

Studies on the traditional uses of plants of Malam Jabba valley, District Swat, Pakistan

By

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Abstract

This paper is based on the results of a project carried out in the remote Hindukush-Himalayan region of Malam Jabba, in order to study the ethnobotanically valued flora of the area. Malam Jabba valley contains 187 plant species of ethnobotanical importance, belonging to 75 families. The plants were classified as medicinal plants (95 Spp.), agro forestry based plants (57 Spp.), vegetable and pot herb (39 Spp.), ornamental (32 Spp.) honey bee attracting (31 Spp.), agricultural tool making (32 Spp.), plants yielding edible fruits (30 Spp.), thatching and sheltering (27 Spp.) fencing and hedge plants (19 Spp.), poisonous (16 Spp.) and timber yielding plants (14 Spp.).

The vegetation of the area is under high biotic pressure as a result of indiscriminate deforestation for different purposes and overgrazing as the locals are primarily dependent on the plant resources of the area. People utilize wood mainly as fuel and cut trees to make more land available for agriculture. Ruthless collection of medicinal plants in the area has threatened the existence of some indispensable and valuable medicinal plants like *Paeonia emodi*, *Podophyllum hexandrum*, *Valeriana Jatamansi* and *Acorus calamus* in the area.

Key Words: Ethnobotany; Malam Jabba; Conservation; Hindukush-Himalayas

Introduction

Plants form the basis of life. They provide us ready made food, medicines to fight diseases, services to earn, fodder and forage for our cattle, fuel wood for burning, flowers for celebrations, materials for making agricultural tools, honey collected from its flowers, timber for construction and many more useful items. Plants form the basis of life. They provide us ready made food, medicines to fight diseases, services to earn, fodder and forage for our cattle, fuel wood for burning, flowers for celebrations, materials for making agricultural tools, honey collected from its flowers, timber for construction and many more useful items.

Ethnobotany is the most important approach to study natural resource management of indigenous people. The interaction between the mountain people and natural system through history has helped in maintaining the richness of species, communities and genetic materials in both productive systems and wild lands of the mountain environment. However, the rich Biodiversity is being disastrously impoverished due to human actions in the last few decades. Understanding the indigenous knowledge of mountain people in relation to biodiversity resource management is one of the key issues for sustainable development (Pie, 1991).

There are no provisions anywhere for the protection of knowledge rights of native people. Little action has been taken by legal professional Environmental, non governmental or even human rights groups to secure intellectual property rights (IPR) for native people Martin, 1995).

Malam Jabba Valley

Malam Jabba is located in the North of Pakistan between the Himalayan and the Hindukush foot hills. It belongs to Swat District, Which is part of Malakand Division situated in the North West Frontier Province (NWFP). The Swat District is dominated by the wide and fertile cultivated Swat Valley, which stretches in the North-South direction and is flown through by the Swat River. Malam Jabba lies at a distance of 52 kilometers from Saidu Sharif, the capital of Swat District.

About 8 kilometers North-East of Mingora, at the village of Manglaur, the Malam Jaba Valley branches off the Swat Valley. The altitude of Malam Jabba ranges from 990 m (3260 ft) at the valley entrance to 2880 m (9500 ft) at the highest peak of Shagar Sar. In the North of Malam Jabba lies Shangla District.

The lower Part of Malam Jabba Valley with the main Villages Ser, Telegram and Shagai stretches northeast and is rather narrow. At Ilanai (1270m) the valley is divided into a Northeast bound valley with main villages Shinkat (1500 m) Shaltalu, Mangarkot (1660 m), Serai and Ganajir and the wide Southeast bound valley with the main villages Murai, Kashora (1600 m), Malam (1800 M), Spin Obo (1900 m) and Kuh (2300 m). The whole Malam Jaba Valley has an estimated population of 20,000 inhabitants [Environmental Protection Society (EPS) Report].

Materials and methods

The project area was visited several times for collection of data during the year 1998. Plants were collected from the area, identified and preserved in the herbarium of Quaid-e-Azam University, Islamabad. Plants of ethnobotanical importance were classified on the bases of their local utility. For this purpose local people were interviewed. Questionnaire method was adopted for this purpose. The data obtained was then analyzed carefully.

Results

There were 187 spices which belong to 76 families. Among them fungi was represent by one family (Helevelaceae), Gymnosperms were represented by two families (Pinaceae, and Taxaceae). Pinaceae was represented by 4 species. Pteridophytes were represented by three families (Adiantaceae, Equisetaceae, Petridaceae), Monocots by six families were (Amarylilidaceae, Araceae, Liliaceae, Poaceae, Cyperaceae). The well represented families were Poaceae (16 Spp.) and Liliaceae (3 Spp.).The remaining 64 families were dicot. The well represented families were

Rosaceae (14 Spp.), Solanaceae (9 Spp.), Lamiaceae (8Spp.), Cucubrbitaceae (7 Spp.), Brassicaceae and Papilionaceae (7 Spp.) each. They were followed by Euphorbiaceae, Polygonaceae (5 Spp.) each and Moraceae (4 Spp.). Amaranthaceae, Oleaceae, Ranunculaceae and Salicaceae each had three species.

The plants were classified according to local, traditional and economic uses. Much of the species were found to be used for multipurpose. The multipurpose species include *Prunus armeniaca*, *Diospyrus lotus*, *Diospyrus kaki* and *Prunus domestica*.

Based on the utility, there were 95 medicinal plants and 57 plants were cultivates and formed the basis of agro forestry, 48 species of fodder and forage, 47 fuel wood species, 39 species of vegetables and pots and herbs, 32 species were utilized to make agricultural toll, 31 were honey bee attracting species; 30 yield edible fruits, 28 plants were used in naming people and places, 27 were used for thatching and sheltering, 19 were used as fencing and hedge plants, 16 plants were consider as poisonous and 14 species were classified as timber trees. some miscellaneous uses of plants such as washing and cleaning utensils with, fish poison sacred and holy plants, plants specified for graveyard, mud supporting, making wooden utensils and spoons from and removing of spines are also given.

Botanical Name: *Abies pindrow* Royle
Local Name: Achar
Common Names: Zarnab (U); West Himalayan Silver Fir (Eng.)
Habit: Tall coniferous tree of temperate regions
Part Used: Bark, leaves, trunk, cones
Local Uses: The leaves are used as substitute for tea. The plant provides useful timber for building purposes. Wood is used in furniture, bridges, matches industry and beams. Branches are used for burning purposes; leaves are used for placing fruits in crates. Cones are used as fuel and decoration.

Botanical Name: *Acacia modesta* Wall
Local Name: Palosa
Common Names: Phulai (U)
Habit: Tree
Part Used: Gum, leaves, flowers, sticks, wood
Local Uses: Gum is used as tonic, also used for curing of dysentery and weakness, stimulant and demulcent. Branches are used as toothbrush. Leaves used as fodder for goats. Also used in fencing, as fuel wood and by honeybees.

Botanical Name: *Achyranthus aspera* L.
Family: Amaranthaceae
Local Name: Gishkay
Common Names: Puthkanda (U)
Habit: A perennial wasteland herb
Part Used: Root, whole plant
Local Uses: Root infusion is used for removing stones from kidneys. Decoction of the plant is diuretic, laxative and stomachic.

Botanical name: *Acorus calamus* L.
Local Name: Skhawaja.
Common names: Warch (U); Sweet flag (Engl.)
Habit: Herb of moist places
Part Used: Rhizome
Local Uses: The dried rhizome is crushed to powder and used in dysentery and chronic diarrhea. The powder is mixed with mustard oil and applied externally for rheumatism. The rhizome is given to children to bite during teething.

Botanical Name: *Adiantum venestum* D.Don.
Synonym: *Adiantum capillus-veneris*
Family: Adiantaceae
Local Name: Sumbal
Common Names: Persoshan (U); Maiden Hair Fern (Eng.)
Habit: Shade and moisture loving small fern
Part Used: Fronds, whole plant
Local Uses: Ornamental, fronds are used for curing scorpion bites. Juice of the frond is expectorant, emetic and diuretic.

Botanical Name: *Adiantum nigrum* L.
Family: Adiantaceae
Local Name: Sumbal
Habit: Shade and moisture loving fern
Part Used: Fronds, whole plant
Local Uses: Ornamental, fronds are used for curing scorpion bites.

Botanical Name: *Aesculus indica* (Wall. ex. Cambl.) Hk.f.
Family: Hippocastanaceae

Local Name: Jawaz
Common Names: Horse Chestnut (Eng.)
Habit: A large deciduous tree of temperate areas
Part Used: Fruits, leaves, wood
Local Uses: Leaves are used as fodder. Nuts are colic, used for the cure of chest diseases in horses, donkeys and mules. Wood is used in making furniture, agricultural appliances, gun butts, used for burning purposes. Shade tree.

Botanical Name: *Ailanthus altissima* (Mill) Swingle

Family: Simarubaceae

Local Name: Backyanra

Common Names: Tree of Heaven (Eng.)

Habit: Large size fast growing cultivated tree

Part Used: Leaves, trunk, and bark

Local Uses: Leaves are used as fodder for cattle. The wood is used for construction and making low class furniture, also used in making bee boxes and water-mill pulley. It is used as fuel wood. It is considered as an invader species. Bark is anthelmintic. Bark juice is mixed with milk for curing dysentery and diarrhea.

Botanical Name: *Ajuga bracteosa* Wall. ex. Benth.

Family: Lamiaceae

Local Name: Khwaga Bootei

Common Names: Kauri Booti & Neel Khanti (U)

Habit: Shade loving herb growing in crevices

Part Used: Whole plant

Local Uses: Used as internal colic, also used for the treatment of achenes, decoction is useful for curing jaundice, hypertension and sore throat.

Botanical Name: *Allium cepa* Linn,

Local Name: Piaz

Habit: A cultivated vegetable

Part Used: Bulbs, Leaves

Uses: The bulbs are stimulant. The leaves are diuretic, aphrodisiac and expectorant. Used extensively (both fresh and dry) in cooking as spices and condiment. It is also antiseptic. Its juice is applied to soothes the irritation caused by scorpion and hornet sting. Onion juice is administrated in Tobacco poisoning. Its juice is also used as and ink by wizards. The script is invisible until it is exposed to sunlight or smoke, after exposing beautiful pale brown orange writing appears on paper. It is also kept by the Drads with them while crossing high altitude passes as it enhances the intake of oxygen.

