical uses: Decoction of root is used for abdominal pain, diarrhea, blood purification, constipation, heart diseases, leucoderma, bilious fever, biliousness, urine problems, purifies the nurse's

milk, asthma and jaundice. It is an effective remedy for stomach pain and very useful remedy for dyspepsia and in nervous pain caused by the stomach and bowels problems. Decoction is also used as appetizer. Due to high market demand of root for commercial porpoise; over exploitation by locals and smuggling by nomads, the plant is rapidly disappearing from natural habitat and become threatened locally.

109. Bot. name: ***Verbascum thapsus*** L., Vou. spec: # 614
Habit: Perennial herb, Locality: Peerjot
Vernacular name: Romkato, Parts used: Flowers and leaves
Ethnobotanical uses: Leaves are heated and rubbed with oil are applied as an application to the inflamed parts and wounds. Flowers and leaves decoction is used for chest complains, diarrhea and cough.

110. Bot. name: ***Veronica beccabunga*** L., Vou. spec: # 1370
Habit: Annual herb, Locality: Peerjot

111. Bot. name: ***Veronica campylopoda*** Boiss., Vou. spec: # 520 A, Locality: Gorikot
Ver. name: Jajo-e- Kach, Parts used: Whole plant.
Ethnobotanical uses: Both species are locally known by same name and uses are also same. Pulverized paste of plant is used for eczema and other skin diseases. It is also used as diuratic and antiscor.

Family: Solanaceae

112. Bot. name: ***Datura fastuosa*** L., Vou. spec: # 641
Habit: perennial herb, Locality: Gorikot
Ver. name: Daturo, Parts used: Whole plant
Ethnobotanical uses: Decoction of leaves is used for asthma. The juice of flower is used for earache. Seed smoke is inhaled for killing and expel the teeth insect. The leaves are applied on the boils and abscess. The whole plant is considered as narcotic. Excess internal usage may be harmful; it may cause mental upset to death.

113. Bot. name: ***Hyoscyamus niger*** L., Vou. spec: # 559
Habit: perennial herb, Locality: Chillum
Ver. name: Bazarbhang, Parts used: Leaves and seeds
Ethnobotanical uses: Fresh leaves are applied externally for boils and abscess for maturation and expel of pus. Seed are narcotic and used for sleeplessness.

114. Bot. name: ***Solanum tuberosum*** L., Vou. spec: # 1735
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Aaloo , Parts used: Whole plant
Ethnobotanical uses: Tubers crushed and paste is used for burns externally. Tubers are cooked in fire ash and eaten, it is useful for cough and fever. Potato is boiled in water and eaten as food. It is widely used as vegetable. Potato is one of the best sources of income. Leaves are used as fodder.

Family: Urticaceae

115. Bot. name: ***Urtica dioica*** L., Vou. spec: # 16
Habit: Perennial herb, Locality: Peerjot
Ver. name: Joomi, Parts used: Stem and leaves
Ethnobotanical uses: Young stem with leaves are used as vegetable. Medicinally it is used for urine problems, kidney diseases, paralysis and jaundice. Decoction of leaves and stem is also used for skin diseases and diabetics.

Family: Valerianaceae

116. Bot. name: ***Valeriana clarkei*** Briq., Vou. spec: # 1647
Habit: Perennial herb, Locality: Peerjot
Ver. name: Gonespawjabati, Parts used: Rhizome and roots

117. Bot. name: ***Valeriana jaeschkei*** C.B.Clarke, Vou. spec: # 234, Locality: Kalapani,
Ethnobotanical uses: The species of genus "*Valeriana"* are locally known by same name and uses are also same. Pulverized root and rhizome are used as mouth freshener, tooth trouble and bleeding from gums.

Family: Violaceae

118. Bot. name: ***Viola biflora*** L., Vou. spec: # 1558
Habit: Perennial herb, Locality: Bulasber Nullah
Ver. name: Lilio, Parts used: Wholeplant

119. Bot. name: ***Viola fedtschenkoana*** W. Becker, Vou. spec: # 1261, Locality: Gorikot

120. Bot. name: ***Viola odorata*** L., Vou. spec: # 1281, Locality: Gorikot

Ethnobotanical uses: All three species are known same name by locally and the ethnobotanical uses are also same. Decoction of plant is used for cough, sore throat, bronchitis, kidney and liver diseases. The paste is externally used for eczema and skin disease.

Family: Zygophyllaceae

121. Bot. name: ***Fagonia bruguieri*** DC. var. ***bruguieri,*** Vou. spec: # 483
Habit: Perennial herb, Locality: Bunji
Ver. name: Daasowkonu, Parts used: Leaves and fruit
Ethnobotanical uses: Leaves and fruit are boiled in water and extract is used for abdominal pain and for ringworm in children.

