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Abstract

The paper enumerates the traditional uses of 42 plant species belonging to 28 families, which are used by the village communities of Dir Kohistan Valleys, (NWFP, Pakistan) for the treatment jaundice. Asteraceae is the leading family with four species. It is followed by Malvaceae, Solanaceae and Rhamnaceae with three species each. 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°- 9’ to 35°-47’ and longitude 71°-52’ to 72°-22’ in the northern position of the watershed of Panjkora river. The Hindu Raj range bound 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 the Southwest. 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 as 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)

The rural communities of Dir Kohistan Valley (NWFP, Pakistan) are still dependent upon wild plants 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 Jaundice. The study is 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.

On the way different plant materials were being collected and used. 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).

Result

During the field survey, ethnobotanical information of 42 species of medicinal plants belonging to 28 families was compiled from various habitats of the study areas. The study shows that among the jaundice, pneumonia, asthma, digestive problem, dysentery, 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.

<table>
<thead>
<tr>
<th>Botanical Name</th>
<th>Local Name</th>
<th>Family</th>
<th>Habit and Habitat</th>
<th>Part used</th>
<th>Local Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adiantum incisum L.</td>
<td>Phunka</td>
<td>Adiantaceae</td>
<td>Perennial herb</td>
<td>Leaves</td>
<td>Leaves are used for the extraction of juice which is recommended for jaundice.</td>
</tr>
<tr>
<td>Abutilon indicum (L.) Sweet</td>
<td></td>
<td>Malvaceae</td>
<td></td>
<td>Leaf</td>
<td>The leaves are dried, powdered and boil in water. The filtrate is used for jaundice.</td>
</tr>
<tr>
<td>Adiantum Capillus veneris L.</td>
<td>BeBe Ayesha Sanra</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Family: Pteridaceae
Parts Used: Frond
Local Uses: Syrup is made from its fronds and rhizomes. It is flavored with orange flowers and uses it for gallstones and jaundice.

Botanical Name: *Ajuga bracteosa* Wallich ex Benth.
Local Names: Kori booti
Family: Lamiaceae
Parts used: Leaves
Local Use: Decoction of the leaves is used in jaundice.

Botanical Name: *Allium cepa* L.
Local Name: Pyaz
Family: Liliaceae
Habit: Herb
Local Uses: Bulbs of the plant are very useful in jaundice.

Botanical Name: *Althea rosea* L.
Local Name: Gul e Khaira
Family: Malvaceae
Habit & Habitat: Shrub
Part used: Roots
Flowering Period: July-September
Ethnomedicinal Uses: Roots are dip in new earthen pot for whole night. In the following morning the water juice is drunk for jaundice.

Botanical Name: *Artemisia absinthium* L.
Local Name: Jaukay
Family: Asteraceae
Habit: Herb
Parts used: Whole plant
Local uses: The powdered herb in small amount mixed in soup, will serve to relieve the yellow hove of jaundice from skin.

Botanical Name: *Asparagus adscendens* L.
Local Name: Musli sufaid.
Family: Liliaceae
Habit and Habitat: Climber
Flowering Period: July-September
Part used: Rhizome.
Local uses: The clean rhizome is boiled in water then filtrate is used for jaundice.

Botanical Name: *Berberis lycium* Royle
Family: Berberidaceae
Local Name: Ziar Largay
Habit: Shrub
Part Used: Root bark
Local Use: Decoction of the root bark is used in jaundice.

