Ethno-veterinary plants used by the tribal of Dang, Gujarat

Vinod Maina*, Ramesh Kumar and Ravi Prasad

Botanical Survey of India, Arid Zone Regional Centre, Jodhpur - 342 008, Rajasthan, India
*Corresponding author: mainabsi@yahoo.co.in

Abstract

The present paper deals in traditional veterinary medicinal uses of 16 plant species in Dang district of Gujarat. Ethnobotanical study in Dang District of Gujarat shows that, 5 species used in healing wounds, 2 each used as appetizer and removal of lice while 9 were used for other diseases like fertility, general illness, neck injuries, lactation, swellings, throat pain and viral infections.

Keywords: Dang, Ethno Botany, Gujarat, India, Veterinary Uses

INTRODUCTION

The Dang region is historically known as “Dandakaranya or Dandak Van” during the period of Ramayana. Dang is the southernmost district of Gujarat state situated between 20°33' – 21°5' N latitude and 73°27' – 73°57' E longitude with an area of c. 1,764 sq km, comprising mostly hilly tract covered with dense forest, The eastern part of the district is a part of Sahyadriris. In the north it is bounded by Surat (Gujarat) and Dhule (Maharashtra), in east by Nasik (Maharashtra) and West by Valsad (Gujarat) districts. Ahwa is the district Head Quarter. The elevation of the district ranges from 675 m to 1,290 m above MSL. The main rivers of the districts are Gira, Purna, Khapri and Ambika. The geology of this region is composed of Deccan Trap and soils found in the area are black rock outcrops shallow black, brown and alluvial soil of recent origin.

The area experiences a monsoon climate. However due to deforestation, the climate of the area shows a variation. Temperature varies from 21° to 35°C; June remains the hottest month while December and January remain the coldest months in a year. The mean relative humidity varies from 50 to 85% and the mean annual rainfall for the district is 1300–1900 mm per year. Due to good rainfall and perennial source of water, the region has thick and luxuriant vegetation.
The area is inhabited mainly by Bhil tribes’ white the other tribes such as Gamit, Kokni, Varli and Kotwalia are found less in number. Their local dialects are Dangi or Konkani; however they are also familiar with Gujarati and Marathi. Each tribal group has their unique culture, and traditional uses of plant or plant products not only a part of their lifestyle but also a source of livelihood. It is to be emphasized here that the economy of the area is based upon forestry and agriculture; the bulk of commodities used day to day life is derived from forest.

A perusal of literature (Pal, 1980; Sebastian, 1984; Khanna & al., 1993; Senani & al., 2001; Jain & Srivastava, 2003; Mistry & al., 2003; Bandyopadhyay & Mukherjee, 2005; Kumar & Suman, 2009 a, b; Dey & De, 2010; Kathiriya & al., 2012; Saha & al., 2013; Gayakvad & al., 2014; Yadav & al., 2014) have reported some medicinal plants from the district, however very limited reports are available for veterinary uses of plants. In the present paper, traditional veterinary uses of 16 common plants of Dang districts of Gujarat is enumerated with its correct name, voucher specimen number, and mode of uses.

**MATERIALS AND METHODS**

Ethno-botanical information were collected during routine floristic survey in the district of Dang. Information regarding the medicinal uses of plants, perception of local people regarding use of plants in veterinary diseases, was collected through questionnaire. Public perception regarding use of plants for common veterinary diseases