Botanical Name: *Allium sativum* Linn

Local Name: Ooga

Habit: A common cultivated vegetable

Part Used: Bulbs, Leaves

Uses: Used extensively in cooking as flavouring agent, specie carminative, aromatic and condiment. It is effective in heart diseases and hypertension. It is diaphoretic, diuretic, expectorant and antiseptic. Decoction is effective in hysteria, flatulence, asthma and whooping cough. It is also used in epilepsy. It is famous superstitiously if one keeps it evils (ghost) will stay away from him.

Botanical Name: *Alnus nitida* Endl

Local Name: Geiray

Habit: Tree growing along water courses.

Part Used: Wood, catkins

Uses: Wood is used as fuel, also used for making agriculture appliances. It is very useful to prevent soil erosion. Catkins are used in cosmetics.

Botanical Name: *Amaratus viridis* Linn.

Syn: *Amaranthus gracilis* Linn

Local Name: Chalwaey

Habit: Annual herb every common in summer.

Part Used: Whole plant

Uses: Cooked as pot herb fresh fodder, used as emollient

Botanical Name: *Andrancne cordifolia* Muell.

Local Name: Krachay

Habit: A perennial herb

Part Used: Leaves, fruits

Uses: Vermifuge for cattle.

Botanical Name: *Amaranthus spinosus* Linn
Local Name: Chalwaey
Habit: A common annual weed at waste places
Part Used: Whole plant, leaves
Uses: Leaves are used as vegetable, it is fodder for sheep

Botanical Name: *Apluda mutica* Linn
Local Name: Wakha
Habit: Common grass
Part Used: Whole plant
Uses: It serves as fresh and dry fodder.

Botanical Name: *Arisaema flavum* schott
Local Name: Marjarai
Habit: Perennial herb of moist shady habitat.
Part Used: Rhizome, fruit.
Uses: The rhizome is poisonous. The red fruit is also poisonous causing numbness of tongue. It is also believed to help in tracing bears.

Botanical Name: *Artemisia scoporia* Waldst and Ket.
Syn: *Artemisia trichophylla* Wall. Ex DC
Local Name: Jaukay
Habit: Leaves, shoots, seeds
Part Used: Leaves, shoots, seeds
Uses: Respiratory stimulant, anthelmintic and purgative. Used as cure for ear ache. Used for burning. Shoots are used for making brooms for sweeping lawns and roofs of muddy houses, also used in making edges of mud roofs. It is used for naming persons i.e Jaukay Sobidar.

Botanical Name: *Aristida cyanatha* Nees ex Steud
Local Name: Wakha
Habit: Common grass growing everywhere in plains and foot hills.
Part Used: Whole plant
Uses: Fresh and dry fodder for cattle

Botanical Name: *Asparagus officinalis* Linn.
Local Name: Tendorai
Habit: Perennial herb.
Part Used: Young shoots
Uses: Young shoots are used as vegetable.

Botanical Name: *Asphodelus tenuifolius* Cavan
Local Name: Piazakay, Oogakaey
Habit: Common spring weed
Part Used: Fresh leaves.
Uses: It is cooked with maize bread. Used as a condiment.

Botanical Name: *Avena sativa* Linn.
Local Name: Jamdar
Habit: An annual weed of wheat field.
Part Used: Whole plant
Uses: It is used as fodder for cattle.

Botanical Name: *Berberis lycium* Royle
Local Name: Kwaray
Habit: Spiny shrub of exposed places
Part Used: Leaves, stem, root, bark, branches.
Uses: Stomachic, intestinal colic, expectorant. Used in diarrhea, diuretic. Used in the treatment of internal wound. Used in piles. It is also used in jaundice and other liver disorders. The fruits are edible it is also used in fencing and Hedges specially against procopines. Name of a place "Kwaray", notorious for local wine distilleries.

Botanical Name: *Bergenia himalyca* Boriss
Local Name: Makanpat
Habit: Rhizomatous plant of shady moist habitat.
Part Used: Rhizome
Uses: It is used for discharge of pus in animals. It is used as a tonic, also used in muscular pain.

Botanical Name: *Brassica campestris* Linn.
Local Name: Sharshum
Habit: A cultivated vegetable and oil seed crop.
Part Used: Leaves, seeds
Uses: Young leaves and flowering tops are used as vegetable. Oil is extracted from seeds which is used in cooking, massage of body and hair, used as ointment. Seed cakes locally known as "Khal" is obtained after extracting oil and are used as fodder for cattle.

Botanical Name: *Brassica campestris* Linn . Var. rapa.
Local Name: Tepar
Habit: A cultivated vegetable
Part Used: Leaves, roots
Uses: Leaves and root is common vegetable. It is good for stomach and ulcer problems.

Botanical Name: *Brassica oleraceae* Linn . Var. botrytis
Local Name: Ghobi
Habit: A cultivated vegetable.
Part Used: Flower
Uses: Common vegetable. It usually causes gas trouble.

Botanical Name: *Buxus sempervirens* HK.f.
Local Name: Shamshad
Habit: Shrub growing under trees
Part Used: Whole plant, leaves, stem.
Uses: Used as fuel, also used in Rheumatism. It is diaphoretic, purgative, poisonous and febrifuge, used in making wooden spoons and utensils.

Botanical Name: *Calotropis procera* (Willd.) R.Br.
Syn: *Asclepias procera* Willd.
Local Name: Spulmaey
Habit: Common weed of waste, dry and exposed.
Part Used: Whole plant.
Uses: Plant parts are crushed with raw sugar (gur) to make a paste which is applied over to dog bites. Leaves are smoked to cure asthma and cough. Latex is utilized commonly in skin disorders. It is poisonous.

Botanical Name: *Calendula arvensis* Linn.
Local Name: Zair gulae.
Habit: An annual wild herb.
Part Used: Leaves, flowers
Uses: The leaves and flowers are given to children who are suffering from scrofula. It is used as tonic, it is diaphoretic and anthelmintic. The powdered leaf is used as snuff for the discharge of mucus. It is honey bee species.

Botanical Name: *Calendula officinale* Linn.
Local Name: Zair gulae
Habit: A cultivated ornamental herb.
Part Used: Flowers, leaves.
Uses: Flowers and shoots are used to treat wounds. Flowers along with honey are stimulant, astringent and antispasmodic.
Honey bee species.

Botanical Name: *Canabis sativa* Linn.
Syn: *Canabis indica* Lamk.
Local Name: Bhang
Habit: An annual wild herb of waste places.
Part Used: leaves, flowering tops.
Uses: Sedative, tonic, narcotic, anodyne refrigerant. Juice added with milk and nuts to make "Tandai" a cold drink which produces a pleasant excitement. "Charas" is also prepared from it. Honey bee species.

Botanical Name: *Caralluma edulis* (Edgew.) Bth ex HK.f.
Syn: *Boucerosia edulis* Edgew.
Local Name: Pamankay
Habit: A succulent perennial herb.
Part Used: Succulent stem
Uses: Vegetable, it is carminative. It is used by patients with diabetes. It is also used in hypertension.

Botanical Name: *Conyza canadensis* Conquist
Local Name: Malloch
Habit: Common wild herb.
Part Used: Vegetative portion.
Uses: Fresh fodder, homeostatic, stimulant, diuretic, astringent, used in diarrhea and dysentery.

Botanical Name: *Capsella bursa-pastoris* (Linn.) Medic.
Local Name: Bambaisa
Habit: An annual weed.
Part Used: Leaves, flowering tops, seeds.
Uses: It is less commonly used as vegetable. Seeds are stimulant, diuretic astringent, also used in dropsy. It serves as fresh fodder.

Botanical Name: *Capsicum annum* Linn.
Local Name: Ghat Marchakay
Habit: An annual cultivated herb.
Part Used: Fruits
Uses: Vegetable, condiment, carminative. It is used as flavouring agent in rice.

Botanical Name: *Celtis caucasica* Linn.
Local Name: Tagha
Habit: A medium to tall size tree of foot hills
Part Used: Leaves, fruits, wood
Uses: Fuel wood, used in making agricultural tools, leaves are used as fodder, fruits are edible which are refrigerant, also applied in colic, amenorrhoea and allergy.

Botanical Name: *Clematis grata* Wall.
Local Name: Ghrazela
Habit: Common wild climbing herb.
Part Used: Vegetative portion.
Uses: Fodder for sheep.

Botanical Name: *Chenopodium album* Linn.
Local Name: Sarmay
Habit: An annual wild weed of fields.
Part Used: Vegetative portion, roots.
Uses: It is used as pot herb, laxative, anthelmintic, roots used in Jaundice and urinary problems. Also serves as a fresh fodder.

Botanical Name: *Convolvulus arvensis* Linn.
Local Name: Prewatai
Habit: An annual climbing herb.
Part Used: Vegetative part
Uses: Fresh fodder, purgative, also applied in skin disorders. Wheat field weed.

Botanical Name: *Colocasia esculentum* Linn.
Local Name: Kachaloo
Habit: Cultivated vegetable
Part Used: Leaves, Underground stem.
Uses: Common vegetable, demulcent.

Botanical Name: *Cotonester microphylla* Wall
Local Name: Kharawa
Habit: A medium sized shrub.
Part Used: Whole plant.
Uses: It is used for thatching and sheltering roof. Used as fuelwood. It is also used for fencing.

Botanical Name: *Colchicum Luteum* Baker.
Local Name: Suranjan-e-sherin
Habit: Rhizomatous plant of moist temperate forests.
Part Used: Rhizome
Uses: Used as blood purifier, it is laxative and aphrodisiac.

Botanical Name: *Citrulus colocynthis* Shard.
Syn: *Cucumis colocynthis* Linn
Local Name: Kalkundaey

Habit: A prostrate herb found in dry maize fields.
Part Used: Fruit
Uses: Fruit is administered to cattle for intestinal disorders. Its juice is given in dropsy, fruits are bitter and poisonous, careless use may prove fatal. Children play with the fruits.

Botanical Name: *Coriandrum sativum* Linn.
Local Name: Dhanyal
Habit: An annual cultivated herb
Part Used: Leaves, seeds
Uses: Condiment, aromatic, stimulant, flavouring agent, carminative, used in piles, increases the secretion of gastric juices, used as Corrigan, fragrance digestive, fruits decoction is given in colic, seeds create appetite. Oil is extracted from it, also used in naming i.e. Danyal.

Botanical Name: *Cucumis sativus* Linn.
Local Name: Badrang
Habit: Prostrate to climbing herb.
Part Used: Fruits
Uses: It is extensively used as salad. It is refrigerant.