Botanical Name: *Chenopodium murale* L.
Family: Chenopodiaceae
<table>
<thead>
<tr>
<th>Botanical Name:</th>
<th>Local Name:</th>
<th>Family:</th>
<th>Part Used:</th>
<th>Local Uses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chenopodium album L.</td>
<td>Sarmay</td>
<td>Chenopodiaceae</td>
<td>Leaves are crushed, mixed with water and kept for night dew in a pot. It is used for the treatment of jaundice it is usually taken early in the morning.</td>
<td>Leaves are crushed, mixed with water and kept for night dew in a pot. It is used for the treatment of jaundice it is usually taken early in the morning.</td>
</tr>
<tr>
<td>Cucurbita maxima Duch.ex Lam.</td>
<td>Wun</td>
<td>Cucurbitaceae</td>
<td>Roots used in jaundice.</td>
<td>Roots used in jaundice.</td>
</tr>
<tr>
<td>Cucurbita pepo L.</td>
<td>Gharangy Kadoo</td>
<td>Cucurbitaceae</td>
<td>Unripe and ripe fruits are used as vegetable and used for jaundice.</td>
<td>Unripe and ripe fruits are used as vegetable and used for jaundice.</td>
</tr>
<tr>
<td>Clematis grata Wall.</td>
<td>Aok</td>
<td>Ranunculaceae</td>
<td>The decoction of plant is used for jaundice.</td>
<td>The decoction of plant is used for jaundice.</td>
</tr>
<tr>
<td>Calotropis procera L.</td>
<td>Nasky</td>
<td>Asclepiadaceae</td>
<td>The whole plant is used for jaundice.</td>
<td>The whole plant is used for jaundice.</td>
</tr>
<tr>
<td>Coriandrum sativum L.</td>
<td>Nasky</td>
<td>Umbelliferae</td>
<td>Fruits and leaves are used in jaundice</td>
<td>Fruits and leaves are used in jaundice</td>
</tr>
<tr>
<td>Cuscuta reflexa Roxb</td>
<td>Maraz botay</td>
<td>Cuscutaceae</td>
<td>Herb, which climb the host plants.</td>
<td>Herb, which climb the host plants.</td>
</tr>
<tr>
<td>Cynodon dactylon L.</td>
<td>Drab</td>
<td>Poaceae (Graminae)</td>
<td>Juice extracted from plan is used in jaundice,</td>
<td>Juice extracted from plan is used in jaundice,</td>
</tr>
<tr>
<td>Family:</td>
<td>Parts:</td>
<td>Local name:</td>
<td>Flowering period:</td>
<td>Flowering period:</td>
</tr>
<tr>
<td>Chenopodiaceae</td>
<td>Whole Plant</td>
<td>Aok</td>
<td>Aug.-September</td>
<td>Aug.-September</td>
</tr>
<tr>
<td>Cucurbitaceae</td>
<td>Fruit</td>
<td>Gharangy Kadoo</td>
<td>Cucurbitaceae</td>
<td>Cucurbitaceae</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td>Whole Plant</td>
<td>Clematis grata Wall.</td>
<td>Ranunculaceae</td>
<td>Ranunculaceae</td>
</tr>
<tr>
<td>Asclepiadaceae</td>
<td>Whole Plant</td>
<td>Calotropis procera L.</td>
<td>Asclepiadaceae</td>
<td>Asclepiadaceae</td>
</tr>
<tr>
<td>Umbelliferae</td>
<td>Fruits and leaves</td>
<td>Coriandrum sativum L.</td>
<td>Umbelliferae</td>
<td>Umbelliferae</td>
</tr>
<tr>
<td>Cuscutaceae</td>
<td>Shoots</td>
<td>Cuscuta reflexa Roxb</td>
<td>Cuscutaceae</td>
<td>Cuscutaceae</td>
</tr>
<tr>
<td>Poaceae (Graminae)</td>
<td>Drab</td>
<td>Cynodon dactylon L.</td>
<td>Poaceae (Graminae)</td>
<td>Poaceae (Graminae)</td>
</tr>
<tr>
<td>Habit</td>
<td>Herb Prostate grass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parts used</td>
<td>Whole plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local uses</td>
<td>It is used along with Rose flowers in Jaundice.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowering period</td>
<td>April-October</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Botanical Name:** *Evolvulus alsinoides* L.  
**Family:** Convolvulaceae  
**Habit:** Herb  
**Part Used:** leaf  
**Local Use:** The fresh leaves are boiled in water and the decoction is used for jaundice.

<table>
<thead>
<tr>
<th>Botanical Name:</th>
<th><em>Gallium aparine</em> L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family:</td>
<td>Rubiaceae</td>
</tr>
<tr>
<td>Part used:</td>
<td>Leaves</td>
</tr>
<tr>
<td>Local Use:</td>
<td>Leaves are used in jaundice.</td>
</tr>
</tbody>
</table>

**Botanical Name:** *Jasminum humile* L.  
**Local Name:** Peeli chembaili.  
**Family:** Oleaceae  
**Habit and Habitat:** shrub  
**Part used:** Flowers.  
**Flowering Period:** April-May  
**Ethnomedicinal Uses:** Flowers are sun dried and powdered and boiled in water. The decoction is used for blood purification and jaundice.

**Botanical Name:** *Melia azedarach* L.  
**Local Name:** Shandai  
**Family:** Meliaceae  
**Part Used:** Leaves  
**Habit:** Tree  
**Ethnomedicinal uses:** The decoction obtained after crushing and squeezing the leaves is used in jaundice.

**Botanical Name:** *Malva sylvestris* L.  
**Local name:** Sonchal  
**Family:** Malvaceae  
**Parts Used:** Whole Plant  
**Local Uses:** The whole plant is boiled in water and the decoction is used in jaundice.

**Botanical Name:** *Oxalis corniculata* L.  
**Family:** Oxalidaceae  
**Local Names:** Khutkorla  
**Parts used:** Whole plant.  
**Local Use:** Fresh leaves are crushed, extract is mixed with water, and sugar is mixed and syrup "Sharbat" is used in jaundice.