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plant name</th>
<th>Perception of the local herbal healer</th>
<th>Perception of the local tribal</th>
<th>Bhil</th>
<th>Plant part used</th>
<th>Used for the diseases in traditional therapy</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Alternanthera ficoidea</em> (L.) Sm.</td>
<td>M</td>
<td>NK</td>
<td>NK</td>
<td>LE</td>
<td>E</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td><em>Arundo donax</em> L.</td>
<td>NK</td>
<td>NK</td>
<td>M</td>
<td>LE</td>
<td>E</td>
<td>Rhizome, whole plant</td>
</tr>
<tr>
<td>3</td>
<td><em>Baliospermum solanifolium</em> (Burm.) Suresh</td>
<td>NK</td>
<td>NK</td>
<td>NK</td>
<td>M</td>
<td>E</td>
<td>LE</td>
</tr>
<tr>
<td>4</td>
<td><em>Cuscuta reflexa</em> Roxb.</td>
<td>M</td>
<td>NK</td>
<td>M</td>
<td>LE</td>
<td>E</td>
<td>Whole plant</td>
</tr>
<tr>
<td>5</td>
<td><em>Erythrina variegata</em> L.</td>
<td>NK</td>
<td>M</td>
<td>NK</td>
<td>NK</td>
<td>E</td>
<td>LE</td>
</tr>
<tr>
<td>6</td>
<td><em>Ficus arnottiana</em> (Miq.) Miq.</td>
<td>NK</td>
<td>NK</td>
<td>M</td>
<td>LE</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

*Plant used as purgative and seeds as diaphoretic, demulcent and tonic. (CSIR, 1986) And also used as galactogogue after delivery. (Bandyopadhyay & Mukherjee, 2005)*

*Seeds and roots used as purgative and in rheumatism.(CSIR, 1986)*
7. **Gloriosa superba** L.  
   - **Part Used:** Whole plant  
   - **Use:** Remove lice  
   - **Additional Information:** Root used in small pox, galakatki, dangapila of cattles. (Dey & De. 2010)  
   - *Used in gout and rheumatism and also to induce polyploidy. (CSIR, 1986)*

8. **Indigofera linifolia** (L.f.) Retz.var. linifolia  
   - **Part Used:** Leaves  
   - **Use:** Wounds  
   - **Additional Information:** Neck and shoulder injury caused during plough or pulling bullock cart.  
   - *Used in febrile eruptions, also considered a vermifuge. (CSIR, 1986)*

9. **Mallotus polycarpus** (Benth.) Kulju & welzen  
   - **Part Used:** Leaves  
   - **Use:** Remove lice  
   - **Additional Information:** Leaves used for epilepsy and applied to tubercular gland of the neck; juice as gargle for sore throat and fruit for inflammation. (CSIR, 1986)  
   - *Fruits used in rheumatism, gout, liver and spleen affections and also for diabetes. Juice of leaves in bilious affections and roots for hemorrhoids. (CSIR, 1986)*

10. **Martynia annua** L.  
    - **Part Used:** Leaves  
    - **Use:** General  
    - **Additional Information:** Lopped leaves used as fodder for galactagogue. (CSIR, 1986)  
    - *Juice of leaves used in flatulence, dyspepsia, diarrhea, cough, leprosy and gonorrhea. Bark decoction for piles and beri-beri. (CSIR, 1986)*

11. **Momordica charantia** L.  
    - **Part Used:** Seeds  
    - **Use:** General  
    - **Additional Information:** Leaves used as fodder for galactagogue. (CSIR, 1986)  
    - *Powdered seeds are mixed with jiggery and given in lumbago. (CSIR, 1986)*

12. **Pongamia pinnata** (L.) pierre  
    - **Part Used:** Whole plant  
    - **Use:** Appetizer  
    - **Additional Information:** Powdered seeds are mixed with jiggery and given in lumbago. (CSIR, 1986)  
    - *Powdered seeds are mixed with jiggery and given in lumbago. (CSIR, 1986)*

