Medicinal plants used in the treatment of Gastrointestinal disorders in Bellary district, Karnataka, India

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An ethnomedicobotanical survey of Bellary district, Karnataka, comprising seven taluks was conducted during 2008-2010. About 32 species of folk drug plants belonging to 32 genera and 27 families were found to be used as a remedy for gastrointestinal disorders by the rural and forest ethnic people. The Scientific, local and family names of these medicinal plants along with their parts used and mode of their administration are given in the present paper.

Keywords: Traditional knowledge, Medicinal plants, Gastrointestinal disorders, Bellary, Karnataka

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Man depended on plants not only for food, but also to cure his various ailments since several thousand years. Most common gastrointestinal disorders are indigestion (Dyspepsia), lack of hungrier (Appetite), stomach pain, ulcers, dysentery and diarrhea, constipation and piles. The causes for the gastrointestinal disorders vary based on the age of the person, locality and the mode of life style. The common causes are contaminated food and water supplies, nutritional factors and also pathogens like bacteria, viruses, protozoan parasites and helminthes. According to WHO 80% of the populations living in the developing countries rely almost exclusively on traditional medicine1. At present about 65% of the Indian population is dependent on the traditional system of medicine2. In India, it is reported that traditional healers use 2,500 plant species and 100 plant species serve as regular sources of medicine3. Local herbal practitioners in the study area are using a variety of plant species for the treatment of gastrointestinal disorders successfully. The main objective of this survey was to document the traditional knowledge on medicinal plants of Bellary district used for the treatment of gastrointestinal disorders. Documenting the indigenous knowledge through ethnomedicobotanical study is important for the conservation of biological resources as well as their sustainable utilization. Gastrointestinal disorders are very commonly seen problems in the society and effective drugs are very much required. The results of this study will attract the Scientists, Researchers, Pharmaceutical industries and Herbal healers and play an important role in reducing the gastrointestinal problems in society.

Bellary, one of the districts in Karnataka has a population of 25.32 lakhs as per the 2011 census. People exhibit a vast diversity in their culture, tradition and living system. The district has a very rich heritage of herbal drugs. The district occupying an area of 8,447 sq km encompasses the latitudinal parallels ranging from 14° 30’ to 15° 50’ North and to the longitudinal meridians of 75° 40’ to 77° 11’ East. The district has 7 taluks namely, Bellary, Hadagali, Hagaribommanahalli, Hospet, Kudligi, Sandur and Siruguppa (Fig. 1). The types of soils in the district are mainly black cotton and red. The climate is semi arid with mixed type of vegetation consisting of semi evergreen, dry deciduous and scrub forests. Average elevation of the district is 478 m above sea level. The annual average rainfall and temperature are 636 mm and 32°C, respectively.

Methodology

The information on plants used for treating gastrointestinal disorders of folklore source was obtained during the ethnomedicobotanical survey of
Bellary district conducted in 2008 to 2010. For this purpose, frequent field trips were made to various villages belonging to all the 7 taluks of the district. A total of 30 herbal healers (26 men and 04 women) of age group between 45 and 86 yrs belonging to various communities and tribes such as, Swamijis, Valmikis, Koravas, Kurubas and Lambanees were identified, interviewed and the information given by them about the uses of medicinal plants in the locality were recorded. The data collected through PRA method and PIC was taken from each informant. Data on the local names of folk drug plants, parts used, method of preparation and dosage were noted. The ethnic as well as the cultural importance of the drug plants were also recorded. The specimens of all drug plants were photographed, collected and identified by referring to Flora of Gulbarga district and three volumes of Flora of Presidency of Madras. Voucher specimens were made by using standard plant press, authenticated and deposited at the Herbarium centre of the Department of Post Graduate Studies and Research in Botany, Gulbarga University, Gulbarga.