Botanical Name: *Cucurbita* Spp.
Local Name: Bindol
Habit: A cultivated climbing herb.
Part Used: Long snake like fruits
Uses: It is a common vegetable. It is stomachic

Botanical Name: *Cucurbita maxima* Linn.
Local Name: Khog Kadoo
Habit: A cultivated prostrate to climbing herb.
Part Used: Fruits, seeds, leaves, young shoots, flowers
Uses: Young shoots, flowers and fruits are used as vegetable. It is used in ulcer or other digestive problems, stomachic. Famous "Kadoo halva" is prepared from the fruit. Fruit pulp is also used in confectionery, Jams and Jelleys. Seeds are used as anthelmintic. Seeds are also used in confectionery and cakes. The name "Kadoo" is termed for an idiot person.

Botanical Name: *Cucurbita pepo* Linn.
Local Name: Gharangy Kadoo
Habit: An annual prostrate to climbing cultivated herb.
Part Used: Fruit
Uses: Fruit is used as vegetable. It is diet for patients suffering from Jaundice, heart and stomach problems.

Botanical Name: *Daphne oloides* Schreb. Syn: *Daphne mucronata* Royle
Local Name: Laighonai
Habit: Common shrub.
Part Used: Fruits
Uses: The fruits are edible. It is poisonous to animals. Its poultice is used for sweeping and rheumatism. It is also used as fuelwood. It has beautiful flowers and can be used as ornamental plant.

Botanical Name: *Datura innoxia* Mill
Local Name: Dhatura/Mangaz
Habit: Common waste land herb.
Part Used: Leaves, seeds
Uses: Leaves are applied externally in swelling of limbs. Extract of leaves is helpful in toothache, headache and epilepsy. Leaves extract effect the nervous system, overdose may induce vomiting, coma and even death. Seeds are antipyretic and narcotic.

Botanical Name: *Debregeasia salicifolia* (D. Don) Rendle Syn: *Boehmeria salicifolia* D. Don
Local Name: Ajlai
Habit: A water course shrub.
Part Used: Branches, wood and fruits.
Uses: Fruits are edible. It is used as fuelwood. Branches are used in thatching. It is also used as Hedge plant.

Botanical Name: *Dactyloctenium aegyptium* (L.) P. Beauv.
Local Name: Wakha.
Habit: A common grass.
Part Uses: Whole plant.

Uses: It serves as fresh and dry fodder.

Botanical Name: *Dicanthium annulatum* (Forssk)

Local Name: Wahka

Habit: Common medium sized grass.

Part Uses: Whole plant.

Uses: It serves as fresh and dry fodder.

Botanical Name: *Diospyrus lotus* Linn. (Fig. 3)

Local Name: Toor amlook

Habit: A wild medium sized tree.

Part Uses: Fruit, wood, leaves.

Uses: The wood is used in furniture. It is also used as fuel wood. Fruit are edible which are carminative, putgative and causes flatulence, leaves serves as fodder.

Botanical Name: *Diospyrus kaki* Linn. (Fig. 4)

Local Name: Ziar Amlook

Habit: This Japanese persimmon is grafted in the local *Diospyrus lotus*.

Part Uses: Fruit, wood.

Uses: It is very common commercial fruit tree of Malam Jabba valley. It is used in dry and fresh form and is very delicious. It is laxative. The wood is utilized as fuel.

Botanical Name: *Diplachne fusca* (L.) P. Beauv.

Local Name: Bangaya

Habit: A medium sized grass of dry habitat.

Part Uses: Whole plant.

Uses: It is used as fodder for cattle.

Botanical Name: *Dodonea viscosa* (L.) Jacq. (Fig. 5)

Local Name: Ghwaraskay.

Habit: A shrubby plant of exposed dry habitat.

Part Uses: Leaves, seed, wood.

Uses: It is used as astringent. It is used as rheumatism, swelling and burns. It is used in thatching and fencing. Its shoots are tied to make brooms. It is fragrant. It is also planted as ornamental and hedge plant.

Botanical Name: *Dryopteris stewartii* More K ze.

Local Name: Unknown.

Habit: A fern of moist shady areas.

Part Uses: Young fronds.

Uses: It serves as ornamental plant.

Botanical Name: *Fragaria indica* Andrew.

Local Name: Da Zamki Toot.

Habit: A perennial prostrate herb.

Part Uses: Fruits.

Uses: Fruits are edible and are laxative.

Botanical Name: *Echinops graffithianus* Boiss.

Local Name: Unknown

Habit: A common spiny weed of exposed sites.

Part Uses: Roots and stem.

Uses: It is considered as spiny weed. Stem and leaves are diuretic and aphrodisiac.

Botanical Name: *Equisetum arvense* Linn.

Local Name: Bandakay.

Habit: A tall narrow herb of moist habitat.

Part Uses: Shoots.

Uses: The extract of shoots mixed with mustered oil I used as hair tonic and antilice. It is used for cleaning and washing utensils.

Botanical Name: *Ehretia obtusifolia* Hochst . ex DC. (Fig . 6)

Syn: *Ehretia obvata* R. Br.

Local Name: Ghada botay.

Habit: A medium sized shrub.

Part Uses: Leaves, braches.

Uses: Leaves serves as fodder for cattle, fuel wood.

Botanical Name: *Euphorbia helioscopia* Linn.

Local Name: Prewatka.

Habit: An annual weed of fields.

Part Uses: Shoots, roots and latex.

Uses: It is cathartic, anthelmintic. Juice is applied to eruption; latex is poisonous and causes swellings on skin. It also causes irritation. It is also used as fish poison. When it is cooked with other pot herb, it depresses its flavour.

Botanical Name: *Euphorbia prostrata* Ait.

Local Name: Warmaga.

Habit: A prostrate annual herb.

Part Uses: Whole plant.

Uses: The decoction and its paste is used for dermatophytes, specially ring worms. Paste is also applied in skin diseases. It is grazed by goats. Bad looking weed in lawns.

Botanical Name: *Euphorbia wallichii* Hk.f.

Local Name: Shangla

Habit: A common herb in moist temperate forests.

Part Uses: Latex, shoots.

Uses: It is poisonous; highly laxative causes severe diarrhea and dysentery. It is name of a place i.e. Shanglapar District.

Botanical Name: *Eriophorum comosum* (Wall ex Roxb) Nees.

Local Name: Wakha

Habit: Grass of dry habitat.

Part Uses: Shoots

Uses: It is fodder of low quality.

Botanical Name: *Eucalyptus globulus*.

Local Name: Lachi.

Habit: Tall cultivated tree.

Part Uses: Leaves, oil, stem.

Uses: Fuel wood, used in making furniture, beams. It is used as flavoring agent, antiseptic, ant periodic. Leaves used in the form of cigarette for asthma. Introduced species. Honey bee species.

Botanical Name: *Ficus carica* Forsk

Local Name: Inzar

Habit: Medium sized cultivated tree.

Part Uses: Fruits, latex, leaves, wood.

Uses: It is laxative and demulcent. Used in constipation, piles and urinary bladder problems. Latex is used to make removal of spines and thorns easy. It is considered as a holy tree. Superstitious stories are related, if one saw its flower will become rich. Inzargul (flower of fig) is used for a person who meets after a long time, it is also name of a person. Fuel wood, fruits are also dried. Leaves serve as fodder.

Botanical Name: *Ficus palmate* Forsk

Syn: *Ficus varigata* Roxb.

Local Name: Inzar

Habit: A medium sized wild tree growing on slopes.

Part Uses: Fruits, latex, leaves, wood.

Uses: Laxative, demulcent. Used in constipation, piles and bladder diseases. Fruits are used both dry and fresh. It is holy, superstitious and used for naming. Leaves are used as fodder. Braches are used as fuelwood.

Botanical Name: *Gentiana kurroo* Royle.

Local Name: Unknown

Habit: Small herb is exposed habitat.

Part Uses: Corms, root.

Uses: Root is tonic, stomachic, febrifuge. Used for fattening of horses.

Botanical Name: *Geranium collinum* Steph ex Willd.

Local Name: Srazella

Habit: A perennial herb.

Part Uses: Whole plant.

Uses: Decoction of plant is antipyretic tonic and also used for curing cough and cold.

Botanical Name: *Gymnosporia royleana* Wall ex Lawson

Local Name: Soor azghay.
Habit: A spiny shrub of foot hills
Part Uses: Whole plant.
Uses: Young shoots are fodder for goat. It is also used as a hedge plant and fuel wood.

Botanical Name: *Hedera nepalensis* K. Koch.
Local Name: Da Wano kalay.
Habit: Tall liana climbing trees.
Part Uses: Leaves.
Uses: It is used as fresh fodder. Juice is used in first aid. It is ornamental. It is famous as an anticancer.

Botanical Name: *Helianthus annuus* Linn.
Local Name: Nwar parast.
Habit: A tall cultivated herb.
Part Uses: Seed, flowers.
Uses: Seeds yield edible oil used as best oil for cooking, seeds are laxative and diuretic. It is planted for ornamental purposes.
Honey bee species.

Botanical Name: *Heteropogon contortus* (L.) P. Beauv. Ex. Roem. & Schult.
Local Name: Barwaza.
Habit: A medium sized grass.
Part Uses: Leaves.
Uses: It is layered on the floors of old mosques and serves as a mat and insulting agent.

Botanical Name: *Abelmoschus esculentus* (L.) Moench.
Syn: *Hibiscus esculentus* Linn.
Local Name: Bhindi.
Habit: A cultivated vegetable in summer.
Part Uses: Fruits
Uses: It is extensively used as vegetable. It is emollient, demulcent and diuretic, it causes constipation.

Botanical Name: *Indigofera heterantha* Wall. Ex Brand.
Syn: *Indigofera gerardiana* Wall ex Baker.
Local Name: Ghoureja.
Habit: A medium sized shrub of exposed habitat.
Part Uses: Shoots, braches.
Uses: Shoots serve as fodder for goats. Young branches are twisted into ropes, they are tied to make brooms for cleaning roofs and lawns. It is used for thatching and fencing. It serves as fuelwood, wood ash is used for making snuff. It is honey bee species. Name of place i.e. Gjpireja.

Botanical Name: *Ipomoea carica* Jacq.
Syn: *Ipomoea palmata* Forssk.
Local Name: Unknown.
Habit: A wild climbing weed in maize field.
Part Uses: Whole plant.
Uses: It is used as fodder when weeded out.

Botanical Name: *Jasminum humile* Linn.
Local Name: Zair Rambail Chambail/Yasmin.
Habit: A wild ornamental climbing shrub.
Part Uses: Flowers, whole plant.
Uses: It is ornamental. Root decoction is used for curing ringworms.

