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Ethnomedicinal Plants Used Against Diarrhea and Dysentery in Dir Kohistan Valley (NWFP), Pakistan

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Abstract

This paper enumerates the traditional uses of 34 plant species belonging to 26 families, that are used by the village communities of Dir Kohistan Valley (NWFP, Pakistan) for the treatment of diarrhea and dysentery diseases. Some of useful species are under serious threat due to unsustainable activities. Hence, a proper documentation of useful plants with their present status and local traditional knowledge as well as practices is urgently needed. Effort should also be initiated to implement appropriate conservation measures for preservation and sustainable uses of these useful species.

Introduction

Dir Kohistan Valley NWFP, (Pakistan) covers 1 40,351 acres of the coniferous forests situated between latitude 35^0- 9′ to 35^0-47′ and longitude 71^0-52′ to 72^0-22′ in the northern position of the watershed of Panjkora river. The Hindu Raj range bounds the area generally known as Dir Kohistan on the north and northwest, by the Torwal and Gabral range on the east, by Dodbah Sarghar on the south, and by Btarai ghar on theSouthwest. Pangkora is a pashtu word meaning five streams; the five tributaries of the rivers are Azgologh, Zandrai, Shandoor, Gwaldai and Dokdara khwars. Territories adjoining the tract are Chitral on the north as well on theWest, Swat Kohistan and Upper Swat on the east, and Painda khel and Dir on the South. The total area of Dir Kohistan is 4, 12,570 acres i.e., 645 squares miles. Of this, an area of 1, 40,351 acres covered with coniferous forests. (Source: District Census Report of Kohistan, NWFP Pakistan, 1998).

The rural communities of Dir Kohistan Valley (NWFP, Pakistan) are still dependent upon wildplants for their primary healthcare and treatment of diseases. They collect the useful plants from various habitats such as forests, scrub, grassland, cultivated fields and use these plant materials as raw drugs. These communities have acquired good knowledge on the useful and harmful properties of the useful plant resources in course of their constant association with forest and agro-ecosystems. However, at present, this vast store of information is being eroded as a result of human's unsustainable activities. The loss of traditional knowledge within cultures undergoing rapid change is just as irreversible as the loss of species (Joshi and Joshi, 2005). Hence efforts should be made to document the various uses of plants before some of these plants are eliminated from the area, or before these inhabitants shift over to modern remedies. In this context, the rich and diverse forest ecosystems and vast tribal population with traditional knowledge systems due to cultural and environmental diversity in the country have attracted a number of workers for ethnomedicinal studies in the past (Shinwari and Khan, 1998, Hamayun, 2003, Ahmad *et al.*, (2004, Ahmad, 2005). However, the vast store of ethno-medicinal information of these study areas has not been fully documented.

In the present paper an attempt has been made to present indigenous knowledge and uses of the wild plants which are used by local communities for treatment of diarrhea and dysentery.

This study was carried out in some villages of Dir Kohistan Valley (NWFP, Pakistan). The land forms of the study areas are characterized by moderate to steep sloppy mountainous terrain. The study areas are endowed with rich and varied vegetation types due to their diverse topography and variable climatic conditions. The human pressure on these vegetative resources is very heavy except on very steep, almost vertical and inaccessible rock faces near the river. The villages are inhabited by different ethnic tribes which are rich in folk lore.

