

Traditional knowledge on medicinal plants used in the treatment of respiratory disorders in Bellary district, Karnataka, India

S M Siddalinga Murthy¹ and G M Vidyasagar^{2*}

¹Department of Botany, A D B First Grade College, Harapanahalli-583 131, Karnataka, India

²Department of Post Graduate studies and Research in Botany, Gulbarga University, Gulbarga-585 106, Karnataka

Received 20 June 2011; Accepted 3 May 2013

An ethnomedicinal survey was carried out in 16 different villages of Bellary district of Karnataka with an aim to document the information regarding indigenous plant species used in the treatment of respiratory disorders. A total of 26 plant species belonging to 23 genera and 16 families were recorded and enumerated along with their botanical name, family, local name, parts used, ethnomedicinal uses including their method of preparation, mode of administration and dosage. The reported plant species in the form of various traditional preparations are employed by the village people for the management as well as treatment of various respiratory disorders.

Keywords: Bellary, Traditional knowledge, Medicinal plants, Respiratory disorders, Herbal drugs.

IPC code; Int. cl. (2011.01)–A61K 36/00, A61P 11/00

Introduction

Plants have been used in traditional medicine for thousands of years and herbal medicines are much in demand throughout the world. Even after the induction of 200 years of modern system of medicine, about 90% people in rural India take the help of local health practitioners for the treatment of various diseases¹. Respiratory disorders are quite common in the study area due to unscientific mining activities and continuous emission of industrial effluents. Some of the common respiratory problems prevailing in the study area are asthma, bronchitis, cold, cough and whooping cough. According to World Health Organization (WHO) about 20 million people are estimated to suffer from asthma in India and about 150 million in the world². Literature survey showed that no ethnomedicinal work has been reported previously from the Bellary district of Karnataka, but similar studies have been done by several workers in other parts of the state³⁻⁸. Hence, an ethnomedicinal survey was carried out in different villages of Bellary district of Karnataka state, India with an aim to document the information regarding traditional uses of folk drug plants in the treatment of respiratory disorders. Documenting the traditional knowledge is important for the conservation of medicinal plants as well as their sustainable utilization.

Bellary district, having seven *talukas* is situated between 14° 30' and 15° 50' North latitude and 75° 40' and 77° 11' East longitude. It is surrounded by Raichur district to the north, Chitradurga and Davanagere districts to the south, Koppal district to the west and Ananthapur district of Andhra Pradesh to the east. It is having partly sandy and black cotton with red loamy soil suitable for the cultivation of agricultural crops. The western parts of the district are red loamy with hilly area having rich minerals like iron (65%) and manganese (40-48%). As per the 2011 census, the population in the district is 25.32 lakhs. The district has a geographical area of 8.13 lakhs hectares, out of which the forest area covers an extent of 1.057 lakhs hectares i.e. 13% of the total geographic area. The climatic condition is semi arid with mixed type of vegetation consisting of semi evergreen, dry deciduous and scrub forests. The maximum temperature recorded was 45°C. and the minimum was 11°C. The average elevation is 478 m above sea level and the annual rainfall is 639 mm. The tribals inhabiting in the study area are *Medara*, *Lambani*, *Korava*, *Budabudikae* and *Adavichencharu*. The tribal and rural people in the district exhibit a vast diversity in their culture and living system.

Materials and Methods

Ethnomedicinal survey was carried out in 16 different villages of Bellary district (Plate 1) from

*Correspondent author:

E-mail: gmvidyasagar@rediffmail.com



Plate 1—Location map of the Bellary district of Karnataka, India

June 2008 to May 2010. The villages visited during the survey are Emmiganur, Laxmipura of Bellary taluk, Itagi, Uttangi of Hadagali taluk, Kadlebalu, Chintrapalli, Bachigondanahalli, Dashmapur of Hagaribommanahalli taluk, Sannapur, Ramasagar of Hospet taluk, Kottur of Kudligi taluk, Tharanagar, Vysanakere of Sandur taluk and Genekehalu, Hachholli, Karuru of Siruguppa taluk. During field trips, the information regarding the folk drug plants used against the respiratory disorders were gathered from tribals, traditional herbal healers and elderly people of the villages. The details about local name, place of collection, parts used, method of preparation, and dosage were recorded against each studied plant during the survey. The plant species were collected and photographs were also taken. The collected species were identified with the help of the Flora of Gulbarga district⁹ and 3 volumes of the Flora of Presidency of Madras¹⁰. The Voucher specimens were deposited at the Herbarium centre, Department of Botany, Gulbarga University, Gulbarga.