Botanical Name: *Jasminum officinale* Linn.
Local Name: Spin Rambail Chambail, Yasmin.
Habit: A wild cultivated ornamental plant.
Part Uses: Whole plant.
Uses: Diuretic, anthelmintic. Flowers used in skin diseases, headache. Used in mouth rash. Oil is rubbed on heart as nerve sedative. Ornamental and fragrant. It is famous that when it blooms its fragrance attracts snakes.

Botanical Name: *Justicia adhatoda* L.
Synonym: *Adhatoda vasica* Nees
Family: Acanthaceae
Local Name: Baikar
Common Names: Arusa & Bhekar (U); Malabar Nut & Casaka (Eng.)

Habit: Non palatable shrub
Part Used: Root and leaves
Local Uses: Roots are used in rheumatism, pneumonia and cough. Leaves are applied to reduce swelling. The decoction of leaves is antispasmodic, expectorant, abortifacient and also used for curing dysentery in cattle. It is also used in scabbies and other skin disorders. Used in snakebites, eye and ear ailments. Antiseptic and insect repellent. Honey Bee species.

Botanical Name: *Juglans regia* Linn.
Local Name: Ghuz
Habit: A wild/cultivated large deciduous tree.
Part Uses: Nut, bark, leaves, wood.
Uses: It is used in standered furniture, also used for carving. Bark (Dandasa) is used for cleaning and sparkling of teeth. Leaves are also used as lips make up. Nuts can infect throat due to its oily nature. It has warm nature and can cause jaundice. It is also used as a dye. Used in naming i.e. "Ghuz". Decoction of leaves is given in eczema and intestinal worms.

Botanical Name: *Limmonium gilesii* (Hemsl. & Aitch) Rech. f.
Local Name: Watwatakay.
Habit: Succulent herb of dry exposed hills.
Part Uses: Whole plant.
Uses: Plant can be used as ornamental.

Botanical Name: *Lathyrus sativus* Linn.
Local Name: Chillo.
Habit: A prostrate herb.
Part Uses: Seeds, vegetative portion.
Uses: It is used as a fresh fodder. Seeds are also eaten.

Botanical Name: *Lathyrus apache* Linn.
Local Name: Kurkamanay.
Habit: Prostrate herb.
Part Used: Young shoots.
Uses: It is used as pot herb, also eaten by children as it has a very pleasant taste. It is also used as a fodder.

Botanical Name: *Luffa cylindrica* (L.) Room.
Syn: *Luffa aegyptica* Miller. ex Hk. f.
Local Name: Torai.
Habit: A cultivated climbing vegetable.
Part Uses: Fruits.
Uses: Fruits are used as vegetable, good for stomach and ulcer problems. Dried fruit case is used for cleaning utensils.

Botanical Name: *Malus pumila* Mill.
Syn: *Pyrus malus* Linn.
Local Name: Manra.
Habit: A cultivated fruit trtee with many varities.
Part Uses: Fruits, flowers, wood.
Uses: Valuable commercial fruit, purgative, source of iron, expectorant, used in jams, jelleys and good for heart. Wood is hard and is used for agriculture tools, branches serves as fuelwood.

Botanical Name: *Mentha longifolia* (L.) Huds.
Syn: *Mentha sylvestris* Linn.
Local Name: Villanay.
Habit: A perennial herb of moist area.
Part Uses: Whole plant.
Uses: Dried leaves powder is used in chatney, stomachic, carminative. It is used in diarrhea and dysentery. It is used with boiled eggs as tonsillites. It is stimulant and Rheumatic. It is aromatic and applied in various gastric problems. It is cooked with maize cobs as flavouring and carminative agent.

Botanical Name: *Mentha spicata* Linn.
Syn: *Mentha viridus* Linn.
Local Name: Podina.
Habit: A perennial cultivated herb.
Part Uses: Leaves.
Uses: The leaves are used in chatnies, leaves used as salad, spice, stimulant, carminative. Decoction of leaves is used as mouth wash. It is helpful in dyspepsia.

Botanical Name: *Melia azedarach* Linn.
Local Name: Tora Bikyana, Shandai.
Habit: A medium sized wild/cultivated tree.
Part Uses: Whole tree.
Uses: Bark is cathartic and emetic. Flowers applied as poultice, decoction of leaves is used in hysteria. Seeds used in rheumatism, also used in blood pressure. Ripened fruits are used against diabetes. Timber wood, used in making furniture. Shade tree. Leaves used as fodder. Ornamental. It is also a honey bee species.

Botanical Name: *Malva neglecta* Wall.
Local Name: Panerak, Samchal
Habit: A cultivated herb
Part Uses: Leaves
Uses: It is used a pot herb. It is also ornamental.

Botanical Name: *Mirabilis jalapa* Linn.
Local Name: Gul-e-Bada.
Habit: A perennial ornamental herb.
Part Uses: Leaves.
Uses: A hot poultice of leaves is used to mature and resolve boils.

Botanical Name: *Morchella esculenta* (Linn.) Pers ex Fr.
Local Name: Goujai
Habit: Mushroom of moist temperate habitat.
Part Uses: Whole
Uses: It is very costly and delicious mushroom. It is collected, sold in the local market and then exported. It has also medicinal value.

Botanical Name: *Micromeria biflora* (Bunhi Ham ex D. Don. Benth)
Local Name: Unknown
Habit: Small herb of crevices.
Part Uses: None.
Uses: No local use known

Botanical Name: *Morus alba* Linn.
Local Name: Spin toot.
Habit: A cultivated or wild deciduous tree.
Part Uses: Fruit, leaves, branches, trunk.
Uses: Fruit are eaten both fresh and dry. They are laxative, purgative. Leaves are emollient, used for cleaning throat, cooling agent, anthelmintic and astringent. Baskets are also made from the flexible branches. Wood is used in furniture. Leaves were once used in rearing silk worms. Leaves are eaten by goats and sheep. Planted as shade tree.

Botanical Name: *Morus nigra* Linn.
Local Name: Toor Toot.
Habit: A cultivated or wild deciduous tree.
Part Uses: Leaves, wood, branches, tree.
Uses: Fruits are eaten however they are laxative, leaves are emollient, used for cleaning throat, cleaning agent, anthelmintic and astringent. Baskets are made of flexible branches. Wood is used in making furniture. Shade tree, fuelwood, leaves are fodder for sheep and goats.

Botanical Name: *Myrsine Africana* Linn.
Local Name: Maru-rang
Habit: A medium sized shrub.
Part Uses: Whole plant.
Uses: Used in mudroof thatching, fuelwood and fodder for goat.

Botanical Name: *Myrtus cummunis* Linn.
Local Name: Manro
Habit: A medium sized shrub.
Part Uses: Leaves, fruits.
Uses: Used for fragrance in tea, used as spices. Carminative, appetizer, flavouring agent, digestive. Fruits are edible, develop taste. Used in naming by Dards i.e. "Manro".

Botanical Name: *Memordica charantia* Linn.
Local Name: Karela
Habit: A cultivated prostrate to climbing herb.
Part Uses: Fruit
Uses: It is used as vegetable, also used for curing fever. It is expectorant.

Botanical Name: *Narcissus tazetta* Linn.
Local Name: Gul-e-Gangass, Gul-e-Nargis.
Habit: A perennial herb of graveyards flowering in early spring.
Part Uses: Flowers.
Uses: Cultivated for ornamental purposes. Juice is purgative and emetic. Used in naming i.e. "Nargis". It is honey bee species.

Botanical Name: *Nasturtium officinale* R. Br.
Local Name: Talmeera.
Habit: A perennial herb of moist habitat.
Part Uses: Vegetative portion.
Uses: It is used as vegetable, salad and pot herb, it is anticorbic, stomachic, Apitizer and diuretic and it is also used in chest problems.

Botanical Name: *Nerium indicum* Mill .(Fig.7)
Syn: *Nerium odorum* Soland.
Local Name: Ganderay
Habit: A huge shrub of water courses.
Part Uses: Flowers, leaves, root.
Uses: Decoction of leaves in paste form is applied externally on the skin to cure certain skin diseases. Root is used in snake bites. It is poisonous. It is ornamental. Honey bee species.

Botanical Name: *Nicotiana tabaccum* Linn.
Local Name: Tambacco
Habit: Cultivated herb.
Part Uses: Leaves
Uses: It is important cash crop. Used in snuff, applied to wounds, antiseptic, narcotic, used for making cigaretttes. After removal of leaves the stems are dried and used for burning.

Botanical Name: *Olea ferrugenea* Royle
Local Name: Khona
Habit: Tall evergreen tree specified to graveyards.
Part Uses: Fruits, leaves, trunk
Uses: Fruit is eaten, antidiabetic, leaves used in toothache, astringent, antiseptic, diuretic, antiperiodic. Used in soar throat. Oil is obtained from seeds. Holy tree, grown in shrines and grave yards. Used for making agricultural tools, fuelwood. Used in naming i.e. "Khona Gul"

Botanical Name: *Origanum vulgare* Linn.
Syn: *origanum normal* D.Don
Local Name: Shamakay
Habit: A perennial herb.
Part Uses: Vegetative portion.
Uses: Used as fresh fodder. Used in tooth ache and ear ache, it is diuretic also used for washing utensils.

Botanical Name: *Oryza sativa* Linn.
Local Name: Sholy
Habit: Cultivated staple crop where there is plenty of water.
Part Uses: Graoms, straw
Uses: It is important cereal crop. Source of starch, Hay is used as fodder. It is also for cleaning and washing utensils.

Botanical Name: *Onychium japonicum* (Thunb.). Kze
Local Name: Not known
Habit: Fern of moist temperate forests.
Part Uses: Whole plant.
Uses: It is ornamental.

Botanical Name: *Otostegia limbata* (Bth.) Boiss
Syn: *Ballota limbata* Bth.
Local Name: Spin azghay, Pishkanr.
Habit: A small sized shrub.
Part Uses: Leaves.
Uses: Used in gum diseases and curing of wounds.

Botanical Name: *Oxalis corniculata* Linn.
Local Name: Manzakay Tarookay.
Habit: A perennial herb.
Part Uses: Leaves
Uses: Used in stomach problems, refrigerant, vermifuge, it is used for developing taste, also used for sensitive teeth. Decoction of leaves is given in fever and dysentery.

Botanical Name: *Papaver rhoeas* Linn
Local Name: Alak Janaey
Habit: An annual plant flowering early in spring.
Part Uses: Flowering tops, fruits
Uses: Slight sedative, children play games with flower buds.