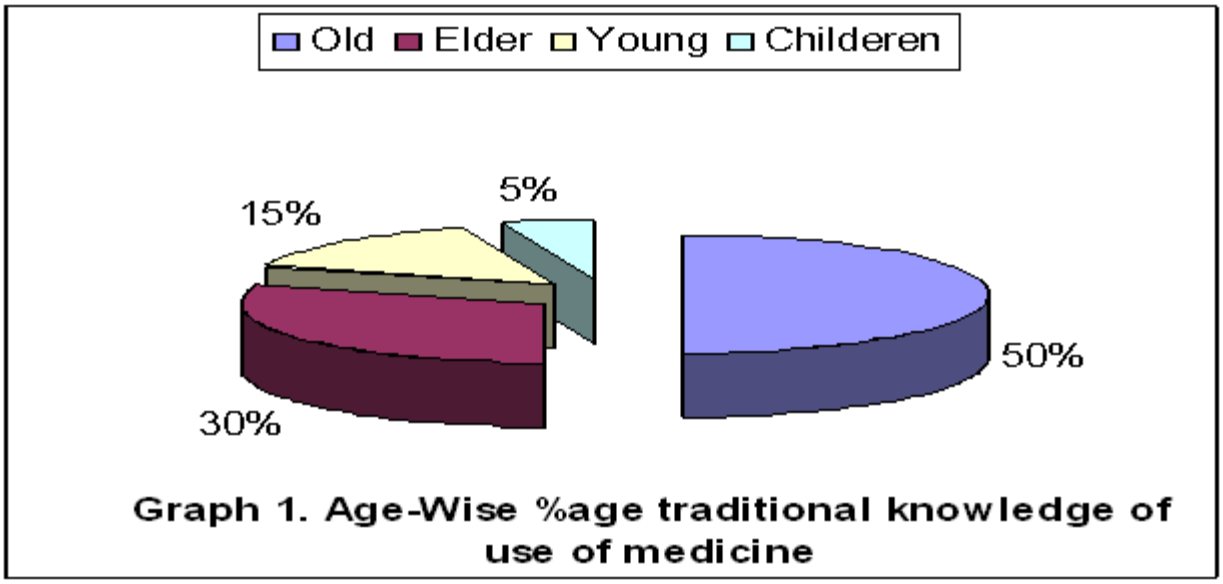
Materials and Methods

Several field trips in and around the study areas were undertaken during the years 2006-2008 with a view to collect plant species of ethnomedicinal value and to document the indigenous practices. The information was gathered using various techniques such as open and structured interview, and discussion with local informants, such traditional healers and experienced village elders including midwives and by direct observations. About 100 informants were interviewed in this regard.

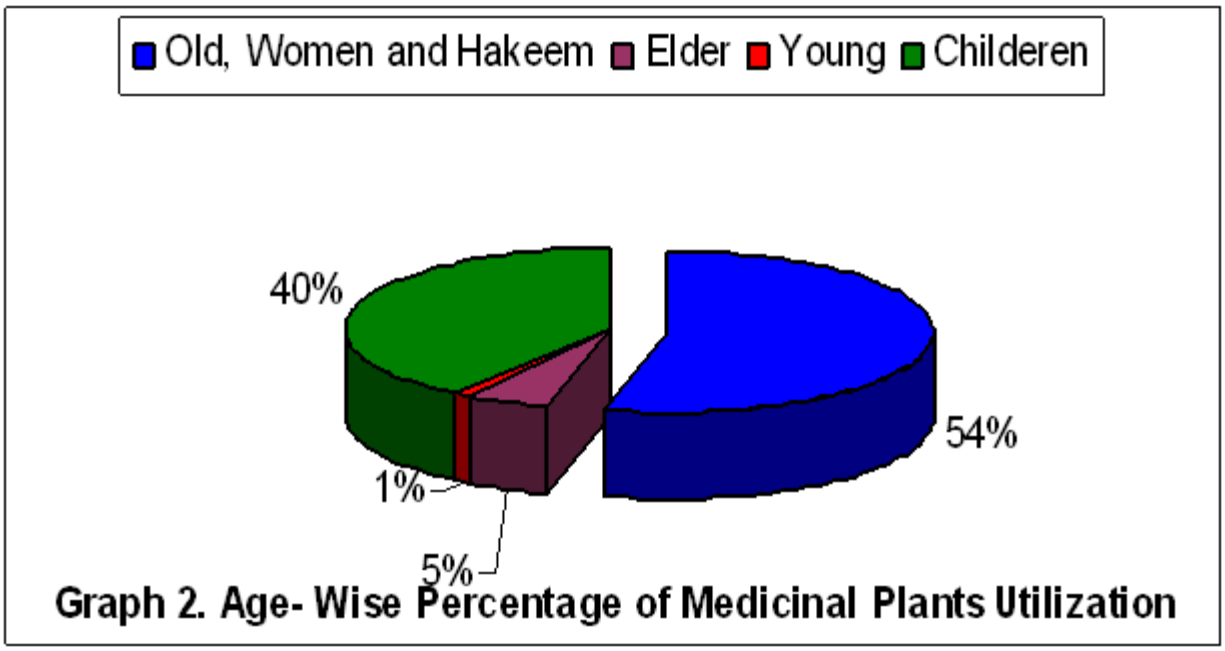
The plant specimens were identified with the help of floras. Voucher specimens are deposited in the Department of plant sciences Quaid-I-Azam University. Nomenclature used in this report follows Nasir and Ali (1972).