122. Bot. name: ***Peganum harmala*** L., Vou. spec: # 488
Habit: Perennial herb, Locality: Bunji Dass
Ver. name: Ispandur, Parts used: Whole plant
Ethnobotanical uses: Plant soaked in water and infusion is used for abdominal pain, tap worm, joint pain, cough and other pectoral disorder. Smoke is spread in house as insecticide and pesticide. It is also believed that the smoke remove the evils. Leaves are used for writing amulets and believed its action is fast than the other papers. In case of abdominal pain and hysteria the above religious method of treatment is commonly used.

Family: Alliaceae

123. Bot. name**:** ***Allium Fedtschenkoanum*** Regle, Vou. spec: # 1097
Habit: Perennial herb, Locality: Kamri Top
Ver. name: Paloon, Parts used: Leaves
Ethnobotanical uses: Leaves are bitter in taste used as substitute of onion in vegetable and eaten as raw; useful for stomach disorder and abdominal pain.

Family: Asphodelaceae

124. Bot. name: ***Eremurus himalaicus*** Baker, Vou. spec: # 1320
Habit: Perennial herb, Locality: Peerjot
Ver. name: Sheloshah, Parts used: Leaves
Ethnobotanical uses: Leaves are used as vegetable and considered energetic and useful for constipation. Due to over exploitation and grazing pressure plant is rapidly disappearing from natural habitat.

Family: Iriddaceae

125. Bot. name: ***Iris hookeriana*** Foster, Vou. spec: # 972
Habit: Perennial herb, Locality: Mirmalik, Shonter Top
Ver. name: Crisma, Parts used: Flower
Ethnobotanical uses: Decoction of flower is used for asthma, cough and bronchitis. It is also used for chest infection.

Family: Liliaceae

126. Bot. name: ***Tulipa clusiana*** DC., Vou. spec: # 1330
Habit: Perennial herb, Locality: Peerjot
Ver. name: Meio, Parts used: Blub
Ethnobotanical uses: Blubs are eaten as raw after removing bark and considered energetic, power stimulant and tonic.

Family: Orchidaceae

127. Bot. name: ***Dactylorhiza hatagirea*** (D. Don) Soo, Vou. spec: # 700
Habit: Perennial herb, Locality: Gorikot P. R. C.
Ver. name: Nermada, Parts used: Root
Ethnobotanical uses: Root decoction is used for aphrodisiac, backache and fatigue.

Family: Poaceae

128. Bot. name: ***Chrysopogon gryllus*** (L.)Trin. subsp**.** ***echinulatus*** (Ness) T. A. Cope
Vou. spec: # 1663
Habit: Perennial herb, Locality: Peerjot
Ver. name: Pakorkach, Parts used: Whole plant
Ethnobotanical uses: Root is used for cleaning pots and tools as substitute of steel securer. Stem with inflorescence is used for making brooms. It is a good source of fodder.

129. Bot. name: ***Hordeum vulgare*** L., Vou. spec: # 1848
Habit: Annual herb (Cultivated), Locality: Hercho
Ver. name: Yow, Parts used: Whole plant
Ethnobotanical uses: Seeds are one of the sources of food. Seeds are used for horses as tonic. Plant is used as fodder.
130. Bot. name: ***Pennisetum flaccidum*** Griseb., Vou. spec: # 1654
Habit: Perennial herb, Locality: Peerjot
Ver. name: Taloney, Parts used: Whole plant
Ethnobotanical uses: Stem with leaves is dried and stored for winter; dry parts soaked in water and twisted and make strip; this strip is used for making sleepers type shoes. These shoes are used for walking on snow and ice which are protected to slip. It is planted along the water channel and field wall to protect soil erosion and damage. It is also used as fodder.
131. Bot. name: ***Saccharum filifolium*** Ness ex Steud., Vou. spec: # 1766
Habit: Perennial herb, Locality: Bunji Gah
Ver. name: Naei, Parts used: Stem and leaves
Ethnobotanical uses: Stem is used for making pen; one side of stem piece make sharp as form of nib and used for writing .Dry stem is used as source of fuel.
132. Bot. name: ***Triticum aestivum*** L., Vou. spec: # 551
Habit: Annual herb (Cultivated), Locality: Peerjot
Ver. name: Goom, Parts used: Whole plant
Ethnobotanical uses: Wheat is main source of food. Pulverized paste of grain is externally used for wounds, swilling and abscess. Wheat soaked for few days in a pot and after seedling dried and grindered, its flour bread is used to nurse for increasing milk. It is also used for goats and sheep for same porpoise. This plant is best source of fodder.
133. Bot. name: ***Zea mays*** L. Vou. # 558
Habit: Annual herb (Cultivated), Locality: Perjot,
Ver. Name: Makayi, Parts used: Whole plant
Maize is second chief source of food and straw. Stem is eaten or chewed for its taste and considered as power stimulator and general tonic. Grain is also used for jaundice. Stem and leaves are used as fodder and fuel.