Botanical Name: *Papaver somniferum* Linn.
Local Name: Qash-Qash
Habit: A rarely cultivated herb on margins of gardens
Part Uses: Latex, seeds.
Uses: Latex is obtained from unripe fruit by making incision in it which is narcotic, anodyne, sedative increases excitement and physical vigor, source of some 24 alkaloids however due to its narcotic use it is completely banned by the government (with USAID). It is a source of afyne and heroin. It was used as a weapon of war against the Chinese. Seed are used as tonic. It is now restricted to gardens and is planted for ornamental purposes. It is honey bee species.

Botanical Name: *Paeonia emodi* Wall ex Hk. f.
Local Name: Mamaikh
Habit: A perennial herb.
Part Uses: Rhizome.
Uses: Roots and rhizomes are used to cure backbone ache. It is also tonic, emetic and cathartic. It is blood purifier. It is also used in dropsy, epilepsy. It is colic.

Botanical Name: *Plantago lanceolatum* Linn.
Local Name: Jabai
Habit: An annual herb.
Part Uses: Leaves, fruits, seeds
Uses: Extract of leaves is applied to sore, wounds and inflamed surface laxative, used in dysentery, mouth diseases. Check taste power.

Botanical Name: *Polygonum arenastrum* boreau
Local Name: Not known
Habit: A perennial herb of moist habitat.
Part Uses: Whole plant
Uses: Astringent, used for curing ulcer and warts.

Botanical Name: *Polygonum barbatum* Linn.
Local Name: Pulpulak
Habit: A perennial herb of moist habitat.
Part Uses: Shoots
Uses: Used as fish poison. The leaves are crushed with sand to kill fish.

Botanical Name: *Polygonum amplexicaulis* HK. f.
Local Name: Tarva parna.
Habit: A perennial herb of temperate habitat.
Part Uses: Shoots, leaves.
Uses: The youngest shoots are used for curing ulcer.

Botanical Name: *Portulaca olearacea* Linn.
Local Name: Warkharae.
Habit: A cultivated herb.
Part Uses: Vegetative portion

Uses: It is used as pot herb which is refrigerant, alterative, it is also used in kidney, liver, urinary bladder and lungs problems.
Botanical Name: *Podophyllum emodi* Wall. Ex Royle
Local Name: Kakora
Habit: A shade loving herb
Part Uses: Rhizome
Uses: It is used as hepatic stimulant, purgative and emetic.

Botanical Name: *Populus caspica* Bornm
Syn: *Pinus longifolia* Roxb. Ex Lamb
Local Name: Nakhtar
Habit: A characteristic tree of subtropical pine forest.
Part Uses: Whole tree.
Uses: Timber wood, fuel wood, used for making furniture, cones are used for burning and decoration purposes. It yields edible seeds. Leaves are used for sheltering and for keeping fruits in crates. It yields Resin and turpentine. Resin locally known as "Jaula" is stimulant used in ulcer, snake bites, scorpion stings and blood purifier. It is used in skin diseases. Saw dust is used by barbarians to warm water; it is also used for cleaning utensils. Its name "Nakhtar" is termed for a tall person.

Botanical Name: *Pinus wallichiana* A.B. Jackson
Syn: *Pinus excelsa* Wall
Local Name: Peeuch
Habit: A characteristic tall tree of moist temperate habitat.
Part Uses: Whole tree
Uses: Turpentine is obtained. Tar is applied as protective varnish to wood work. Sugary exudant is eaten by people. It is second best timber wood in Pakistan used for house building, making furniture, used in match industry, making bridges and beams. Used in paper industry. Cones are used for burning and ornamental purposes. Branches are used as fuel wood.

Botanical Name: *Picea smithiana* (Wall) Boiss
Local Name: Mangazaey
Habit: Characteristic conifer of moist temperate forest.
Part Uses: Whole tree
Uses: It provides timber wood, used in bridges, building houses, fuel wood. Used in match industry. Leaves are used to keep fruits in crates.

Botanical Name: *Pisum sativum* Linn.
Local Name: Matar
Habit: A cultivated climbing herb
Part Uses: Seeds, leaves.
Uses: Its leaves and seeds are extensively used as vegetable in winter. Honey bee species.

Botanical Name: *Platanus orientalis* Linn
Local Name: Chinar
Habit: A cultivated/wild huge deciduous tree.
Part Uses: Whole tree
Uses: It is best hard wood for making furniture it is planted as a shade and ornamental tree. Bark is given in tooth ache and diarrhea. Used as fuel wood. Its name "Chinar" is used in naming people and places i.e. Chinar camp, Chinar and parachinar. Maple leaf is Symbol of Kashmir and Canada.

Botanical Name: *Plectranthus rugosus* Wall. Ex Bth
Local Name: Burtus, Spirkay
Habit: A medium sized shrub of exposed dry places.
Part Uses: Branches
Uses: It is used for thatching and sheltering, it is fodder for goats. Decoction of leaves is antiseptic. It is aromatic. It serves as fuel wood. It is honey bee species.

Botanical Name: *Prunus domestica* Linn.
Local Name: Alucha.
Habit: A medium sized cultivated fruit tree with many varieties.
Part Uses: Fruit, wood, leaves.
Uses: Commercial fruit tree used in Jams and Jelleys. It is laxative. In dry form the fruits are used as flavouring agent in rice and meat. Fruit pulp is also used in chutnies (Murabba). Wood is used for burning. Leaves serves as fresh fodder. It is honey bee species.

Botanical Name: *Prunus armeniaca* Marsh.
Local Name: Khubanai
Habit: A cultivated fruit tree with many varieties.
Part Uses: Fruit, wood, leaves, seeds.
Uses: Fruit and seeds are eaten both dry and fresh. Gum is obtained from stem, famous as anticancer. People who eat its fruit are said to be long-lived, fuel wood. Its leaves serve as fresh fodder.

Botanical Name: *Prunus persica* Linn.
Syn: *Amagdalus persica* Linn
Local Name: Shaltalu
Habit: A small sized wild/cultivated fruit tree with many varieties.
Part Uses: Fruit, leaves, wood.
Uses: Fruits edible, fuelwood, leaves as fodder. Name of a place i.e. "Shaltalu".

Botanical Name: *Punica granatum* Linn.
Local Name: Ananghorai
Habit: A wild/cultivated fruit yielding small bush like tree.
Part Uses: Fruit, bark, leaves.
Uses: Leaves are used in skin diseases, also used in dysentery. Fruit is astringent and cooling, its juice is syptic and blood purifier. Fruit pericarp is used for whooping cough, it is laxative. Seeds are dried and used as "anardana" which is condiment and used as spices, used in place of tomato in curries. Bark of stem and root is anthelmintic. It is used as mouthwash, antipyretic and expectorant. It is also used in naming i.e. "Anar Gul".

Botanical Name: *Pteridium aquilinum* (L.) Kuhn
Syn: *Pteris equilinum* Linn
Local Name: Kwanjai
Habit: A perennial fern of moist shady area.
Part Uses: The young fronds.
Uses: The fronds are used as pot herb. It is cooked with whey. Dard people use it for naming i.e. "Kwanjai". It is ornamental.

Botanical Name: *Pyrus pashia* Ham ex. D. Don
Local Name: Tangai
Habit: A wild fruit tree
Part Uses: Fruits, wood.
Uses: Fruits are eaten which are astringent, febrifuge, sedative and laxative. Fuel wood. It serves as root stock for grafting apple and pear. Honey bee species.

Botanical Name: *Quercus dialatata* Lindle ex Royle
Local Name: Spin banj.
Habit: A slow growing tree.
Part Uses: Wood, nuts
Uses: It is fuel wood species, yields timber; roasted seeds are eaten, astringent diuretic, used in diarrhea, indigestion and asthma. Children play marbles with seeds. Due to its toughness the wood is used in agricultural tools, handles of plough, axes, gun, butts and walking sticks. Seed heads are used as playing cups by children.

Botanical Name: *Quercus incana* Roxb.
Local Name: Toor banj
Habit: A slow growing tree.
Part Uses: Wood.
Uses: It is timber yielding tree, used as fuel wood. It is also used for making agricultural tools specially ploughs, handles.

Botanical Name: *Ranunculus aquatilis* Linn.
Local Name: Jaghagha
Habit: An aquatic herb
Part Uses: Whole plant.
Uses: It is slight poisonous. Decoction of plant is used in asthma and periodic fever. It is purgative for goat.

Botanical Name: *Raphanus sativus* Linn
Local Name: Mooley.
Habit: Cultivated herb.
Part Uses: Young leaves, root.
Uses: Young leaves and roots are used as pot herb, extensively used as salad which is digestive, carminative and diuretic. It is also used in jaundice, piles and urinary diseases.

Botanical Name: *Ricinis communis* Linn.
Local Name: Herhanda
Habit: A perennial herbaceous shrub.
Part Uses: Leaves, seeds, oil.
Uses: Leaves are emetic, narcotic, poisoning, purgative, poultice is applied to swellings. Castor oil is purgative, oil is given in constipation before and after child birth to mother. Seeds are sedative.

Botanical Name: *Rosa moschata* J. Herm.
Local Name: Zangaley Gulab
Habit: Climbing shrub of hilly areas.
Part Uses: Flowers, branches
Uses: Ornamental, flowers used for fragrance. It is also used in fencing and hedges. Honey bee species. Used in naming i.e. Gulab Khan.

Botanical Name: *Rosa* spp.
Local Name: Palwari
Habit: Climbing to prostrate shrub.
Part Uses: Flowers, branches
Uses: It is ornamental. Usually cultivated at the edge of fields as fencing and hedge plant. Honey bee species.

Botanical Name: *Robinia pseudoaccacia* Linn.
Local Name: Kikar
Habit: A cultivated tree.
Part Uses: Flowers, wood.
Uses: It is introduced and cultivated for erosion and fuelwood. Flowers are used for ornamental purposes, leaves serves as fodder for goats, also used in fencing and hedges. It is honey bee species.

Botanical Name: *Rubus ellipticus* Smith.
Local Name: Sra karwara
Habit: A climbing shrub.
Part Uses: Fruit, leaves.
Uses: Leaves serve as fodder for goats, hedge plant.

Botanical Name: *Rubus fruticosus* Hk. f.
Local Name: Karwara
Habit: A prostrate to climbing shrub.
Part Uses: Fruits, leaves, shoots
Uses: Leaves are used for the treatment of diarrhea, cough, fever, used as diuretic; fruits are edible, carminative, used in jams and jelly's. Leaves are fodder for goat. Used for fencing and hedges.