Results

During the field survey, ethnobotanical information of 34 species of medicinal plants belonging to 26 families was compiled from various habitats of the study areas. The study shows that diarrhea and dysentery, jaundice, pneumonia, asthma, digestive problem, dyspepsia, diabetes and eye problems are the major diseases in the village. During the treatment of the diseases, various forms of preparation are used. In the following enumeration, the species are arranged alphabetically. Botanical Name followed by family, uses of the plants and their parts as reported by the local inhabitants and habitat along with the information collected areas.



Graph 1. Age-Wise %age traditional knowledge of use of medicine



Graph 2. Age- Wise Percentage of Medicinal Plants Utilization

Botanical Name *Acacia nilotica* (L.) Delile.
Family Mimosaceae
Local Name Kikar
Habit Tree
Parts used woods, leaves and gums
Local uses Wood is hard and durable and is used for house, agricultural tools and as fuel wood. Leaves are used as fodder for goats. Gums are used as tonic, also for curing diarrhea, dysentery and diabetes.
Flowering period March-May

Botanical Name *Acacia modesta* Wall.
Family Mimosaceae
Local Name Palosa
Habit Tree
Parts used Gum, leaves, flowers, sticks and wood.
Local uses Gum is used as a tonic, for curing of dysentery and weakness, as a stimulant and demulcent. Branches are used as toothbrush. Leaves are used as fodder for goats. It is also used in fencing, as fuelwood and by honeybees.

Botanical Name *Achillea millefolium* L.
Family Asteraceae
Local Name Jarai
Part used Whole plant
Habit Herb
Local Uses The whole plant is boiled in water and the decoction is used for dysentery.

Botanical Name *Acorus calamus* L.
Family Acoraceae
Local Name Skhawaja.
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 *Achyranthes aspera* Linn.
Family Name Amaranthaceae
Local Name Lainda
Parts used Whole plant.
Local Uses Decoction of both leaves and roots are used in dysentery.

Botanical Name *Ailanthus altissima* (Mill) Swingle.
Family Simarubaceae
Local Name Angrizai backyanra
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 honeybee boxes and water-mill pulleys. It is used as fuelwood. Bark is anathematic. Bark juice is mixed with milk for curing dysentery and diarrhea.
Flowering period April-May

Botanical Name *Amaranthus viridis* L.
Family Amaranthaceae
Local Name Gunhar
Habit Herb
Parts Used Whole plant
Local Uses Decoction of whole plant is used for diarrhea.

Botanical Name *Berberis brandisiana* Ahrendt
Family Berberidaceae
Local Name Shugloo
Habit Shrub
Part Used Leaves, Fruits, Bark
Local Uses Leaves decoction is useful in dysentery and sore throat. Fruits are edible. Root and stem bark is tonic and is frequently utilized for healing of wounds and arthritis.

Botanical Name *Berberis lycium* Royle.
Family Berberidaceae
Local Name Sumbal
Parts Used Leaves
Local Uses Dried leaves are crushed, mixed with water and then filtered through a cloth. The extract obtained is used to cure diarrhea. The dried seeds in Ghur syrup are one of the useful household remedies to cure diarrhea and dysentery.

Botanical Name *Conyza canadensis* Conquist.
Family Asteraceae(Compositae)
Local Name Malooch
Habit Herb
Parts used Vegetative parts
Local uses Fresh fodder, stimulant, homeostatic, diuretic, used in diarrhea and dysentery.
Flowering period July-Sept.

