CHAPTER III

MATERIAL AND METHODS
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The herbal wild plants are the chief source of ethnomedicines which are widely practised in remote and tribal villages. They have been using these herbal lores from generation to generation. The local persons who are involved in such practices are the chief source of information and knowledge who have acquired it from their ancestors. During investigation, frequent field visits were made to the remote villages during 1998-2001. After establishing good rapport with local practitioners like Vaidyas, Bhagats etc., the ethnomedicinal information was collected. In the beginning, they were very much reluctant to divulge the indentity and location of plants but after persistant convincing, and motivation that their information will not be misused, they disclosed the secrets of herbal plants to the author. The plants of such significance were collected in vegetative as well as in blooming condition, simultaneously jotting down the vernacular names and all the relevant information, disclosed by the local practitioners. These practitioners mainly includes the Vaidus of Gond, Korku tribes, Bhagats, local medicineman who are well experienced and respected elderly persons. The plants were brought to the laboratory and processed for herbarium specimens. The important plant parts like underground root tubers, corms, fruits etc. were preserved in 4% formalin.

The morphotaxonomical description of each plant taxon was done and identified with the consultation of different floras. The specimens that could not be identified with the help of literature were shown to the renowned taxonomist personally in order to confirm the botanical identity of the plant. After confirmation and noting of ethnomedicinal information about the plant species, the subsequent visits were planned to photograph the plants in proper blooming period and also to confirm the
folk medicinal uses. The cooperation of the local tribal guides were sought to reach the remote places for collection and photography. It was observed that these tribals are very simple, innocent and once they get convinced, they offer their full cooperation and help. On many occasions the author had to take shelter in their huts. Sometimes, pecuniary lurements made it possible to find the exact location of the plant.

After the completion of description, identification and noting of ethnomedicinal significance, each taxon was scrutinized for phytochemical constituents through literature and it was incorporated in the text alongwith their references. During the scrutiny for phytochemical constituents it was noticed that some plants are lacking this particular information. Such plants were then subjected to phytochemical screening by adopting the established methods suggested by Harborne (1973), Kokate (1997).

For socio-cultural studies the author has virtually stayed with the tribes and spent sufficient time to extract the information about cultural practices prevalent among these tribes. It was a fascinating experience to interact with these people about their festivals, rituals, religious practices, magico-religious beliefs, social taboos etc. They always considers the plants as sacred entity. It was observed that these tribals consider the creation of Nature as God and offer symbolic, ceremonial reverence on specific occasions. The author has consulted various families to study the cultural diversity among the tribal population in this region.

The tribal villages covered during present investigation are as follows:

**Achalpur** (Taluka) : Belkheda, Buradghat, Borgaon Peth.

**Morshi** : Dhanora, Ganeshpur, Bhivkund, Malinpur, Samdapur, Sayawada, Belona, Taroda, Deothana, Jamthi, Salbardi, Tembhi, Bopalwadi, Hirapur etc.
Chikhaldara: Chikhaldara, Ghatang, Baglinga, Chunkhedi, Behali, Biba, Bhulori, Makhala, Semadoh, Bela, Gaulkheda, Bhiroja, Keli, Salona, Chikhali etc.

Dharni: Ratnapur.

The medicinal property of the plants is due to presence of alkaloids, glycosides, volatile oil, saponins, and tannins etc. They are naturally synthesized by the plants through definite pathways. Plants are very important renewable source of raw material for the production of variety of chemicals those can be utilised by mankind as per the need (Bhakuni, 1997). Plants also provide a source of bioactive compounds, many of which can be used as poisons, stimulants or therapeutic agents (Faransworth, 1990). It becomes necessary to find out the chemical constituents present in a particular medicinal plants and their plant parts which are used to cure the diseases. There are certain plants which are medicinally significant and in need of chemical analysis.

In present work ten such plants are selected which are medicinally significant. Their parts like roots, tubers, corms, leaves, seeds etc. are used as a crude drug to cure different ailments by the tribals and other herbal practitioners. In present work preliminary phytochemical screening of the following ten plants were undertaken.

1. Helinus lanceolatus Brandis Rhamnaceae (Root)
2. Dioscorea pentaphylla L. Dioscoreaceae (Tuber)
3. Corallocarpus epigaeus (Rottl et Willd) Clarke Cucurbitaceae (Tuber)
4. Cayratia trifolia (Linn) Domin. Vitaceae (Tuberous root)
5. Firmiana colorata (Roxb.) R.Br. Sterculiaceae (Root)
6. Leea macrophylla Roxb. Leeaceae (Tuberous root)
7. Ampelocissus latifolia (Roxb.) Planch. Vitaceae (Tuberous root)
8. Tacca leontopetaloids (L.) O. Ktze. Taccaceae (Tuber)
9. Tectaria macrodonta (Fee) C. Chr. Aspidiaceae (Rhizome)
10. Boerhaavia diffusa L. Nyctaginaceae (Root stock)
All these plants were collected from the field and the medicinally significant parts were dried in shade and subsequently crushed to prepare a fine powder. Further these dried powders were subjected to preliminary phytochemical screening by a successive solvent extraction method (Harborne, 1973; Kokate, 1997).

**Phytochemical analysis:**

**Successive solvent extraction:**

About 50 gms of the dry plant powder were successively extracted with the following solvents in a soxhlet's extractor:

- a. Petroleum ether
- b. Benzene
- c. Chloroform
- d. Acetone
- e. Ethanol
- f. Water

Concentrated the liquid extract obtained in each solvent by distilling off the solvent and then evaporated to dryness on the waterbath at 50°C weighed the solidified extract obtained with each solvent and calculated its percentage in terms of the dry weight of plant material. Each time before extracting a residual part with the next solvent, it was dried in oven at 40 to 50°C.