(Continued)
<table>
<thead>
<tr>
<th>No.</th>
<th>Species</th>
<th>E</th>
<th>LE</th>
<th>LE</th>
<th>M</th>
<th>M</th>
<th>E</th>
<th>Whole Plant</th>
<th>Appitizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td><em>Sida rhombifolia</em> L.</td>
<td>E</td>
<td>NK</td>
<td>M</td>
<td>M</td>
<td>E</td>
<td>E</td>
<td>Leaves</td>
<td>Wound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Sida spinosa</em> L.</td>
<td>E</td>
<td>LE</td>
<td>LE</td>
<td>M</td>
<td>E</td>
<td>M</td>
<td>Whole plant</td>
<td>Appetizer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Used in rheumatism and tuberculosis. Stem used as diuretic and febrifuge and in skin problems. (CSIR, 1986)
*Root tonic and diaphoretic used in debility, fever and gonorrhoea. (CSIR, 1986)

Abbreviations: E: Effective; LE: Less effective; M: Moderate; NK: Not known.
Uses marked with (*) are applied in cases of human and incorporated here on the basis of literature available which are administered by different local people/tribal of India.

**Plate-1.** A. Top view of Dry deciduous forest of Dang; B. Dangi lady along with her cattles; C. Field interaction with tribals; D. *Ficus arnottiana* (Miq.) Miq.; E. *Cuscuta reflexa* Roxb.; F. *Erythrina variegata* L.
was classified as effective, moderate, less effective, depending on the response of the users to that disease. Later, the data were cross-checked with the local herbal and a general conclusion was derived. The current name of the plants are appended here alphabetically followed by a family name, local name (L.N.) in parenthesis, habit, place of collection in Dang, GPS coordination, collector and vouchers specimen number and mode use of the plant.

**ENUMERATION OF PLANTS USED IN VETERINARY USES**

- **Alternanthera ficoidea** (L.) Sm. (Amaranthaceae), (L. N. Sonaru & Kataran)
  - Leaves paste are applied to cure wounds.

- **Arundo donax** L. (Poaceae), (L.N. Bara nal)
  - Tall grass; Bhond Vihir, 20°55’00.1”N & 73°52’05.3”E, 12.10.2014, *Vinod Maina* 29693.
  - Crushed rhizomes mixed with water given orally or chopped whole plant mixed with fodder administered to cure throat pain.

- **Baliospermum solanifolium** (Burm.) Suresh (Euphorbiaceae) (L. N. Baktumbo)
  - Under shrub; Kushmal, 20°52’29.6”N & 73°33’14.5”E, 10.02.2013, *Vinod Maina* 28805.
It is believed larvae can expel from body by tying root of plant on neck and also to cure neck wounds.

**Cuscuta reflexa** Roxb. (Convolvulaceae) (L. N. Amerbel, Payor)
Parasitic greenish-yellow twiners; Dhuldha forest, 20˚57’53.6”N & 73˚39’55.6”E, 10.03.2015, *Vinod Maina* 29733. Whole plant soaked in water and allows chicks to drink to cure or control viral infections.

**Erythrina variegata** L. (Fabaceae) (L. N. Pangara)
Tree up to 6 m tall; Kalibel forest, 20˚55’19.5”N & 73˚34’47.8”E, 10.02.2013, *Vinod Maina* 28821. Leaves ash is applied on neck to cure swelling.

**Ficus arnottiana** (Miq.) Miq. (Moraceae), (L. N. Khadak Payara)
Tree; Piplai Devi forest (Hindra road), 20˚48’56.3”N & 73˚48’35.6”E, 28.08.2012, *Vinod Maina* 28859. Milky latex of plant mixed with water in Nagali (*Eleusine coracana*) flour is given to increase lactation.

These groups constituted the nucleus of the present study. et al. ethno-botanical Specimen examined: Dang: *Vinod Maina*

**Gloriosa superba** L. (Liliaceae), (L. N. Kalkuti)
Herbaceous climber; Bheskatri forest, 20˚48’38.3”N & 73˚44’54.0”E, 04.10.2014, *Vinod Maina* 29559. Chopped whole plant mixed with fodder administered for removing lice.

**Indigofera linifolia** (L.f.) Retz.var. *linifolia* (Fabaceae), (L. N. Kali Hirni & Kali Jhilani)
Leaves paste may be applied or leaves can be rubbed on wounds followed by bath to cure them.