Botanical Name: *Rumex nepalensis* Spreng.
Local Name: Shalkhay
Habit: A perennial herb.
Part Uses: Leaves, roots
Uses: Leaves serve as pot herb, they are diuretic, astringent and demulcent, it also soothes the irritation caused by urtica dioica. Roots are also astringent.

Botanical Name: *Rumex hastatus* Linn
Local Name: Tarookay
Habit: Common plant of cliffs.
Part Uses: Leaves, young shoots.
Uses: Used in " Chattni" for its sour taste, leaves are carminative, purgative, astringent, diuretic, stomachic and flavoring agent.

Botanical Name: *Saccharum bengalense* Retz.
Local Name: Sharghashay
Habit: A grass of water course and field margins.
Part Uses: Leaves stem.
Uses: Used for thatching, it is also used for making baskets and brooms.

Botanical Name: *Saccharum spontaneum* Linn.
Local Name: Kahai
Habit: A grass of moist, marshy habitat.
Part Uses: Leaves and culms (stem)
Uses: It is used in making winnowing trays, locally known as “Chaj” brooms and baskets. It is also used for thatching roofs.

Botanical Name: *Salix babylonica* Linn
Local Name: Wala.
Habit: Deciduous tree along water courses
Part Uses: Whole tree.
Uses: Fuelwood, small sticks are cut and used in weaving cloth and “azarband” at homes, used in making cricket bats and light furniture. It is ornamental, mud supporter and prevent erosion. There is a very interesting Pushto sentences “Da-waley-Waley-waley-waley” means “why are you hitting willows of the stream”.

Botanical Name: *Salix tetrasperma* Roxb.
Local Name: Wala
Habit: A deciduous tree along water courses.
Part Uses: Whole tree.
Uses: Fuel wood, planted along water courses to prevent soil erosion. It is also mud supporter. It is used in making cricket bat and light furniture.

Botanical Name: *Setaria viridis* (L.) P. Beauv
Local Name: Wakha
Habit: Small grass of fields and waste areas.
Part Uses: Vegetative portion.
Uses: Fodder for cattle.

Botanical Name: *Senecio chrysanthemoides* D.C.
Local Name: Ziar gualay.
Habit: A perennial herb.
Part Uses: Flowers
Uses: Ornamental.

Botanical Name: *Silene vulgaris* Linn.
Local Name: Manghotay
Habit: An annual weed of wheat field.
Part Uses: Young shoots, fruits.
Uses: Young shoots are used as vegetable. It has some cosmetic value as seeds and leaves paste is used for whitening of skin.

Botanical Name: *Solanum miniatum* Benth. Ex Wild
SYN: *Solanum nigrum* L.
Local Name: Kachmachu
Habit: A wild herb
Part Uses: Berries, leaves.
Uses: Vegetable, fresh fodder, expectorant, used in certain skin diseases, used for washing and cleaning wounds. Hot leaves are used as poultice. It is carminative tonic and diuretic. It is also used in dropsy and jaundice.

Botanical Name: *Solanum surratense* Burm. f.
Syn: *Solanum xanthocarpum* Schard-ex Whendl.
Local Name: Manraghonay.
Habit: A small spiny prostrate herb.
Part Uses: Whole plant.
Uses: The whole plant is expectorant bitter, stomachic and diuretic. It is used in asthma, cough, fever pain in chest and gonorrhoea.

Botanical Name: *Solanum tuberosum* Linn.
Local Name: Aloo
Habit: A cultivated tuberous herb.
Part Uses: Underground tubers.
Uses: Used as vegetable, important source of starch and proteins, causes gas trouble, cooked in a number of ways.

Botanical Name: *Solanum esculentum* Linn.
Local Name: Batinganr.

Habit: A cultivated herb.
Part Uses: Fruit
Uses: It is common vegetable, it causes mouth rash.

Botanical Name: *Sorghum halepense* (Linn) Bres
Local Name: Dadum
Habit: Perennial rhizomatous weed.
Part Uses: Vegetative part.
Uses: It serves as fodder in low qualities, drinking of water after eating it can cause flatulence and proves fatal for the cattle.

Botanical Name: *Spinacea oleracea* Linn.
Local Name: Palak.
Habit: A cultivated vegetable of autumn.
Part Uses: Leaves.
Uses: It serves as common vegetable. It can cause kidney stones.

Botanical Name: *Thalictrum foliosum* D.C.
Local Name: Mamera.
Habit: A rhizomatous herb of temperate areas.
Part Uses: Rhizome.
Uses: It is used in several eye disorders.

Botanical Name: *Taraxacum officinale* Webber.
Local Name: Zair gulae.
Habit: A perennial herb.
Part Uses: Flower, root, leaves
Uses: It is used against tumors. It is purgative, diuretic, tonic, mild laxative, used as remedy for kidney and liver diseases. It is also helping in the flow of bile, it is ornamental.

Botanical Name: *Taxus wallichiana*
Local Name: Banyan
Habit: Conifer of moist temperate forest.
Part Uses: Whole tree, leaves.
Uses: Leaves used in bronchitis, whooping cough and asthma. It is also used in indigestion and epilepsy, leaves and fruits are sedative and antiseptic, wood is used in building roofs and due to its durability to heavy snow they are placed on graves. Leaves are source of taxicol.

Botanical Name: *Trifolium repense* Linn.
Local Name: Shautal
Habit: A wild/cultivated herb.
Part Uses: Whole plant.
Uses: It is used as fodder for cattle. It is also use as a pot herb. It increases soil fertility and as cultivated as crop rotation.

Botanical Name: *Tagetes minuta* Linn.
Local Name: Zangaley Hamisha
Habit: Annual wild/cultivated herb
Part Uses: Flowers
Uses: Fragrant and ornamental.

Botanical Name: *Triticum aestivum* Linn.
Local Name: Ghanam
Habit: A cultivated cereal crop.
Part Uses: Whole plant
Uses: It is cultivated as main staple crop, grains are roasted with raw sugar (ghur). Hay is eaten by cattle. Hay is mixed with clay plaster as an anticracking agent.

Botanical Name: *Teucrium stocksianum* Boiss.
Local Name: Kwandi botay.
Habit: Herbaceous plant of exposed areas.
Part Uses: Leaves, young shoots.
Uses: Leaves are bitter, expectorant , decoction of leaves is used for curing soar throat.

Botanical Name: *Urtica dioca* Linn.
Local Name: Sizunkay.
Habit: An annual stinging herb of moist and shady habitat.

Part Uses: Leaves.
Uses: Leaves can cause severe irritation which can be soothed by rubbing the leaves of *Rumex nepalensis*. It can cause allergy.

Botanical Name: *Valeriana jatamansi* Jones
Local Name: Mushk-e-Bala
Habit: A perennial herb of temperate forests
Part Uses: Rhizome
Uses: Decoction of rhizome is useful in cholera and dysentery. Rhizome is carminative and aromatic. It is antispasmodic. It is also recommended in hysteria.

Botanical Name: *Verbascum thapsus* Linn
Local Name: Khardhag
Habit: An annual herb.
Part Uses: Leaves, flowers, seeds.
Uses: Used in diarrhea and dysentery of cattle. It is analgesic and antiseptic. Used for healing wounds leaves and flowers are used against cough and pulmonary diseases in the form of paste. Seeds are narcotic and fish poison.

Botanical Name: *Viburnum foetens* (D. Don) Wall ex. D.C. (fig .8)
Local Name: Ghaz meva.
Habit: Shrub of exposed habitat in temperate forests.
Part Uses: Fruits, branches.
Uses: The fruits are edible. Branches serve as fuelwood. Fruit are also eaten by monkeys.

Botanical Name: *Viola betonicifolia* Sm. (Fig 9)
Local Name: Banafsha.
Habit: A perennial herb of temperate forests.
Part Uses: Whole plant, flowers.
Uses: It is astringent, diaphoretic, antipyretic, anticancer, febrifuge and purgative, used in epilepsy and nervous disorders.

Botanical Name: *Viola canescens* Wall ex Roxb. (Fig. 10)
Local Name: Banafsha
Habit: A perennial herb of temperate areas.
Part Uses: Whole plant, flowers
Uses: It is astringent, demulcent, purgative, diaphoretic, antipyretic and febrifuge, also famous as anticancer. The flowers are recommended in epilepsy, nervous disorders and also used in common colds in the form of syrup, also used for curing acne, folk stories are also related to the flower. It is also in naming girls i.e. "Banafsha".

Botanical Name: *Vitex negundo* Linn
Syn: *Vitex incise* Lam
Local Name: Marvandaey
Habit: A medium sized shrub of water courses and graveyards.
Part Uses: Leaves, roots, branches
Uses: Fresh roots are used as bandage to relieve pain of chest and back, branches are used as tooth brush (Miswak) leaves are aromatic, febrifuge, diuretic and anthelmintic. Leaves are smoked to relieve headache. Flowers are astringent and tonic. Non palatable, used for making shelters for tobacco seedlings.

Botanical Name: *Vitis Jacquemontii* Parker
Local Name: Ghedar kwar.
Habit: A perennial wild climber, sometimes covering whole tree.
Part Uses: Fruit
Uses: Wild edible grapes, it is laxative.

Botanical Name: *Xanthium strumarium* Linn.
Local Name: Ghiskay.
Habit: An annual herb of waste land.
Part Uses: Leaves, fruits
Uses: Decoction of leaves is used in malarial fever. Fruits stuck to clothes and body hair of animals (dispersal) and are hard to remove.

Botanical Name: *Zanthoxylum armatum* D.C.
Local Name: Dambara
Habit: A medium sized spiny shrub.
Part Uses: Bark, fruit, stem, seeds.
Uses: Fruit is used as stomachic, carminative. Used in toothache, seed are used as condiment, tonic, aromatic. Used in fever and cholera, improves taste and speaking power, it increases saliva secretion. Used in "Chutney", it increases milk in cows. Young shoot are

useful in gum diseases, also used as toothbrushes. Stem is used to make dreadful sticks (“Dambary sotay”) to kill snakes and keeps the dogs away.

Botanical Name: *Zea mays* Linn
Local Name: Jawar
Habit: A cultivated crop.
Part Uses: Cobs, whole plant
Uses: Delicious bread is made of it and is routine diet of people. Cobs are cooked in a number of ways. Edible oil extracted from it. Cob cases are used for washing and cleaning utensils. Stems are used as fresh fodder. They are also burnt when dried.

