

## 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 & Secman, 2007; Kargıoglu *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 65° 32' 12" East and 25° 42' 16" North (Fig. 1). It is the second largest National Park of Pakistan covering an area of 6,190km<sup>2</sup> 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 & Qaiser, 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.

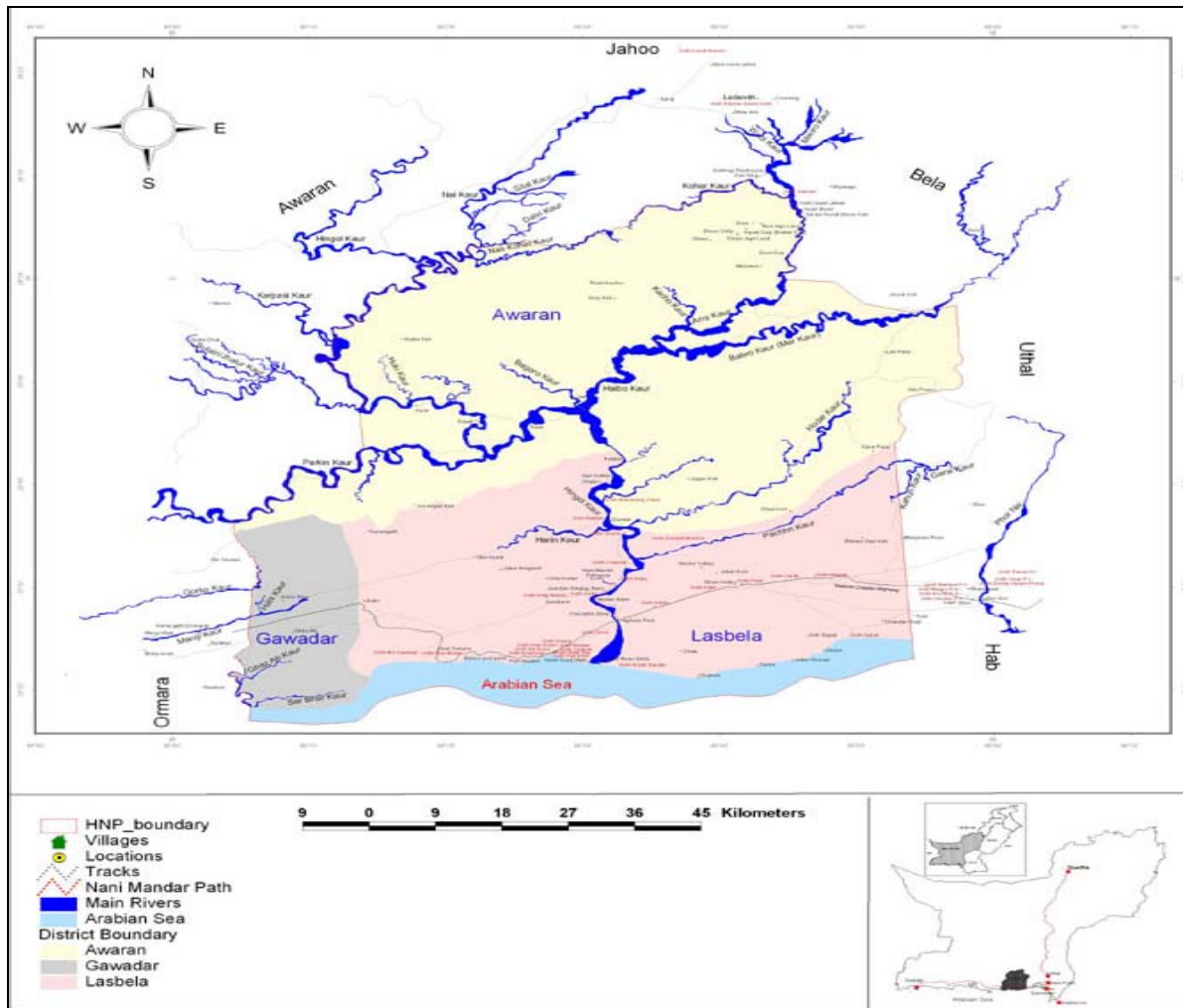


Fig. 1. Map of the study area.

