
MEDICINAL FLORA OF HINGOL NATIONAL PARK,
BALUCHISTAN, PAKISTAN

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Abstract

The aim of this study was to record medicinal use of native plants by the inhabitants of the study area. Thirty nine plant species belonging to 32 genera and 22 families were documented having medicinally important and are being used by the local people for treating their various diseases. Generally, 25 different ailments were treated from the reported species. Most of the reported taxa were used as tonic (13%), followed by diarrhea (9.2%), wound healing (7.41%), constipation, cooling agent, cough and throat pain (5.56% each). In addition, four plant species were used to treat fracture, stomach problems and fever of livestock. Fabaceae contributed significant number of species (7 spp.), followed by Asclepiadaceae, Asteraceae & Zygophyllaceae (3 spp. each), Capparaceae, Chenopodiaceae, Cucurbitaceae, Rhamnaceae, Scrophulariaceae, Tamaricaceae and Tiliaceae (2 spp. each), while 9 families represented by single species. For each species, botanical name, family, habit, local name, part(s) used and ethnomedicinal uses are provided in this paper.

Introduction

The use of plants to cure diseases and relieve sufferings is a common practice that was started from the earliest times of mankind’s history (Hill, 1989). Still, the use of plants as a source of medicine is very much important for human beings (Kultur, 2007). Various studies have been carried out from the world on medicinal use of plants by various indigenous communities (Norscia & Borgognini-Tarli, 2006; Passalacqua et al., 2007; Vidyasagar & Prashantkumar, 2007; Koche et al., 2008; Jeruto et al., 2008; Pattantaik et al., 2008; Salazar et al., 2008; Ugurlu & Seeman, 2007; Kargioglu et al., 2008; Moreno-Salazar et al., 2007; Ratnam & Raju, 2008).

The ethnobotany in Pakistan is going to be matured with the passage of time and various studies have been reported from various parts of the country (Bhatti et al., 2001; Qureshi, 2002; Khan & Khatoon 2004; Qureshi & Bhatti, 2008, 2009; Qureshi et al., 2009). With reference to Baluchistan, few studies were carried out by various scholars (Shinwari & Malik, 1989; Goodman & Ghafoor, 1992; Leporatti & Lattanzi, 1994). However, the study area has never been explored before ethnobotanically, so it was felt worthwhile to record folk knowledge of medicinal plants used by the inhabitants of Hingol National Park, Baluchistan.

Materials and Methods

The study area: The Hingol National Park (HNP) is located in Lasbella, Awaran and Gwadar districts of Balochistan. It is situated at 65º 32’ 12” East and 25º 42’ 16” North (Fig. 1). It is the second largest National Park of Pakistan covering an area of 6,190km2 with 5,000 households spread in more than 200 scattered villages. In 1997 Dhrun, Hingol and the area in between Rodani Kacho were declared as a National Park i.e., Hingol National Park. The park has high attractive sites like beaches, sand dunes and patches of agriculture, mountains, wetlands and the sea. Furthermore, there are mud volcanoes i.e. Chandragup mud volcano in the southeastern part and Khandewari mud volcano in the Haro range in the east. In the Hinglaj area, there is Nani Mandar, a sacred place for the Hindus.

Ethnobotanical enumeration: During the collection of vegetation data, ethnomedicinal information of plants was collected during August, 2009 to July, 2010. A semi-structured questionnaire was designed and employed to record medicinal uses of native species. The local inhabitants and game watchers were interviewed to extract the ethnobotanical data like local names, parts used, method of preparation and ailments treated. During the survey, plant specimens were also collected from the study area. These were identified with the help of different floras (Jafri, 1966; Nasir & Ali 1970-1989; Ali & Nasir 1990-1991; Ali & Quaiser, 1993-2008; Batanouny, 1981; Boulos, 1991; Bhandari, 1978; Qureshi, 2004). The voucher specimens are deposited in the Herbarium of Pir Mehr Ali Shah Arid Agriculture University for record.