Discussion

It may be assumed that the very course of human culture has been deeply influenced by plants, particularly those used by indigenous people around the world. Thatch for huts, timbers for boats, fibers for cordage, textile and dyes to color all appear at early stages of human history. Yet these uses pale in comparison with the use of plants for medicine and food (Balick and Cox, 1996). From the early human has familiarized himself with plants and used them for various purposes throughout the ages. Many plant species have been used for the time immemorial (Lama *et al*., 2001), Partel *et al*., 2005). Rig Veda between 4500-1600 BC and Ayurveda between 2500-600 BC are considered as pioneer ethnobotanical recorded papers in Indo-Pak (Ahmed, 2002). About 70-80 % of world population used traditional medicine for their illness and ailments (Pie, 2001). Yet these uses are pastel in comparison with the use of plants for medicine and food. The common method of indigenous cure traces its origin to Greek medicine system, later on adapted by the Arabs and spread to the other parts of the world (Iqbql & Hamayun, 2004). In search of food and to cope successful with human suffering, primitive man began to distinguish those plants suitable for nutritional purposes from others with definitive pharmacological action. Therefore some plants come to be widely used as food while others show beneficial effects against various human sufferings such as fracture, injuries, and diseases. This relationship has been grown between plants and human, and many plants become used in drugs.

Traditional knowledge of Astore Valley regarding medicines is a good illustration of poor communities, fighting even incurable diseases through the traditional methods and even of their livestock, through these herbal medicines. The indigenous traditional knowledge of medicinal plants and therapies of various local communities has been transmitted orally for centuries is rapidly diminishing, due to change in traditional culture, availability of modern system of medicine and introduction of modern technology. Hence, these traditional practices are required proper documentation and the present study is an attempt to collect, explore, preserve and proper documentation of medicinal plants which are being used traditionally, in Astore valley. Present research work indicates that local people make use a great range of plants from their surroundings. All these 133 herbs are used one or more medicinal uses.

It is observed that the knowledge of medicinal plants and their methods of usage are confined to old aged persons. Above 50 years old people have wealth of knowledge about medicinal plants and using methods. According to present qualitative analysis it is observed that the traditional knowledge and the percentage of

traditional cure system in Astore Valley is rapidly decreasing. About 20-30 percent people of remote and upper villages are depended on traditional cure system for their ailments, while in lower and central villages 10-15 percent people are used the traditional system of treatment for their ailments. People of remote or upper villages are far from modern knowledge therefore there is a lack of belief in young generation in the traditional medicine system. They use of allopathic medicine, due to easy availability and efficacy. Another reason is difficulties for accessibility of medicinal plants in wiled and lack of knowledge.

The ethnobotanically important plants are categorized in to rare, threatened and endangered in IUCN report (Anonymous, 2008). The present status of the economically and medicinally important plants of the study area needs to be determined in order to develop plans for their protection. Improved awareness of conservation issues are needed. Proper documentation of indigenous knowledge about the plants could be supportive in achievement of such objectives. Local cultivation of medicinal plants and other economically important species may play an important role in economic development of the area.

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References

Ahmed, H. (2002). Mankil valley: an introduction to the medicinal flora.Wildlife department Swat, GIF and MBCP Swat pp; 28-33.

Ali, M. (1995). Map of Northern Areas of Pakistan. Fine Books Printers, Lahore.

Ali, S.I. and Qaiser, M. (Eds.1993-2010). *Flora of West Pakistan*. No. 194-217. Karachi.

Ali, S.I. and Qaiser, M. (1986). A phytogeographical analysis of phanerograms of Pakistan and Kashmir. *Proc. of Royle Soc. Edingburgh* 89B: 89-101.

Anonymous, (2008). IUCN Red list of threatened species, www.iucnredlist.org.

Ashraf, M., Hayat, M.Q., Jabeen, S., Shaheen, N., Khan, M.A. and Yasmin, G. (2010). *Artemisia* L. species recognized by the local community of northern areas of Pakistan as folk therapeutic plants. *Jour. Med. Pl. Res*. 4(2): 112-119.

Balick. M.J. and Cox, P.A. (1996). Plants, People and Culture. The Science of Ethnobotany, Scientific American Library, New York.