**Mallotus polycarpus** (Benth.) Kulju & Welzen (Euphorbiaceae), (L. N. Karam Bad)
Tree, 10–20 m tall; Bhonga Nimadi, 20˚47’42.1”N & 73˚43’45.8”E, 13.02.2013, *Vinod Maina* 28874. Fruit pulp is applied on neck and should cure to the injury caused during plough land or pulling bullock cart.

**Martynia annua** L. (Pedaliaceae), (L. N. Jun-bela, Vinchudo)
Tall Herb Near Bheskatri, 20˚56’21.9”N & 73˚33’31.4”E, 06.10.2014, *Vinod Maina* 29589.
Pounded leaves are applied on the body to remove lice.

**Momordica charantia** L. (Cucurbitaceae), (L. N. Karel & Karela)
Climbing herb. Khokhari village (Vardipada), 20˚38’33.3”N & 73˚46’39.8”E, 06.09.2012, *Vinod Maina* 28768. Juice of fresh leaves or powder of shaded dried leaves are applied on wounds to heal up.

**Pongamia pinnata** (L.) Pierre (Fabaceae), (L. N. Karan & Kanaj)
Tree; Purna Wildlife Sanctuary, 20˚42’33.2”N & 73˚32’47.4”E, 21.01.2013, *Vinod Maina* 29498.
Decoction of seeds are given to cure general illness.

**Pueraria tuberosa** (Roxb.) DC (Fabaceae), (L. N. Ghud-Bedar)
Twiner; Bhonga Nimadi, 20˚47’42.1”N & 73˚43’45.8”E, 31.08.2012, *Vinod Maina* 28683.
Leaves and tuber having cooling effect and given to mare as fodder to conceive.

**Sida glabra** Mill. (Malvaceae), (L. N. Chiknibala)
Erect herb; Bheskatri forest, 20˚46’25.6”N & 73˚32’02.2”E, 22.01.2014, *Vinod Maina* 29123.
Chopped whole plant mixed with fodder, administered as appetizer to cure indigestion.

**Sida rhombifolia** L. (Malvaceae), (L. N. Bala)
Shrub; Vardipada forest, 20˚58’36.4”N & 73˚37’14.8”E, 03.10.2014, *Vinod Maina* 29542.
Leaf paste is applied on wounds and tied up with cotton clothes for quick healing.

**Sida spinosa** L. (Malvaceae), (L. N. Kantalobala)
Shrub; Khokhari village (Vardipada), 20˚38’33.3”N & 73˚46’39.8”E, 06.09.2012, *Vinod Maina* 28772.
Chopped whole plant mixed with fodder, administered as appetizer to cure indigestion.

**DISCUSSION**

The present study describes medicinal uses of 16 taxa for 11 different diseases. The study shows that Bhil and Konkanwani (Kunbi) tribe are more familiar regarding veterinary uses in comparison to Gamit, Varli and Kotwalia respectively. The perception of local people about effectiveness of plants shows that 4 plants very effectively, 3 effectively and 9 are moderately used by majority of tribes of the area (Table -1). Uses of 11 plants are known to herbal healers. It is interesting to note that, the same plant is used for different such as *Cuscuta reflexa* used in viral infection,
as galactogue after delivery; *Erythrina variegata* in swellings, cattle fodder, laxative, diuretic, anthelmintic, galactagogue and emmenagogue; *Ficus arnottiana* in general illness and as fodder for galactagogue and *Pueraria tuberosa* in fertility (to conceive), as demulcent, refrigerant and as cataplasm on swollen joints and as fodder for lactagogue.

## ACKNOWLEDGEMENT

The authors are thankful to the Director, Botanical Survey of India (BSI), Kolkata for facilities and encouragements. Thanks are also to the officials of the Gujarat State Forest Department for their logistic supports during exploration and also thanks to Dr. Chandan Singh, Scientist-B for giving their valuable suggestions.

## REFERENCES