Botanical Name: *Zizyphus sativa* Gaertn.
Local Name: Markhanaey
Habit: Spiny medium sized tree.
Part Uses: Fruit, branches.
Uses: Fruit are edible, used as astringent, cooling. Fuel wood, used in fencing and hedges, leaves fodder for goats. It is also recommended in stomach problems and whooping cough, it is honey bee species.

Discussion

Plants form the basis of life. They provide us ready made food, medicines to fight diseases, services to earn, fodder and forage for our cattle, fuel wood for burning, flowers for celebrations, materials for making agricultural tools, honey collected from its flowers, timber for construction and many more useful items. Ethnobotany is the most important approach to study natural resource management of indigenous people. The interaction between the mountain people and natural system through history has helped in maintaining the richness of species, communities and genetic materials in both productive systems and wild lands of the mountain environment. However, the rich Biodiversity is being disastrously impoverished due to human actions in the last few decades. Understanding the indigenous knowledge of mountain people in relation to biodiversity resource management is one of the key issues for sustainable development (Pie, 1991).

There are no provisions anywhere for the protection of knowledge rights of native people. Little action has been taken by legal professional Environmental, non governmental or even human rights groups to secure intellectual property rights (IPR) for native people (Martin, 1995).

Malam Jabba Valley has an estimated population of 20,000 inhabitants (EPS Report). Most of the people depend on agriculture, agroforestry and mountain resources. They collect a lot of medicinal plants, fodder, fuel wood and timber wood from the forest. Human existence grazing and cultivation exerts enormous stress on the vegetation and results in environmental degradation (Shinwari and Khan 1998). Similar situation also prevail in this valley. Some other causes included ignorance, poverty, joblessness and lack of scientific knowledge for the collection of medicinal plants.

Most of the plants were found to be used for multi purposes, such as medicinal, timber wood, fuel wood, leaves as fodder, fruits and seeds are edible, provides dry fruits, used in spices, agroforestry is based on them, commercial fruit trees, wild edible fruits, used in naming, can provide shade and can nests birds (Hussain, 1995).

The people of Malam Jabba Valley have always used medicinal plants for various diseases and have been dependent on surrounding plant resources for a very long time. Haq and Rehman (1990-93) reported some medicinal plants from Swat and Mansehra Districts. Rizwana *et al* (1996) reported the ethnobotany of gymnosperms from Chitral District. Sadaqat (1995) published a series of medicinal plants of family Cucurbitaceae. Hussain and Khaliq (1995) reported 69 medicinal species from Swat. All these studies show the potential of medicinal plants in the area.

The medicinal plants are collected by the local inhabitants, Dards and local practitioners through traditional knowledge. Most of these people form the poorest link in the trade of medicinal plants (Hersh, 1995). The local inhabitants are ignorant and had little knowledge about the species and proper time of collection (Shinwari and Khan, 1998), however in this valley younger generation is forgetting about indigenous knowledge of plants but the old people still possess the knowledge about wild resources. . The drugs fetch various prices (Table 4.22).

The sequential agroforestry system is believed to have originated in the Neolithic period around 7000 BC (Sharma, 1976) and is still in practice. Sheikh (1987), Khattak *et al* (1980), Kermani (1980) and Haq (1986) reported on various aspects of agroforestry in Pakistan.

The important findings emerging from these studies as summarized by Sheikh (1987) are: Trees in close proximity to agricultural crops depress the yield of the latter, the effects vary depending upon the species of trees and crops and farmers are prepared to plant trees which are fast growing and have a good market value.

In Malam Jabba Valley fruit trees decrease the yield of crops. *Robina pseudoacacia*, *Alianthus altissima* and *Eucalyptus globulus* are planted as fast growing trees especially for fuel and erosion control however the wood is cheap.

Diospyrus Kaki is the most characteristics fruit tree of the valley and in general of whole Swat. In the months of August and September this tree full of red fruits presents a charming view in the orchards of the most Valleys of Swat. In fact most of the persimin fruit supplied to different parts of Pakistan are mostly produced from Swat. Hence this plant plays a vital role as an income source for the local people.

It is very interesting to mention here that there are some cultivars of Pear and apricot in this area of Swat. Most of these cultivars are delicious and economically beneficial. These cultivars are considered as useful source of germplasm in this valley.

Shinwari (1993) reported on fire wood crops, shrubs and trees species in N.W.F.P. In Margalla Hills National Park Islamabad the local people use 35 species as fuel wood (Shinwari and Khan, 1998). Hussain and Khaliq (1995) reported 18 fuel wood species from Dabargai hills, Swat. In Malam Jabba Valley 46 species are used as fuel wood (Table 4.9). This shows that fuel wood utilization is high and the local flora is under severe pressure. Supply of natural gas to the area may help to reduce the pressure on forests for fuel wood.

There are a number of wild ornamental plants in this area such plants include *Jasminum humile*, *Nerium indicum*, *Rosa moschata* and *Senecio chrysanthemoides* (Robert *et al* 1995). Certain plants with beautiful flowers attract honey bees. This can boast up bee keeping as a useful incentive. It is useful activity which can help in conservation and economic stability of the people (Chemas, 1991). Muzaffar (1998) reported that the important plant species for honey bee in the area of Islamabad are *Acacia modesta*, *Adhatoda vasica*, *Canabies Sativa*, *Cucurbita Maxima*, *Dicliptera roxburghiana*, *Helianthus annuus*, *Plectrunthus rugosus* and *Ziziphus sativa*.

In Malam Jabba Valley only a few families keep bees although bee keeping is an old tradition in Swat. It is identified as a small scale off farm cottage industry and economically useful activity. It need less investment to be established, effort is low and good quality honey can bring in good money. Encouragement of the industry in the Valley will not only economically help the people but will also keep the flora alive. The important plants for the bees in Malam Jabba Valley are *Acacia modesta*, *canabis sativa*, *cucurbita maxima*, *Jasminon humile*, *indegoefera heterantha*, *pleclrunthus rugosus* *prunus armenicaca* and *Zizyplus sativa* (Table 4.13).

Baquar (1994) published the medicinal and poisonous plants of Pakistan. However, some of the poisonous plants in Malam Jabba Valley are *Arisaema flavum*, *Buxus*, *sempervirens citrus colocyntis* and *Datura innoxia* Neuwinger (1994) reported poisoning plants for fish in Africa. In Malam Jabba Valley *Polygonum barbatum* is crushed with sand and is used as a fish poison.

Many plants have a lot of miscellaneous uses such as fruits and seeds for food, decoration pieces are made from wood and cones, cultivated for ornamental purposes, hedge and fencing species, wild pot herbs, thatching and sheltering species washing utensils with, fish poison sacred and holy plants, specified for grave yards, mud supporting, making wooden spoons and utensils from and helping in the removal of spines.

An ecologically operative problem of the area is severe grazing, browsing and trampling by domesticated livestock. It causes species not to reach its climax stage due to such hinderance (Shah, 1993). Such stresses are more important than edaphic factors in determining the community composition.

Collection of medicinal plants had threatened certain species. *Podophyllum emodi*, *Valeriana Jatamonsi* are rare plants, while *Taxus Wallichiana* is threatened species (Ahmed and Siraj, 1996). There is a need of careful conservation of the plant resources of the region otherwise many plants may be lost for ever and become extinct.

Among the medical plants, *Paeonia emodei* was once very wide spread in Malam Jabba Valley is now restricted in a small localized area. It is due to the over exploitation of this plant for its high quality medicinal properties, especially for backache, dropsy, epilepsy, convulsions, hysteria and uterine diseases. Local people are well aware of its uses. However this plant is vulnerable and will soon be threatened in near future if the measures are not taken for its conservation.

Delphenium danudatum is not reported from this area. However, some other species of *Delphinum* are found in this valley. It is suggested that *Delphenium danudatum* may be introduced in this area which will be a useful addition of Medicinal plants in the area.

References

- Ahmad, M. and Sirajuddin. 1996. Ethnobotanical profile of Swat. Proc. Ist. Train. Work. on Ethn. and Appl. In Shinwari, Z.K. and (eds) Conservation. N.A.R.C. : 202-206.
- Ahmed, K.S. 1951. Climatic Regions of Pakistan. *Pak. Geog. Rev.* 6 : 1-35.
- Ali, S.I. and M. Qaisar. 1986. A phyto geographical analysis of the Phanerogames of Pakistan and Kashmir. *Proc. Royal Soc. Edinburgh*, 89. 3 : 89-101.
- Ammeerudy, Y. 1994. Local representation and management of agroforests on periphery of kerinci National Park Sumatra, People and Plants Initiative, Div. of Ecol. Sc. UNESCO 3 : 1-46.
- Anis, M. and M. Iqbal. 1994. Medicinal plant lore of Aligarh, India. *Int. Jor. Pharm.* 32.1 : 59-64.
- Asar, A.H. 1961. *Swat-da-tarikh-pa-ranra-ke*. Darul-e-Shaat, Bajawar, Pakistan.
- Baquar, S.R. 1989. Medicinal and Poisonous plants of Pakistan. Prints, Karachi P. 506.