**Detection of Alkaloids:**

Prepared a extract of powdered drug in Petroleum ether, Benzene, Chloroform, Acetone, Ethanol and Water to decant it. Small quantity of solidified extracts were taken with a few drops of dilute hydrochloride acid and filtered it. Filtrate were tested carefully with various reagents. Such as Mayer's reagent (cream precipitate), Dragendorff's reagent (orange brown precipitate) Hager's reagent (yellow precipitate) and Wagner's reagent (reddish brown precipitate) for alkaloid test.

**Detection of Glycosides:**

Small quantity of the extracts were Hydrolysed with dilute hydrochloric acid
for a period of about an hour on water bath at 50°C. Subjected the hydrolysate to Libermann Burchards test (Brown coloured precipitate) to detect the presence of glycosides.

Detection of Phytosterols:

Petroleum ether, Benzene, Chloroform, Acetone, Ethanol and Water extracts were separately treated with solution of alcoholic potassium hydroxide (1%) till complete saponification takes place. To this 5 ml of distilled water and 5 ml of ether were added. Etheral extracts were evaporated up to half quantity by volume and then tested with Libermann-Burchards reagent. Brown coloured precipitate indicates presence of phytosterols.

Detection of Saponins:

1 gm of P.ether, Benzene, Chloroform, Acetone, Ethanol and Water extracts were taken, added 1 ml distilled water to it and shaked well. Again added water till volumes becomes 20 ml and further shaked thoroughly in graduated cylinder for 15 minutes, appearance of one centimeter layer of foam indicated the presence of saponins.

Detection of Tannins:

Small quantity of P. ether, Benzene, Chloroform, Acetone, Ethanol and Water extracts were taken separately in water, added dilute ferric chloride solution (5%) black or green colour indicates presence of tannins.

Detection of Proteins:

Proteins in P. ether, Benzene, Chloroform, Acetone, Ethanol and Water extracts were detected by Biuret method.
1 gm of sample were taken and added 3 cc of 40% NaOH solution to make it strongly alkaline and then added 2-3 drops of 1% copper sulphate solution. Violet or pink colour indicates presence of proteins.

In present investigation medicinal information was collected from local Vaidyas, Bhagats and Herbal practitioners from the villages. In tribal villages mainly Gond and Korkus are the medicinemen.

Following persons from different villages are practicing the plants among tribes.

Table 1 : Herbal practitioners from tribal villages.

<table>
<thead>
<tr>
<th>Name of person</th>
<th>Caste</th>
<th>Age (Years)</th>
<th>Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balaji Pandu Bhusum</td>
<td>Korku</td>
<td>70</td>
<td>Bela</td>
</tr>
<tr>
<td>Jawaharlal Bhaiyalal Kale</td>
<td>Korku</td>
<td>45</td>
<td>Salona</td>
</tr>
<tr>
<td>Babu Pilu Mundhe</td>
<td>Gawali</td>
<td>60</td>
<td>Semadoda</td>
</tr>
<tr>
<td>Mangal Dhurve</td>
<td>Gond</td>
<td>45</td>
<td>Kolkaz</td>
</tr>
<tr>
<td>Motiram Shikari Kasdekar</td>
<td>Korku</td>
<td>50</td>
<td>Pili</td>
</tr>
<tr>
<td>Kisnu Mohan Bhalavi</td>
<td>Gond</td>
<td>75</td>
<td>Pimprithana</td>
</tr>
<tr>
<td>G S. Mawaskar</td>
<td>Korku</td>
<td>65</td>
<td>Bhulori</td>
</tr>
<tr>
<td>Hira Bhobdya Bhilavekar</td>
<td>Gond</td>
<td>60</td>
<td>Borikheda</td>
</tr>
<tr>
<td>Somlal Ganesh Markam</td>
<td>Gond</td>
<td>45</td>
<td>Markanda</td>
</tr>
<tr>
<td>Somu Tekam</td>
<td>Gond</td>
<td>60</td>
<td>Khapa</td>
</tr>
<tr>
<td>Dukhadi Chaitram Aahake</td>
<td>Gond</td>
<td>60</td>
<td>Ganeshpur</td>
</tr>
<tr>
<td>Kalu Nasu Dikar</td>
<td>Korku</td>
<td>55</td>
<td>Biba</td>
</tr>
<tr>
<td>Kalmu Sonu Parate</td>
<td>Gond</td>
<td>65</td>
<td>Baru Gavan</td>
</tr>
<tr>
<td>Hariram Sahu Basantpure</td>
<td>Gond</td>
<td>60</td>
<td>Amthana</td>
</tr>
<tr>
<td>Gopilal Babulal Dahikar</td>
<td>Korku</td>
<td>40</td>
<td>Baglinga</td>
</tr>
<tr>
<td>Pusa Maraskolhe</td>
<td>Gond</td>
<td>55</td>
<td>Mathni</td>
</tr>
<tr>
<td>etc.</td>
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<td></td>
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</tr>
</tbody>
</table>

All the mentioned practitioners were consulted during investigation.
Author interrogated with the very older persons of the family who reaches the age about 90 years and also interviewed with some older persons who reaches the age of 100 years, specifically in Bhulori village for socio-cultural studies. Author visited the Ganeshpur, Deothana of Morshi Tahsil. There he interviewed with older persons belonging to Gond tribes. He interviewed with Korku tribes of village Bhulori, Keli, Salona etc. of Chikhaldara Tahsil to know about their customs. He also contacted the people from Balai caste in the village Bhiroja, Ghatang, Bhavai, Chikhali, Semadoh etc. where Balai caste dominates the population.