Botanical Name *Cynodon dactylon* L.
Family Poaceae(Graminae)
Local Name Drab

Habit Herb Prostate grass
Parts used Whole plant
Local uses It serves as fresh fodder grazed by livestock. It is used along with Rose flowers in Jaundice. It is cultivated in lawns and playgrounds for ornamental purposes. It is also used in piles and dysentery.
Flowering period April-October

Botanical Name *Cyperus rotundus* L.
Family Cyperaceae
Local Name Muther
Parts Used Rhizome
Habit Herb
Local Use The tubers are scraped and pounded with green ginger and mixed with honey is given in dysentery.

Botanical Name *Daucus carota* L.
Family Umbelliferae
Local Name Mooli
Habit Herb
Parts used The whole herb, seeds and roots.
Local uses Diuretic and stimulant. An infusion of the herb is considered an active remedy in the treatment of dropsy, chronic kidney diseases and affections of the bladder. The *seeds* are carminative, stimulant and very useful in flatulence, windy colic, hiccough, dysentery, chronic coughs, etc. It is also used as a salad.

Botanical Name *Diospyrus lotus* L
Family Ebenaceae
Part used Fruit
Habit Tree
Local Name Amlok
Local Uses Locally the decoction of ripened fruit is used for the curing of dysentery.

Botanical Name *Euphorbia wallichii* Hk.f.
Family Euphorbiaceae
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.

Botanical Name *Ficus bengalensis* L.
Family Moraceae
Local Name Bargad
Habit Tree
Part used Latex
Local Uses The latex of this plant is used to treat dysentery, diarrhea, piles, tooth decay, rheumatism and skin diseases.

Botanical Name *Justicia adhatoda* L.
Family Acanthaceae
Local Name Baikar
Common Names Arusa & Bhekar (U); Malabar Nut & Casaka (Eng.)
Habit Non palatable shrub
Part Used Leaves
Local Uses The decoction of leaves is antispasmodic, expectorant, abortifacient and also used for curing

dysentery in cattle. Honey Bee species.

Botanical Name *Mentha royleana* (L.)Huds.
Family Lamiaceae.
Local Name Villanay.
Habit Herb
Parts used Whole plants.
Local uses Leaves are used as a stomach, carminative, diarrhea and dysentery, rheumatic and stimulant.

Botanical Name *Mentha spicata* L.
Family Lamiaceae.
Local Name Podina.
Habit Peppermint herb
Parts used Leaves.
Local uses The dried leaves are powdered and used in chutney, stomachache and carminative. It is also used in diarrhea and dysentery. Leaves used as salad, spice and stimulant. The decoction of leave is used as mouthwash. It is also helpful in dyspepsia.

Botanical Name *Oxalis corniculata* L.
Family Oxalidaceae
Local Name Tarookay
Habit A perennial herb
Parts used Leaves
Local uses Used for stomach problems, fever and dysentery. It is refrigerant, vermifuge and flavoring agent.
Flowering period March--June.

Botanical Name *Pistacia integerrima* J.L.Stewart ex Brandis
Family Anacardiaceae
Local Name Kangar
Parts Used Galls
Habit Shrub
Local Uses Galls are burnt to ash and mixed with honey or sugar. The galls are powdered and fried in Ghee and given in dysentery.

Botanical Name *Plantago major* L.
Family Plantaginaceae.
Local Name Bartang
Habit An annual herb
Parts used Leaves and seeds.
Local uses Seeds are laxative and is used for dysentery and mouth diseases.

Botanical Name *Plantago lanceolata* L.
Family Plantaginaceae.
Local Name Isphaghol,Ghwa jabai.
Habit An annual herb.
Parts used Leaves and seeds.
Local uses Leaves extract is applied to sores, wounds and inflamed surfaces. It is a laxative and is used for dysentery and mouth diseases.

Botanical Name *Platanus orientalis* L.
Family Plantanaceae
Local Name Chinar
Habit Tree
Part Used Wood, Bark
Folk Use wood yield timber, fuel wood. Bark is useful remedy in diarrhea and dysentery.

Botanical Name *Polygonum bistorta* Lin
Family Polygonaceae
Habit Herb
Parts used Roots
Local uses Root is one of the strongest astringent. It is of proved excellence in diarrhea and dysentery.