- Beg, A.R. and M. Khan. 1980-84. Some more plant communities and future of dry Oak Forest Sone in Swat Valley. *Pak. J. For.* 34 (1): 25-35.
- Beg, A.R. and S.A. Khan. 1974. Flora of Malakand Division Part I.A. *Pak. J. For.* 24 : 171-185.
- Beg, A.R. and K.S. Samad. 1974 Flora of Malakand Division. Part 1. B. *Pak. J. For.* 230-286.
- Bellomaria, B. and P. Kacou. 1995. Plants and Popular medicine of Agboville. Cote d' Ivoire. *Fitoterapia.* 66. 2 : 117-141.
- Bhandary, M.J., K.M. Kaveriappa and K.R. Chandrashekar. 1995. Medical ethnobotany of the Siddis of Uttara Kannada District, India. *Jor. Ethnophar.* 47. 3 : 149-158.
- Bhattarai, N.K. 1993. Folk Medicinal use of plants for respiratory complaints in Central Nepal. *Fitoterapia.* 66 . 2 : 163 - 170.
- Bukhari, S.A.H. 1996. Community uses of Medicinal Plants , National Park Machyara, Muzaffar Abad. *Pro. First. Training workshop Ethno. and Appl.* In Shinwari, Z.K. and (eds). Conservation NARC : 59-66.
- Chaudri, M.N. and R.A. Qureshi. 1991. Pakistan endangered flora II. A checklist of rare and seriously threatened taxa of Pakistan. *Pak. Syst.* 5. 12 : 1-84.
- Chemas, A. and V.R. Gray. 1991. Apiculture and Management of associated vegetation of the Maya of Taxicacaltuyub, Yucatan, Mexico, *Agroforestry Syst.* 13.1 : 13-26.
- Clayton, D.H. and N.D. Wolfe. 1993. The adaptive significance of self medication. *Trends. Ecol. Evol.* 8.2 : 60-63.
- Connely, M.P.E., E. Fabiano and I.H. Patel. 1996. Antimalarial activity in crude extracts of Malawian medicinal plants. *Ann. Trop. Med. Parasitol.* 90. 6 : 597-602.
- Cousins, D.J. 1995. Plants with antimicrobial properties. (Antiviral, Antibacterial and Antifungal). *International.* 116-134.
- Cunningham, A.B. 1993. African medicinal plants. People and Plants working paper Division of Ecological Science. UNESCO 1 : 1-50.
- Daubemire, R. 1980. Mountain topography and vegetation pattern. *North west Sci.*, 45.2 : 146-152.
- Elujoba, A.A. 1995. Female infertility in South Western Nigeria. *Fitoterapia.* 66.3 : 239-248.
- EPS Report. Malam Jabba Valley, Pakistan. EPS Library, Saidu Sharif Swat.
- Figueiredo, G.M., Leitao Filho and A. Begossi 1997. Ethnobotany of Atlantic Forest Coastal communities. *Hum. Ecol.* 25 : 353-360.
- Freiburghaus, F., E.N. Ogwal and R. Burn. 1996. In Vitro antitrypanosomal activity of African plants used in traditional medicine in Uganda. *Trop. Med. Int. Health.* 1. 6 : 765-771.
- Gopakumar, K., B. Vijayalakshmi and T.R. Shantha. 1991. Plants used in Ayurveda from Chikmagalur District Karnataka II. *Econ. Taxon. Bot.* 15. 2 : 379 - 389.
- Hajra, P.K. and R.P. Rao. 1990. Distribution of vegetation types in N.W. Himalayas. *Plant Sciences.* 100 . 4 : 263-277.
- Haq, I. 1993. Medicinal plants of Mansehra District N.W.F.P. Pakistan. *Mamdar Medicus* 34. 3 : 63-99.
- Haq, I. and M. Rehman. 1990. Medicinal plant of Upper Swat N.W.F.P. Pakistan. *Hamdard Medicus.* 33. 3 : 51-86.
- Hersch, M.P. 1995. Commercialization of Wild Medicinal Plants from Southwest Puebla, Mexico. *Economic Botany.* 49. 2 : 197-206.
- Hilu, K.W., M.K. Ribu, H. Liang and C. Mandelbaum. 1997. Ethnobotany of Fonio Millets. *S. Afr. J. Bot.* 63.4 : 185-190.
- Hocking, G.M. 1958. Pakistan Medicinal Plants I. Qualities plantarum Material vegetables, 9 : 103-119.
- Hussain, F. and A. Shah. 1989. Phytosociology of vanishing sub-tropical vegetation of Swat with special reference to Docut Hills. *Sci. Khyber.* 2: 27-36.
- Hussain, F., M. Ilyas and K. Gil. 1995. Vegetation studies of Girbanr Hills District Swat, Pakistan. *Kor. J. Ecol.* 18 : 207-218.
- Hussain, F. 1989. Field and Laboratory Manual of Plant Ecology. U.G.C. Islamabad.

- Islam, M. 1991. Certain fodder plants of northeastern region, India. *Econ. Taxon. Bot.* 15.2 : 335-370.
- Jones, T., G.M. Faaubert and J.O. Kokwaro. 1995. Anti-giardal activity of gastro intestinal remedies of the Iuo of East Africa. *J. Ethno. Pharm.* 46.1 : 17-23.
- Kermani, W.A. 1980. Developing multiple use silvicultural practices for forestry of arid regions. Proceedings of IUFRO/MAB Conference, Research on Multiple use of Forest Resources, Flag Staff, Arizona.
- Khan, A.U. 1994. History of decline and present status of natural tropical thorn forest in Punjab. *Soil conservation.* 67.3 : 205-210.
- Khattak, G.M., M.I. Sheikh and A. Khaliq. 1980. Growing trees with agricultural crops. *Pak. J. For.* 31 : 95-97.
- Laferriere, J.E. 1994. Medicinal plants of the lowland Inga People of Colombia. *Int. Jor. Pharm.* 32.1 : 90-94.
- Manadhar, N.P. 1995. Folk lore medicine of Makanpur District, Nepal. *Fitoterapia* 63.2 : 163-177.
- Manandhar, N.P. 1995. An inventory of some vegetable drug resources of Makan Pur District, Nepal, *Fitoterapia.* 66. 3 : 231-238.
- Martin, G.J. 1995. *Ethnobotany, A People and plants Conservation Manual.* Chapma and Hall, London.
- Meckes, M., J. Torres, F. Calzada and J. Rivera. 1997. Antibacterial properties of *Helianthemum glomerastum*. *Phytoterpia.* Res. 11. 2 : 128-131.
- Muzaffar, N. 1998. Beekeeping in Islamabad Area. Islamabad Horticultural Society 16th Annual Spring flowers, fruit and vegetable show. P.44.
- Nasir, E. and S.I. Ali. 1971-95. Flora of Pakistan. Pakistan Agri. Res. council Islamabad.
- Negi, K.S. and K.C. Pant. 1994. Genetic Wealth of Agri-Horticultural crops, their wild relatives indigenous medicinal and aromatic plants of U.P. Himalaya. *J. Eco. Tax. Bot.* 18. 1 : 17-41.
- Newinger, M.D. 1994. Fish poisoning plants in Africa. *Botanica Acta,* 107 . 4 : 270-363.
- Orem, O.H., E. Kakudidi and Z.R. Bukenya. 1995. Ethnobotanical studies of the Rwenzori Mountain, Uganda. *Bothalia.* 25. 1 : 111-119.
- P.T.D.C. Brochure. 1988. Pakistan, Swat Valley. Braqsons Printers Ltd. Islamabad, Pakistan.
- P.T.D.C. Brochure. 1988. Pakistan, Archaeological Heritage. Braqsons Printers Ltd. Islamabad, Pakistan.
- Paliwal, G.S. and A.K. Badoni. 1988. Ethnobotany of Siddis Tribes of Uttarkarh II. Wild Edibles. *Bull. Bot. Suru. Ind.* 30 1-4 : 111-119.
- Pie, S.J. 1991. Mountain culture and forest management of Himalayas *Himalayan Ecosys.* 114-120.
- Ravindra Kumar and R. Kumar. 1995. Forest based socio-economy and livelihood of tribal of Chotanagpur *Indian Forester.* 121. 1 : 51-54.
- Rivera, D. and C. Obon. 1995. The ethnopharmacology of Maderia and porto Santo Islands. *J. Ethnopharm.* 46. 2 : 73-93.
- Rizwana. 1996. A check list of gymnosperms of Chitral District and their ethnobotany. *Hamdard medicus,* 53. 3 : 54-59.
- Roberts, T.J., J.N. Yasin and R. Akhtar. 1995. R. (Eds.) Wild flowers of Pakistan. Oxford University Press.
- Sadaqat. 1995. Medicinal plant of family Cucurbitaceae (Part II) *Hamdard Medicus.* 34 : 91-101.
- Sezik, E, M. Zor and E. Yesilada. 1992. Traditional medicine in Turkey II. *Pharmacogon.* 30. 3 : 233 - 239.
- Shah, S.H. 1993. Ecological studies on Ambela pass Bunner. Ph.D. Thesis. Department of Botany, University of Peshawar.
- Sharma, T.C. 1976. The pre historic background of shifting cultivation. In proceedings of Seminar on Shifting cultivation in North East India. Indian Council of Social Sciences Research.
- Sheikh, M.I. 1987. Agroforestry in Pakistan. Proceedings of a workshop on Agroforestry for rural Needs. New Delhi, India.
- Sheikh, M.I. and R. Haq. 1986. Study of size placement and composition of wind breaks for optimum production of annual crops and wood. Final technical report, PFI, Peshawar, Pakistan.

- Shinawari, M.I and M.A. Khan. 1999. Ethnobotanical conservation status of Margalla Hills National Park, Islamabad. *Jor. Plant. Res. Env.* 8.2 : 53-60.
- Shinwari, Z.K. 1993. Firewood crops shrubs and Trees species in NWFP. *Pak. J. Agri. Res.* 14. 1 : 92-100.
- Shinwari, M.I. and M.A. Khan. 1998. Ethnobotany of Margalla Hills. National Park, Islamabad. Dept. of Biological Sciences, Q.A.U.
- Siddiqui, M. Badruzzaman and W. Husain. 1994. Medicinal plants of wide use in India with special reference to Sitapur District. U.P. *Fitoterapia.* 65. 1 : 3-6.
- Sing, R.P. and M.M. Gupta. 1992. Vegetation survey and Ecological studies under Abies and Picea in Himachel Pradesh *Ind. Forester.* 118.7 : 460-465.
- Singh, V.K. and Zaheer A. Ali. 1994. Folk medicines in primary health care. Common plants used for the treatment of fevers in india. *Fitoterapia* 65.1 : 68-74.
- Stewart, R.R. 1972. An Annotated catalogue of vascular plants of West pakistan and Kashmir. Karachi.
- Stewart, R.R. 1982. History and exploration of plants in Pakistan and adjoining areas : 69-75. PARC Islamabad.
- Sudarsanam, G., M.B. Reddy and N.Nagaraju. 1995. Veternity crude drugs in Rayalaseema, Andhra Pradesh. India. *Int. J. Pharm.* 33. 1 : 52 - 60.
- Tabata, M., E. Sezik and H. Fukui. 1994. Traditional medicine in Turkey III. Folk medicine in East Anatolia, Van and Bitlis Provinces. *Int. Jor. Pharm.* 31 . 12 : 3-12.
- Tiwari, F.J. and M.D. Padhye. 1993. Ethnobotanical study of Gond Tribe, Maharashtra, India. *Fitoterapia.* 64 . 1 : 58-61.
- Vidavathy, S. and D.N. Rao. 1995. Herbal Folk Medicine of Tirumala and Tirupati region Chittoor District, Andhra Pradesh. *Fitoterapia.* 66. 2 : 167-171.
- Yang, S. 1988. A review on the derivation of Zizang (Tibetan) drugs and the advance of its research. In *Acta. Bot. Yunnanic Adit.* 1, China 1988. Bhotasrity, Katmandu Nepal.
- Yousaf, H.M. 1944. *Sufarnama-e-Swat.* Sitar-e-Hind Press, Calcuta, India.