Results

A total of 39 plant species belonging to 32 genera and 22 families are identified, which are being used by the local people for treating 25 different ailment types/applications. In addition, four plant species were used to treat fracture, stomach problems and fever of livestock. Fabaceae family contributed highest number of species (4 spp.), followed by Asclepiadaceae, Asteraceae & Zygophyllaceae (3 spp. each), Capparaceae, Chenopodiaceae, Cucurbitaceae, Mimosaceae, Rhamnaceae, Scrophulariaceae, Tamaricaceae and Tiliaceae (2 spp. each), whereas, 10 families possessed one species. For each species, botanical name, family, habit, local name, part(s) used and ethnomedicinal uses are provided.
Detailed description of ethnomedicinal uses of plants from Hingol National Park, Baluchistan, Pakistan is as follows:

1. **Botanical name:** *Acacia nilotica* (L.) Del.
   - **Family:** Fabaceae-Mimosoidae
   - **Habit:** Tree
   - **Local name:** Babur
   - **Part used:** Gum, bark
   - **Ethnomedicinal uses:** Gum (Khor) is mixed with wheat flour and sugar is roasted in Desi ghee and is used as tonic. The bark of young branches dried under shadow and powder is given in diarrhea.

2. **Botanical name:** *Acacia senegal* (L.) Willd.
   - **Family:** Fabaceae-Mimosoidae
   - **Habit:** Tree
   - **Local name:** Khor
   - **Part used:** Gum
   - **Ethnomedicinal uses:** Gum (Khor) obtained from is mixed with wheat flour and sugar is roasted in Desi ghee and is used as tonic.

3. **Botanical name:** *Calotropis procera* (Will.) R. Br.
   - **Family:** Asclepiadaceae
   - **Habit:** Shrub
   - **Local name:** Murpad
   - **Part used:** Leaves
   - **Ethnomedicinal uses:** Yellow leaves are slightly roasted and obtained juice after squeezing. Few drops are poured into ears to remove pus. The ash of leaves is dusted on wound to heal.
<table>
<thead>
<tr>
<th></th>
<th>Botanical name</th>
<th>Family:</th>
<th>Habit:</th>
<th>Local name</th>
<th>Part used</th>
<th>Ethnomedicinal uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><em>Capparis cartilaginea</em> Decne.</td>
<td>Capparaceae</td>
<td>Shrub</td>
<td>Kirip</td>
<td>Leaves</td>
<td>The juice of the leaves is poured into ears to kill worms</td>
</tr>
<tr>
<td>5</td>
<td><em>Capparis decidua</em> (Forssk.) Edgew.</td>
<td>Capparaceae</td>
<td>Large Shrub</td>
<td>Kuler</td>
<td>Tender shoots</td>
<td>Tender shoots are made into paste and used as blister on boils</td>
</tr>
<tr>
<td>6</td>
<td><em>Cassia italica</em> (Mill.) Lam.</td>
<td>Caesalpiniaceae</td>
<td>Herb</td>
<td>Dadhar Wal</td>
<td>Leaves, flowers</td>
<td>Tea made by boiling flowers is given to pregnant woman to increase labour pain. It is supposed to be an aid to facilitate delivery. Leaves and flowers are used as laxative in small doses</td>
</tr>
<tr>
<td>7</td>
<td><em>Citrullus colocynthis</em> (L.) Schrad.</td>
<td>Fabaceae-Caesalpinioidae</td>
<td>Subshrub</td>
<td>Tirmanh</td>
<td>Roots</td>
<td>The root is used as tooth stick to relieve toothache</td>
</tr>
<tr>
<td>8</td>
<td><em>Commiphora wightii</em> (Arn.) Bhandari</td>
<td>Burseraceae</td>
<td>Small Shrub</td>
<td>Gugur</td>
<td>Resin</td>
<td>Resin of the plant is used in preparation of pills to treat piles. The same is burnt into fire used as fumigants to keep snakes away from their homes</td>
</tr>
<tr>
<td>9</td>
<td><em>Corchorus depressus</em> (L.) Stocks</td>
<td>Tiliaceae</td>
<td>Herb</td>
<td>Mondia</td>
<td>Whole plant</td>
<td>The plant is crushed in water along with candy which is given as cooling agent.</td>
</tr>
<tr>
<td>10</td>
<td><em>Corchorus tridens</em> L.</td>
<td>Tiliaceae</td>
<td>Herb</td>
<td>Mundalo</td>
<td>Leaves</td>
<td>Crushed leaves are applied on cuts, wounds and burns to heal</td>
</tr>
<tr>
<td>11</td>
<td><em>Crotalaria persica</em> (Burm.f.) Merr.</td>
<td>Fabaceae-Faboidae</td>
<td>Subshrub</td>
<td>Rikachik</td>
<td>Whole plant</td>
<td>Plant is crushed and boiled in water and given in constipation</td>
</tr>
<tr>
<td>12</td>
<td><em>Cucumis melo</em> var. <em>agrestis</em> Naud.</td>
<td>Cucurbitaceae</td>
<td>Runner</td>
<td>Chibarwal</td>
<td>Fruit</td>
<td>The ripened fruit is eaten and reported as mild laxative, used in constipation</td>
</tr>
</tbody>
</table>
13. **Botanical name:** *Cymbopogon jwarancusa* (Jones) Schult.  
**Family:** Poaceae  
**Habit:** Grass  
**Local name:** Nadag  
**Part used:** Roots, leaves, flowers  
**Ethnomedicinal uses:** The decoction of roots/leaves is given for skin eruption. The leaves and flowers are boiled and sweetened with sugar used as tea to treat flu and fever