Results

The data obtained from the survey is compiled in Table 1, where the plant species are arranged in alphabetical order. A total of 32 species belonging to 32 genera and 27 families have been reported for the treatment of gastrointestinal disorders. For each species scientific name with voucher number, family, local name, parts used and method of drug preparation and dosage are provided. Families such as, Fabaceae, Mimosaceae, Rutaceae, Asteraceae and Zingiberaceae were with 2 species each. Different plant parts were used for the treatment of gastrointestinal disorders. In general, leaves are highly used followed by fruits, stem, roots, seeds, whole plant and flowers. In majority of cases, the herbal drugs were prepared in the form of juice, decoction, paste and powder. Some of the important drug preparations are, the whole plant of Achyranthes aspera L. is burnt, 3 gm of ash is mixed in 200 ml of water and kept for whole night. In the morning, it is filtered, mixed with 1 gm of ginger powder and given orally daily morning for 4 to 5 days for the treatment of indigestion, Stomach pain and Piles (Husain Sab, 82 yrs old, Halekote village of Siruguppa Taluk). According to Morigeri Chandrappa (68 yrs old) from Gaddikere village of Hagaribommanahalli Taluk, 10 gm fruit pulp of Aegle marmelos (L.) Corr. is mixed with 10 gm of jaggery and given 3 times a day for 3 days for dysentery. An another drug preparation,100 ml of whole plant extract of Cynodon dactylon (L.) mixed with 10 gm of honey and 10 gm of sugar and given orally daily once for 4 to 5 days for the treatment of all types of Piles (Savithramma, 86 yrs old, from Bommaghatta village of Sandur Taluk).

Discussion

The plant species reported in the present study were cross checked with available literature. Some of the plant species mentioned in the present study were recorded earlier. For example, Abrus precatorius Revathi P & Parmelazagan us L, Elettaria cardamomum (L.) Maton, Aloe vera (L) N. Burm. were used for indigestion in Gujarat, Capparis zeylanica L. used for dysentery in Chhatisgarah, Psydium guajava L. and Mangifera indica L. were used for the treatment of gastrointestinal disorders in Assam and Zingiber officinale Rosce., Cyperus rotundus L. and Aegle marmelos (L) corr. were used for gastrointestinal disorders in Arunachal Pradesh. Many of the plant species listed in Table 1 have not been reported in the available literature. However, some of them were used for the treatment of different ailments of human beings. For instance, Abutilon indicum (L.) sweet. used for skin diseases, Cynodon dactylon (L) Pers. as diuretic, Ficus religiosa L. as cordiotonic and Mangifera indica L. for diabetes in Tamil Nadu, Terminalia chebula Retz. is used for respiratory disorders in Andhra Pradesh. Calotropis procera R.Br and Cynodon dactylon (L) Pers. were used for jaundice in Pakistan. Abrus precatorius L., Aloe vera (L) N. Burm. and Psidium guajava L., were used for respiratory disorders in Cameroon.
### Table 1—Medicinal plants used against gastrointestinal disorders by rural people of Bellary