Results and Discussion

The present investigation reveals that 26 plant species belonging to 23 genera and 16 families are used in the treatment of respiratory disorders. Among them, 14 are herbs, 4 are shrubs, 3 are trees and 5 are climbers. The whole plant or different plant parts such as leaves, underground stems, roots, buds and fruits in the form of various preparations are used in the treatment of respiratory problems by traditional healers and local herbal medicinal practitioners. Leaves of 13 plant species, roots of 3 species, underground stems of 4 species, whole plant of 5 species and fruits of one species are used in the preparation of herbal medicine. The herbal preparations are in the form of juice, decoction, paste and pills. In all cases, the method of administration is oral. Many of the plant species reported in the present study have not been recorded in the available literature¹¹⁻¹³. However, some of these plant species are reported to be used for other human ailments e.g. *Achyranthus aspera* L. is used for dog bite, syphilis

Table 1—Ethnomedicinal plants used in the treatment of respiratory disorders in Bellary district of Karnataka, India

S. No.	Plant name with Voucher no.	Family	Local name	Ethnomedicinal uses
1.	<i>Abrus precatorius</i> L. (HGUG 562)	Fabaceae	<i>Gulaganji</i>	Few fresh leaves are eaten twice a day for 3 days in case of bronchitis and cough.
2.	<i>Acalypha indica</i> L. (HGUG 202)	Euphorbiaceae	<i>Kuppigida</i>	About 20 mL of whole plant extract is given twice a day for a week to treat asthma.
3.	<i>Achyranthes aspera</i> L. (HGUG 6)	Amaranthaceae	<i>Uttarani</i>	1-2 g of whole plant burnt ash in honey is given twice a day for 3 to 6 days in cough and cold.
4.	<i>Adhatoda zeylanica</i> Medic. (HGUG 793)	Acanthaceae	<i>Aadusoge</i>	10 mL of leaf extract with jaggery and honey is given twice a day for 3 to 5 days to treat asthma.
5.	<i>Allium cepa</i> L. (HGUG 157)	Liliaceae	<i>Ullagaddi</i>	10-15 mL of onion bulb extract in honey is given in the morning for 21 days to treat asthma.
6.	<i>Allium sativum</i> L. (HGUG 158)	Liliaceae	<i>Bellulli</i>	Two or three garlic cloves are eaten with little salt at night for 3 days in cough.
7.	<i>Calotropis procera</i> R. Br. (HGUG 799)	Asclepiadaceae	<i>Biliekka</i>	5 g of root bark powder is taken with honey twice a day for 3 to 6 days in all types of cough.
8.	<i>Capparis zeylanica</i> L. (HGUG 123)	Capparidaceae	<i>Thottilaballi</i>	Ten to fifteen fresh leaves of this plant, 7 garlic cloves and 7 grains of black pepper are crushed together and given twice a day for one week to treat whooping cough.
9.	<i>Coriandrum sativum</i> L. (HGUG 142)	Apiaceae	<i>Kottambari</i>	About 50 mL of whole plant filtrate is taken twice in a week for 3 weeks in case of asthma.
10.	<i>Curcuma longa</i> L. (HGUG 64)	Zingiberaceae	<i>Harishina</i>	One spoonful of turmeric powder with little black pepper powder is taken with honey or milk at night for 3 to 5 days in case of cough and cold.
11.	<i>Cynodon dactylon</i> (L.) Pers. (HGUG 660)	Poaceae	<i>Garikehullu</i>	50-100 mL of plant juice is given twice a day for 3 to 5 days to treat asthma.
12.	<i>Euphorbia hirta</i> L. (HGUG 186)	Euphorbiaceae	<i>Halina gida</i>	About 20 mL of whole plant extract having a pinch of salt is given with goat milk twice a day for one week to treat asthma.
13.	<i>Ficus recemosa</i> L. (HGUG 585)	Moraceae	<i>Atti mara</i>	Two to three fresh fruits are eaten with honey 2 to 3 times a day for 7 days in case of cough.
14.	<i>Leptadenia reticulata</i> (Retz) Wt&Arn. (HGUG 50)	Asclepiadaceae	<i>Halebali</i>	Few fresh leaves are eaten with 1 or 2 garlic cloves daily morning for 5 days in case of cough and cold.
15.	<i>Murraya koenigii</i> (L.) Spreng. (HGUG 713)	Rutaceae	<i>Karibevu</i>	About 100 mL of decoction prepared by boiling fresh leaves with cumin seeds, jaggery and ginger is given 2 times a day for 3 days in cough and cold.
16.	<i>Ocimum americanum</i> L. (HGUG 533)	Lamiaceae	<i>Nayithulasi</i>	50 mL of leaf decoction is given twice a day for 3 days to treat all types of cough.
17.	<i>Ocimum basilicum</i> L. (HGUG 534)	Lamiaceae	<i>Kamakasturi</i>	10-15 mL of leaf or seed extract is given twice a day for 3 days in case of whooping cough.
18.	<i>Ocimum sanctum</i> L. (HGUG 535)	Lamiaceae	<i>Thulasi</i>	Fresh leaves of this plant, leaves of <i>Leucas aspera</i> Spreng., <i>Momordica charantia</i> L. and dried fruits of <i>Piper longum</i> L. are crushed together; prepared into pills and two pills twice a day are given for one week to treat asthma.
19.	<i>Pergularia daemia</i> (Forsk.) Chiov. (HGUG 51)	Asclepiadaceae	<i>Kuratiga</i>	Few fresh leaves of this plant are crushed with young buds of <i>Euphorbia tirucalli</i> L. and garlic cloves; prepared into pills and two pills twice a day are given for 3 days in case of bronchitis.
20.	<i>Pongamia pinnata</i> (L.) Pierre. (HGUG 169)	Fabaceae	<i>Batti</i>	10 mL of young leaves juice with little black pepper powder is given twice a day for 3 days in cough.
21.	<i>Punica granatum</i> L. (HGUG 35)	Punicaceae	<i>Dalimbe</i>	About 5 g of leaves burnt ash or flower powder with honey is given orally thrice a day for 3-5 days; cures dry cough. (Contd..)