14. **Botanical name:** *Euphorbia granulata* Forssk.  
**Family:** Euphorbiaceae  
**Habit:** Herb  
**Local name:** Sheer Bar  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The plant is crushed and applied on hairs, acting as hair tonic

15. **Botanical name:** *Fagonia brugieri* DC. var. *rechingeri* Had.  
**Family:** Zygophyllaceae  
**Habit:** Bush  
**Local name:** Karkaho  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The plant is burnt along with chicken’s feather and the obtained ash mixed with coconut oil which is applied on the body of children to relieve fever

16. **Botanical name:** *Fagonia indica* Burm.f.  
**Family:** Zygophyllaceae  
**Habit:** Bush  
**Local name:** Karkaho  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The dried plant is soaked in water at night and then boiled. Bath is taken on early morning to heal skin eruption. The decoction of plant is given in chronic fever. The juice mixed with sugar is used as cooling agent

17. **Botanical name:** *Haloxylon stocksi* (Boiss.) Benth. & Hook.  
**Family:** Chenopodiaceae  
**Habit:** Shrub  
**Local name:** Anartirk/Khaar  
**Part used:** Young twig, plant  
**Ethnomedicinal uses:** The poultice of young twigs is applied on the broken bone of the cattles. The paste of the ash is applied on boils to heal. The boiled water is given as bath to act as cooling agent

18. **Botanical name:** *Indigofera articulata* Gouan  
**Family:** Fabaceae- Faboidae  
**Habit:** Subshrub  
**Local name:** Kairo  
**Part used:** Young twig  
**Ethnomedicinal uses:** Young twigs are boiled into water and used as gargle to relieve throat pain, inflammation and cough

19. **Botanical name:** *Indigofera oblongifolia* Forssk.  
**Family:** Fabaceae  
**Habit:** Shrub  
**Local name:** Chill  
**Part used:** Twigs  
**Ethnomedicinal uses:** Twigs are used as tooth stick.

20. **Botanical name:** *Iphiona grantioides* (Boiss.) Anderb.  
**Family:** Asteraceae  
**Habit:** Shrub  
**Local name:** Kalmuro  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The plant is boiled in water and is given in snakebite. The paste is applied on wounds

21. **Botanical name:** *Leptadenia pyrotechnica* (Forssk.) Decne.  
**Family:** Asclepiadaceae  
**Habit:** Shrub  
**Local name:** Khipp
Part used: Milky juice  
Ethnomedicinal uses: Milky juice is applied on ringworm

22. Botanical name: *Nannorrhops ritchienana* (Griff.) Aitch.  
Family: Arecaceae  
Habit: Shrub  
Local name: Peesh  
Part used: Fruit, young leaves  
Ethnomedicinal uses: Fruit is used as tonic. The powder of young leaves is given in diarrhea and dysentery