<table>
<thead>
<tr>
<th>Plant name with voucher number</th>
<th>Family</th>
<th>Local name</th>
<th>Parts and mode of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrus precatorius L. HGUG-562</td>
<td>Fabaceae</td>
<td>Biligulaganji</td>
<td>A few leaves ground with little common salt to make a paste and is given with water twice a day for two days, cures stomach pain.</td>
</tr>
<tr>
<td>Abutilon indicum (L) sweet. HGUG-823</td>
<td>Malvaceae</td>
<td>Thurubiga</td>
<td>Twenty ml of leaf decoction is given twice a day for 3 days, cures stomach pain.</td>
</tr>
<tr>
<td>Acacia ferugiana DC. HGUG-238</td>
<td>Mimosaceae</td>
<td>Banni</td>
<td>About 5 gm stem bark powder is taken with buttermilk 2-3 times a day, cures dysentery.</td>
</tr>
<tr>
<td>Achyranthes aspera L. HGUG-6</td>
<td>Amaranthaceae</td>
<td>Uttarani</td>
<td>Twenty ml of leaf juice is given with buttermilk twice a day for 3 days, controls dysentery.</td>
</tr>
<tr>
<td>Aegle marmelos (L.) Corr. HGUG-710</td>
<td>Rutaceae</td>
<td>Bilva patri</td>
<td>Fruit pulp with little jaggery and pepper powder is given for indigestion.</td>
</tr>
<tr>
<td>Aloe vera (L) N Burm. HGUG-547</td>
<td>Liliaceae</td>
<td>Lolesara</td>
<td>About 10 gm fresh leaf gel taken daily morning orally for 40 days, cures piles.</td>
</tr>
<tr>
<td>Aristolochia bracteata Lam. HGUG-44</td>
<td>Aristolochiaceae</td>
<td>Kattigarike</td>
<td>Two or three young leaves ground with sugar and is given with butter daily once a week, cures piles.</td>
</tr>
<tr>
<td>Calotropis procera R.Br. HGUG-799</td>
<td>Asclepiadaceae</td>
<td>Bili ekka</td>
<td>Few tender vegetative buds ground with salt and pepper, made into small tablets. Daily 2 tablets are given for a week, cures stomach pain.</td>
</tr>
<tr>
<td>Capparis zeylanica L. HGUG-123</td>
<td>Capparaceae</td>
<td>Thottilaballi</td>
<td>Fruits after removing seeds dried, powdered, mixed with little pepper powder and rock salt are taken with water, cures indigestion and constipation.</td>
</tr>
<tr>
<td>Cassia italica (Mill.) Lam. HGUG-213</td>
<td>Ceasalpiniaceae</td>
<td>Nela avare</td>
<td>One spoonful leaf powder is taken with warm water daily night before going to bed for constipation and piles until cured.</td>
</tr>
<tr>
<td>Coccinia indica Wt &amp; Arn. HGUG-808</td>
<td>Cucurbitaceae</td>
<td>Thonde balli</td>
<td>Ripened fruits crushed and are taken with buttermilk for 3-4 days, cures dysentery.</td>
</tr>
<tr>
<td>Cynodon dactylon (L.) pers. HGUG-660</td>
<td>Poaceae</td>
<td>Karike</td>
<td>Thirty ml root extract is given with little sugar and cardamom for dysentery until cured.</td>
</tr>
<tr>
<td>Cyperus rotundus L. HGUG-177</td>
<td>Cyperaceae</td>
<td>Jakinagadde</td>
<td>Five gm of rhizome powder is taken with buttermilk daily 3 times a day for 2-3 days, cures dysentery.</td>
</tr>
<tr>
<td>Elettaria cardamomum (L.) Maton, HGUG-78</td>
<td>Zingiberaceae</td>
<td>Elakki</td>
<td>Whole fruit is taken with ripen banana daily night for constipation and piles until cured.</td>
</tr>
<tr>
<td>Euphorbia hirta L. HGUG-186</td>
<td>Euphorbiaceae</td>
<td>Halkudisoppu</td>
<td>Two spoonful of fresh plant extract mixed with 1 spoon of ghee and 1 spoon of sugar is given thrice a day for 21 days, cures piles.</td>
</tr>
<tr>
<td>Feronia elephantum Corr. HGUG-247</td>
<td>Rutaceae</td>
<td>Belavala</td>
<td>Stem bark rubbed to get paste which is given orally for piles until cured.</td>
</tr>
<tr>
<td>Ficus religiosa L. HGUG-587</td>
<td>Moraceae</td>
<td>Aralimara</td>
<td>Three leaves ground with little jaggery and are taken twice a day for stomach pain until cured.</td>
</tr>
</tbody>
</table>

(Contd.)
Karnataka ethnobotanical studies on medicinal plants were conducted in Kodagu, Uttar Kannada, Chikmagalur, South Canara, Tumkur, Bidar and Bhadravati & Sagar taluk of Shimoga district. However, in Bellary district no detailed study on ethnobotany of medicinal plants is reported. Hence, the present study represents a contribution to the existing knowledge of folk remedies that are in current practice for the treatment of gastrointestinal disorders.

**Conclusion**

The present investigation reports 32 medicinal plant species used for the treatment of gastrointestinal disorders.
disorders. The rural people of Bellary district are highly dependent on these medicinal plants as they are easily available and proved to be effective. The reported species include both wild and cultivated ones. The most significant plants used for the treatment of gastrointestinal disorders by most of the herbal healers in the district are Achyranthes aspera L., Aegle marmelos (L.) Corr., Cynodon dactylon (L.) Pers. and Punica granatum L. Hence, these plants can be taken up for further pharmacological and clinical studies useful in the formulation of new drugs for gastrointestinal disorders.

Acknowledgment

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References