Dickore, W.B. and Nusser, M. (2000). Flora of Nanga Parbat (NW Himalaya, Pakistan). An annotated inventory of Vascular plants with remarks on vegetation dynamics, Botanic Garden and botanical Museum Berlin-Dahlem, Free University Berlin.

Fransworth, N.R. and Soejarto, D.D. (1991). Global importance of medicinal plants In: O., Akerele, V. Heywood and Synge, H. (Eds.): *The conservation of medicinal plants*: proceedings of an international consultation 21-27 March 1988, Ching Mai, Thailand Cambridge University Press, Cambridge 25-51.

Goodman, S. and Ghafoor, A. (1992). The Ethnobotany of Southern Balochistan, Pakistan, With Particular Reference to Medicinal Plants. *Fieldina: Botany,* N.S., No. 31 PP. 1-84.

Hayat, M.Q., Khan, M.A., Ashraf, M. and Jabeen, S. (2009). Ethnobotany of the Genus *Artemisia* L. (Asteraceae) in Pakistan; *Ethnobotany Research & Application* 47- 162.

Hocking, G.M. (1958). Pakistan medicinal plants 1. *Qualitas Plantarum et Materiae Vegetablies* 5: 145-153.

Iqbal, I. and Hamayun, M. (2004). Studies on traditional uses of plants of Malam Jaba valley, District Swat Pakistan *J. Ethnobt*. Leaflets

Kazmi, M.A. and Siddiqui, I.A. (1953). Medicinal Plants of Astore and Upper Guraiz Valleys. *Pak. J. For*. 3: 186-212.

Khan, I., Razzaq and Islam, M. (2007). Ethnobotanical Studies of medicinal and Aromatic plants at higher Altitudes of Pakistan. *American–Eurassian J. Agriculture & Environ. Sci.* 2(5): 470-473.

Khan, M. I. (2004). Survey of medicinal plants in Northern Areas. WWF-Pakistan. http://www.wwfpak.org/nap/dnap_medicinalplants_survey_na_ibrahim.php

Khan, S.W. and Khatoon, S. (2007). Ethnobotanical studies of Useful trees and Shrubs of Haramosh and Bugrote Valley, In Gilgit Northern Area of Pakistan. *Pak. J. Bot.* 39(30): 699-710.

Khan, S.W. and Khatoon, S. (2008). Ethnobotanical studies of Useful trees and Shrubs of Haramosh and Bugrote Valley, In Gilgit Northern Area of Pakistan. *Pak. J. Bot*. 39(30): 699-710.

Lama, Y.C., Ghimire, S.K. and Aumeeruddy-Thomas, Y. (2001). Medicinal plants of Dolpo: Amchi's knowledge and conservation. WWF Nepal Program, Kathmandu, Nepal.

Lewington, A. (1990). Plants for People. Natural History Museum Publication, London.

Nasir, E. and Ali, S.I. (Eds. 1970-1987). Flora of West Pakistan No. 1-181 Islamabad, Karachi.

Nasir, Y. and Ali, S.I. (Eds. 1980-1989). Flora of P West akistan. No. 181-190. Islamabad, Karachi.

Partel, M., Kalamees, R., Reier, Ü., Tuvi, E., Roosaluste, E., Vellak, A. and Zobel, M. (2005). Grouping and prioritization of vascular plant species for conservation: combining natural rarity and management need. *Biol. Cons.* 123: 271-278.

Pei, S. (2001). Ethnobotanical approaches of traditional medicine studies: some experiences from Asia. *Pharm. Bot.* 39: 74-79.

Qureshi, R. A., Ghufran, M.A., Sultana, K.N., Ashraf, M. and Khan, A.G. (2006). Ethnobotanical Studies of Medicinal Plants of Gilgit District and Surrounding Areas. *Ethnobot.Rres. & Applica.* 5:115-122.

Rasool, G. (1998). Medicinal Plants of the Northern Areas of Pakistan. Saad Printo Pack. Rawalpindi Cantt.

Rechinger, K.H., (1957-2001). *Flora Iranica* No.1-174. Naturhist. Museum, Graz.

Shinwari, Z. K. and Gilani, S.S. (2003). Sustainable harvest of medicinal plants at Bulashbar Nullah, Astore (Northern Pakistan). *Jour. Ethnopharmaco.* 84: 289-298.

Titz, A. (2004). *Medicinal herbs and plants scope for diversified and sustainable extraction*. 22-26 July 2004. Bangalore.

Williams, J.T. and Ahmad, J. (1999). Priorities for Medicinal plants. Research and Development in Pakistan. Medicinal and Aromatic Plants Program in Asia (MAPPA). International Development Research Centre (IDRC), Canada, *Medicinal and Aromatic Plants Program in Asia*-SARO, New Delhi.