23. Botanical name: *Neurada procumbens* L.  
Family: Neuradaceae  
Habit: Herb  
Local name: Chhapri  
Part used: Fruit  
Ethnomedicinal uses: The powder of the fruit is used as tonic

24. Botanical name: *Oligomeris linifolia* (Vahl) Macbride  
Family: Resedaceae  
Habit: Herb  
Local name: Izbota/Shurro  
Part used: Whole plant  
Ethnomedicinal uses: The dried plant is soaked for 24 hours and ground. The obtained juice is given in throat pain and cough. The same is given to goat for stomach complaints

Family: Asclepiadaceae  
Habit: Shrub  
Local name: Geeshtar  
Part used: Young twigs  
Ethnomedicinal uses: The dried twigs are boiled in water and used to relieve pain from the body

Family: Asteraceae  
Habit: Shrub  
Local name: Majusar  
Part used: Whole plant  
Ethnomedicinal uses: The decoction of plant is used as diuretic

27. Botanical name: *Rhazya stricta* Decne.  
Family: Apocynaceae  
Habit: Shrub  
Local name: Senhar/Yesherk  
Part used: Leaves  
Ethnomedicinal uses: The powder/juice of leaves is internally used for diabetes. The plant is said to be poisonous to cattle

Family: Salvadoraceae  
Habit: Large Shrub  
Local name: Kotor  
Part used: Roots, twigs  
Ethnomedicinal uses: Roots and twigs are used as tooth stick to strengthen gums and teeth

29. Botanical name: *Salvia santolinifolia* Boiss.  
Family: Lamiaceae  
Habit: Herb  
Local name: ----  
Part used: Seeds  
Ethnomedicinal uses: Seeds are given in diarrhea and piles

Family: Chenopodiaceae  
Habit: Shrub  
Local name: Mesik  
Part used: Whole plant  
Ethnomedicinal uses: The ash of the plant is used to wash hairs
31. **Botanical name:** *Schweinfurthia papilionacea* (Burm.f.) Boiss.
   **Family:** Scrophulariaceae
   **Habit:** Shrub
   **Local name:** Kator/Snaffa
   **Part used:** Leaves
   **Ethnomedicinal uses:** The dried leaves are smoked as cigarette to stop bleeding from nose

32. **Botanical name:** *Sonchus asper* (L.) Hill.
   **Family:** Asteraceae
   **Habit:** Bush
   **Local name:** Machal
   **Part used:** Leaves
   **Ethnomedicinal uses:** Decoction of leaves is used as gargle against throat pain

33. **Botanical name:** *Tamarix aphylla* (L.) Karst.
   **Family:** Tamaricaceae
   **Habit:** Tree
   **Local name:** Gazz
   **Part used:** Whole plant
   **Ethnomedicinal uses:** The smoke of the plant is given to cattle for treating fever

34. **Botanical name:** *Tamarix dioica* Roxb. ex Roth
   **Family:** Tamaricaceae
   **Habit:** Shrub
   **Local name:** Gazz
   **Part used:** Whole plant
   **Ethnomedicinal uses:** Used like previous species.

35. **Botanical name:** *Tephrosia purpurea* (L.) Pers.
   **Family:** Fabaceae- Faboidae
   **Habit:** Shrub
   **Local name:** Maheero
   **Part used:** Roots
   **Ethnomedicinal uses:** The decoction of roots is given in diarrhea and colic pain

36. **Botanical name:** *Tribulus terrestris* L.
   **Family:** Zygophyllaceae
   **Habit:** Herb
   **Local name:** Khorbar
   **Part used:** Fruit
   **Ethnomedicinal uses:** The powder of fruit is mixed with sugar and slightly roasted in *desi ghee* that is used as tonic

37. **Botanical name:** *Verbascum thapsus* L.
   **Family:** Scrophulariaceae
   **Habit:** Shrub
   **Local name:** Kohi Bhang
   **Part used:** Leaves
   **Ethnomedicinal uses:** The powder of leaves is used for healing wounds