Detailed description of ethnomedicinal uses of plants from Hingol National Park, Baluchistan, Pakistan is as follows:

- 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
- 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
- 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

4. **Botanical name:** *Capparis cartilaginea* Decne.  
**Family:** Capparaceae  
**Habit:** Shrub  
**Local name:** Kirip  
**Part used:** Leaves  
**Ethnomedicinal uses:** The juice of the leaves is poured into ears to kill worms
5. **Botanical name:** *Capparis decidua* (Forssk.) Edgew.  
**Family:** Capparaceae  
**Habit:** Large Shrub  
**Local name:** Kuler  
**Part used:** Tender shoots  
**Ethnomedicinal uses:** Tender shoots are made into paste and used as blister on boils
6. **Botanical name:** *Cassia italica* (Mill.) Lam.  
**Family:** Caesalpiaceae  
**Habit:** Herb  
**Local name:** Dadhar Wal  
**Part used:** Leaves, flowers  
**Ethnomedicinal uses:** 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
7. **Botanical name:** *Citrullus colocynthis* (L.) Schrad.  
**Family:** Fabaceae-Caesalpioidae  
**Habit:** Subshrub  
**Local name:** Tirmanh  
**Part used:** Roots  
**Ethnomedicinal uses:** The root is used as tooth stick to relieve toothache
8. **Botanical name:** *Commiphora wightii* (Arn.) Bhandari  
**Family:** Burseraceae  
**Habit:** Small Shrub  
**Local name:** Gugur  
**Part used:** Resin  
**Ethnomedicinal uses:** 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
9. **Botanical name:** *Corchorus depressus* (L.) Stocks  
**Family:** Tiliaceae  
**Habit:** Herb  
**Local name:** Mondia  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The plant is crushed in water along with candy which is given as cooling agent.
10. **Botanical name:** *Corchorus tridens* L.  
**Family:** Tiliaceae  
**Habit:** Herb  
**Local name:** Mundalo  
**Part used:** Leaves  
**Ethnomedicinal uses:** Crushed leaves are applied on cuts, wounds and burns to heal
11. **Botanical name:** *Crotalaria persica* (Burm.f.) Merr.  
**Family:** Fabaceae-Faboidae  
**Habit:** Subshrub  
**Local name:** Rikachik  
**Part used:** Whole plant  
**Ethnomedicinal uses:** Plant is crushed and boiled in water and given in constipation
12. **Botanical name:** *Cucumis melo* var. *agrestis* Naud.  
**Family:** Cucurbitaceae  
**Habit:** Runner  
**Local name:** Chibarwal  
**Part used:** Fruit  
**Ethnomedicinal uses:** The ripened fruit is eaten and reported as mild laxative, used in constipation

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 flue 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 stocksii* (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:** *Iphiaea 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:** Izbotak/Shurro  
**Part used:** Whole plant  
**Ethnomedicinal uses:** The dried plant is soaked for 24 hours and grinded. The obtained juice is given in throat pain and cough. The same is given to goat for stomach complaints
25. **Botanical name:** *Periploca aphylla* Decne.  
**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
26. **Botanical name:** *Pluchea arguta* Boiss.  
**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
28. **Botanical name:** *Salvadora oleoides* Decne.  
**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
30. **Botanical name:** *Suaeda fruticosa* (L.) Forssk.  
**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 1. Diseases/applications treated by the native species of Hingol National Park, Baluchistan, Pakistan.**

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

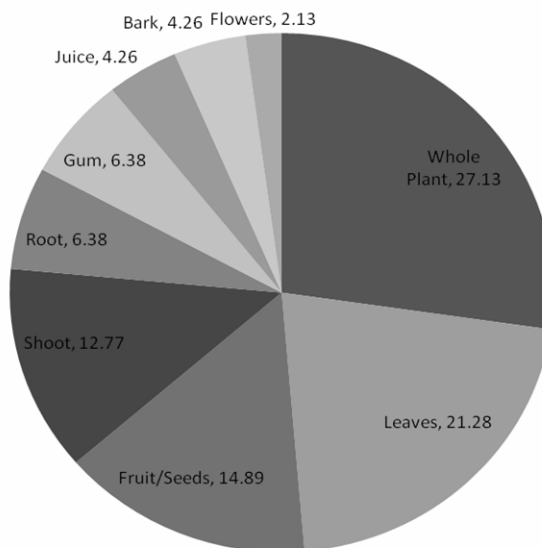


Fig. 2. Percentage of part used in preparing various herbal remedies from the indigenous species.

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