**Botanical Name:** *Peuced palustre* L.  
**Family:** Umbelliferae  
**Habit:** Herb  
**Parts used:** Seed  
**Local uses:** The seeds are mild and gentle and given in powder form.
Botanical Name: *Pistacia integrima* J. L. Stewart ex Brandis  
Family: Anacardiaceae  
Local Name: Shnai  
Habit: Tree  
Part Used: Fruit  
Local Use: Fruits and galls extract is given in jaundice.

Botanical Name: *Phyllanthus amarus* Schum.  
Family: Euphorbiaceae  
Part Used: Whole plant  
Folk Use: The whole plant is used for jaundice.

Botanical Name: *Physalis minima* L.  
Family: Solanaceae  
Part Used: Leaf  
Local Use: Fresh leaves are boiled in water and filter. The filtered water is used for jaundice.

Botanical Name: *Pistacia integrima* J. L. Stewart ex Brand.  
Local Name: Shnai  
Family: Anacardiaceae  
Part Used: Wood, leaves, fruits  
Local Uses: These entire component are crushed together, little water is added and then exposed to night dew in a vessel. Then filtered through a cloth and used early in the morning as a useful remedy for jaundice.

Botanical Name: *Podophyllum emodi* Wall. ex Royle  
Local Names: Bankakri  
Family: Podophyllaceae  
Parts used: Roots and rhizomes.  
Local Uses: The dried fruits or seeds crushed and mixed with root bark of *Berberis lycium* is taken with water in jaundice.

Botanical Name: *Rumex acetosa* L.  
Local name: Churkuy  
Family: Polygonaceae  
Parts Used: Whole plant  
Local Uses: Decoction of the whole plant is used for jaundice.

Botanical Name: *Solanum nigrum* L.  
Family Solanaceae  
Local name: Tore danie  
Habit: Perennial rhizomatous weed/herb.  
Parts used: Vegetative Parts.  
Local uses: Vegetative parts is used in jaundice.  
Flowering period: Throughout the year

Botanical Name: *Raphanus sativus* L.  
Local Name: Mooley.
Family: **Cruciferae**  
Habit: Cultivated herb.  
Part Uses: Root.  
Local Uses: It is also used as salad in jaundice.

Botanical Name: *Sonchus asper* L.  
Family: **Asteraceae**  
Habit: Herb  
Parts Used: Whole Plant  
Local Uses: Juice of the plant is reported its use in jaundice.

Botanical Name: *Swertia spaciosa* (D.Don)  
Local Name: Kori Jari  
Family: **Genitaceae**  
Habit: Herb  
Parts Used: Whole plant  
Local Uses: Aqueous extract of whole plant is useful in jaundice.  
Other Uses: Also used in typhoid.

**Solanum miniatum** Benth. Ex Wild  
Family: **Solanaceae**  
Habit: A wild herb  
Parts Used: Leaves  
Local Uses: Leaves are used in jaundice.

**Taraxaium officinale** webber.  
Local Name: Ziar Gulae  
Family: **Asteraceae**  
Habit: Herb  
Parts used: Flower, root and leaves  
Local uses: Its decoction is used in jaundice.  
Flowering period: Feb.-April

**Taraxacum stenolepium** Hand.-Mazz.  
Local name: Dado  
Family: Asteraceae  
Parts Used: Roots and leaves  
Local Uses: Powdered roots are used for jaundice.

**Viola canescens** Wall ex Roxb.  
Local Name: Binawsha  
Family: **Violaceae**  
Habit: Herb  
Part Used: Whole plant  
Local Uses: Decoction of Root is thought useful in jaundice.

**Viola serpens** Wall.ex.Roxb  
Local Name: Binafsha  
Family: **Violaceae**  
Habit and Habitat: It is common small size herb  
Part used: Flowers  
Flowering Period: November-December
Local Uses: Flowers are dried under shade and ground to make powder. The decoction of the flower is used against jaundice.

Other Uses

Botanical Name: Ziziphus oxyphylla Edgew.
Family: Rhamnaceae
Local Name: Sezen
Habit: Shrub
Part Used: Fruits and root
Local Uses: Roots are used in curing jaundice.

Botanical Name: Zizyphus mauritiana L.
Local name: Ashar
Family: Rhamnaceae
Habit: Shrub
Parts Used: Leaves
Local Uses: The juice of fresh leaves is given in Jaundice.

Botanical Name: Zizyphus oxyphyla Edgew.
Family: Rhamnaceae
Local Name: Elanai
Habit: Shrub
Part Used: Roots, fruits
Local Uses: Roots are sun dried and boil in water and filter. The filtered water is used in curing jaundice.

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 jaundice in the Dir Kohistan Valleys (NWFP, Pakistan). Local people have remarkable detailed knowledge of species identity and characteristics. As more than 60 percent of plant species useful for jaundice 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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References