38. **Botanical name:** *Zizyphus mauritiana* Lam.
   **Family:** Rhamnaceae
   **Habit:** Small tree
   **Local name:** Ber
   **Part used:** Bark, seeds
   **Ethnomedicinal uses:** The powder of bark/seed is given to treat diarrhea. The decoction of the bark and leaves is prescribed in dysentery and diarrhea

39. **Botanical name:** *Zizyphus nummularia* (Burm.f.) Wt. & Arn.
   **Family:** Rhamnaceae
   **Habit:** Shrub
   **Local name:** Jhanguri Ber
   **Part used:** Leaves, fruits
   **Ethnomedicinal uses:** The leaves are crushed and applied on head like *Mehndi* to relieve fever acting as cooling agent. Fruit is used as tonic and used in liver disease.
Discussion

Table 1 shows that most of the reported taxa are used as tonic (13%), followed by diarrhea (9.2%), wound healing (7.41%), constipation, cooling agent, cough and throat pain (5.56% each). Whereas, boils, dysentery, ear infection, fever, hair tonic, piles and skin infections are treated by 3.7% species. For the preparation of remedies, the whole plant is very commonly used (27.13%), followed by leaves (21.28%), Fruit/Seeds (14.89%), shoot (12.77%), whereas, the remaining parts are less used (Fig. 2). All folk recopies are mostly made from single species.

Comparing with literature (Kritikar & Basu, 1918; Nadkarni, 1954; Dastur, 1962; Dymock et al., 1972; Baquar & Tasnif, 1984; Murray, 1989; Shinwari & Malik, 1989; Goodman & Ghafoor, 1992; Leporatti & Lattanzi, 1994; Sivarajan & Balachandran, 1996; Asolkar et al., 1992; Qureshi & Bhatti, 2008) it was observed that most of the species have new uses and addition in the folk herbal medicinal literature. Therefore, there is need of hours to carry out more studies for the isolation and identification of new active compounds from the reported species.

Local inhabitants of the study area collect and utilize medicinal plants according to their availability in different seasons. Since most of the population is illiterate, hence they usually collect the whole plant by uprooting, which cause depletion of such valuable species leading to extinction. Overgrazing, chopping and cutting for fuel and fodder are further threats to decline natural vegetation. Therefore efforts should be made to conserve these valuable plant resources.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Application/Disease treated</th>
<th>No. Spp.</th>
<th>% Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tonic</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>2.</td>
<td>Diarrhea</td>
<td>5</td>
<td>9.26</td>
</tr>
<tr>
<td>3.</td>
<td>Wounds</td>
<td>4</td>
<td>7.41</td>
</tr>
<tr>
<td>4.</td>
<td>Constipation</td>
<td>3</td>
<td>5.56</td>
</tr>
<tr>
<td>5.</td>
<td>Cooling agent</td>
<td>3</td>
<td>5.56</td>
</tr>
<tr>
<td>6.</td>
<td>Cough</td>
<td>3</td>
<td>5.56</td>
</tr>
<tr>
<td>7.</td>
<td>Throat pain</td>
<td>3</td>
<td>5.56</td>
</tr>
<tr>
<td>8.</td>
<td>Boils</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>9.</td>
<td>Dysentery</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>10.</td>
<td>Ear infection</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>11.</td>
<td>Fever</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>12.</td>
<td>Hair tonic</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>13.</td>
<td>Piles</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>14.</td>
<td>Skin infection</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>15.</td>
<td>Tooth stick</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>16.</td>
<td>Colic pain</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>17.</td>
<td>Diabetes</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>18.</td>
<td>Diuretic</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>19.</td>
<td>Flu</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>20.</td>
<td>Labor pain</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>21.</td>
<td>Nose bleeding</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>22.</td>
<td>Pain</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>23.</td>
<td>Ringworm</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>24.</td>
<td>Snakebite</td>
<td>1</td>
<td>1.85</td>
</tr>
<tr>
<td>25.</td>
<td>Toothache</td>
<td>1</td>
<td>1.85</td>
</tr>
</tbody>
</table>

Fig. 2. Percentage of part used in preparing various herbal remedies from the indigenous species.

References

Batanouny, K.H. 1981. Ecology and Flora of Qatar. Centre for scientific and applied Research, University of Qatar, P.O. Box 2713, Doha.


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