Botanical Name *Polygonum persicaria* L.
Family Polygonaceae
Habit Herb
Parts used Roots
Local uses The juice of the roots destroys worms in the ears .It is also used for diarrhea and dysentery.
Flowering period June-Sep.

Botanical Name *Punica granatum* L .
Family Punicaceae
Local Name Anar
Habit A wild/cultivated small, bushy tree.
Parts used Leaves.
Local used The leaves are used for skin diseases and against dysentery.
Flowering period April - May.

Botanical Name *Quercus inccana* Roxb.
Family Fagaceae
Local Name Spin banj
Parts used Fruit.
Habit A slow growing tree.
Local uses Fruit is used to stop internal bleeding. Stop diarrhea and dysentery.

Botanical Name *Rubus fruticosus* Hk.f.
Family Rosaceae
Habit Shrub
Parts Used Roots
Local Uses The root-bark, as used medicinally. It should be peeled off the root and dried by artificial heat or in strong sun. It is boiled in water or milk makes a good decoction. Half a teacupful should be taken every hour or two for diarrhea.

Botanical Name *Valeriana wallichii* DC.
Family Valerianaceae
Local Name Mushk-e-bala
Habit A perennial herb
Parts used Rhizome
Local uses Decoction of rhizome is used cholera, dysentery and against hysteria. The rhizome is carminative, aromatic and antispasmodic.
Flowering period Feb.-Aug.

Botanical Name *Verbascum thapus* L.
Family Verbinace
Local Name Kharghwaq
Habit An annual herb
Parts use Leaves, flowers and seeds.
Local uses Used against diarrhea and dysentery of cattle, analgesic and antiseptic and a wound healer. Leaves and flowers are used against cough and pulmonary diseases in the form of a paste. The seeds are narcotic and used as a fish poison.
Flowering period March-October

Botanical Name *Valeriana jatamansi* Jones
Family Valerianaceae
Local Name Mushk-e-Bala
Habit A perennial herb of temperate forests
Part Uses Rhizome
Local 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 *Zizyphus jujuba* Mill.
Family Rhamnaceae
Local Name Bor/Ber
Habit Tree
Part used Bark
Local Uses The macerated bark is mixed with milk and honey, and is taken for the treatment of diarrhea, dysentery, cough and cold.

Botanical Name *Zizyphus jujuba* Mill.
Family Rhamnaceae
Local Name Baira
Habit Tree
Part Used Wood, leaves, roots, bark, fruits
Local Use Bark macerated in milk is given along with honey in diarrhea and dysentery. It is a major ingredient of “Joshanda” which is used for cough and cold.

Discussion

The use of plants for the existence of human being is as old a practice as the human race itself. The accumulation of knowledge of plant use however co-evolved with human civilization through the experiential use of plants, generation after generation. People would have remained exposed to epidemic, endemic and chronic diseases, besides acute ailments (Hamayun, 2003).

In Dir Kohistan valley the percentage of traditional knowledge about the use of medicinal plants is clear from Graphs 1 and 2. Old aged people, women and hakims add 50% of it and use that much (about 50%) to cure their ailments. Elder have 30% knowledge and use 5% of the local drugs. Young people know about 15% of it but they use little (about 1%) or none at all of the local medicinal plants in case of illness. Children know about 5% of the uses but they were forced to take 40% of the folk medicinal recipes for the treatment of diseases (Graphs 1 and 2).

The results of the present study revealed that wild plants and their parts are widely used for diarrhea and dysentery in the study villages of the Dir Kohistan Valley (NWFP, Pakistan). Local people have remarkable detailed

knowledge of species identity and characteristics. As more than 60 percent of plant species useful for diarrhea and dysentery treatment appear to be restricted to shaded forest habitats in the forests, the anthropogenic unsustainable activities such as deforestation, habitat destruction, urbanization etc. may pose a serious threat to the species. Hence, priority should be given to the following three measures:

1) Investigation related to taxonomy, chemical screening and documentation of the useful species and their habitats;

2) Initiation of conservation action works with appropriate measures involving local participation;

3) Implementation of awareness activities with integrated approach for sustainable development.

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