Table 1—Ethnomedicinal plants used in the treatment of respiratory disorders in Bellary district of Karnataka, India—(Contd.)

S. No.	Plant name with Voucher no.	Family	Local name	Ethnomedicinal uses
22.	<i>Ruta chalepensis</i> L. (HGUG 13)	Rutaceae	<i>Sadapu</i>	10 g fresh leaves of this plant, 7 grains of black pepper, 7 cloves and 7 garlic cloves are crushed together and prepared into pills. Two pills twice a day are given for one week to treat asthma.
23.	<i>Tylophora indica</i> (Burm.f.) Merr. (HGUG 54)	Asclepiadaceae	<i>Admutdballi</i>	5-10 mL of root extract is given twice a day for 5 days in case of asthma.
24.	<i>Vitex negundo</i> L. (HGUG 764)	Verbenaceae	<i>Lekki</i>	Three to five leaves are eaten with a pinch of salt twice a day for one week in cough.
25.	<i>Zalea decandra</i> (L.) N. Burm. (HGUG 2)	Aizoaceae	<i>Biliganajili</i>	About 50 mL of root decoction is given twice a day for 3 to 5 days to treat asthma.
26.	<i>Zingiber officinale</i> Rosc. (HGUG 59)	Zingiberaceae	<i>Shunti</i>	About 20 mL of juice prepared from ginger and betel leaves is given with honey three times a day for 3 days in case of cough and cold.

and fever in Tamil Nadu¹⁴, *Adathoda zeylanica* Medic. for malarial fever, leucoderma and venereal diseases in Arunachal Pradesh¹⁵, *Calotropis procera* R. Br. for elephantiasis, pneumonia and tuberculosis in Andhra Pradesh¹⁶, *Cynodon dactylon* L. for piles and menstrual disorders in Nepal¹⁷, *Acalypha indica* L. for diabetes, sores and scabies in Karnataka¹⁸, etc. It is also observed that same plant species may have curative property for respiratory disorders as well as other diseases of human beings. A total of 26 plant species belonging to 23 genera and 16 families are recorded and enumerated along with their botanical name, family, local name, parts used, ethnomedicinal uses including their method of preparation, mode of administration and dosage (Table 1).

Conclusion

The present study revealed that the local herbal medicinal practitioners possess good knowledge of herbal drugs. Now-a-days, conservation of traditional knowledge is greatly menaced by a lot of factors related to modernization of the region and lack of interest in traditional healers in transferring it to the next generation. It is therefore, essential to document the traditional knowledge of medicinally useful plants. Such studies may provide some valuable information to Phytochemists and Pharmacologists in screening of individual plant species and assessing active substances against respiratory disorders.

Acknowledgments

Authors are grateful to all informants for sharing their valuable knowledge during the ethnomedicinal survey and consent for publication.

References

- 1 Yadav SS and Patil SH, Traditional medicines and health care system of tribals of Satpuda Region, Maharashtra State, *New Botanist*, 2000, **27**(1), 51-65.
- 2 Reddy KN, Reddy CS and Trimurthulu G, Ethnobotanical Survey on respiratory disorders in Eastern Ghats of Andhra Pradesh, India, *Ethnobot Leaflets*, 2006, **10**, 139-148.
- 3 Iyengar MA, Bhat KG, Nayak SGK, Rajgopal PK and Nanda A, Survey of Medicinal Flora of South Kanara, India, *Indian Drugs*, 1986, **24**, 69-73.
- 4 Gopakumar K, Vijayalaxmi B, Shantha TR and Yoganasimhan SN, Plants used in Ayurveda from Chikmagalur district, Karnataka, *J Econ Tax Bot*, 1991, **15**(2), 379-389.
- 5 Yoganasimhan SN, Togunashi VS, Keshavamurthy KR and Govindaiah, Medico-botany of Tumkur district, Karnataka, *J Econ Tax Bot*, 1982, **3**(2), 391-406.
- 6 Kalyanasundaram Indira, An ethnobotanical study of the Kodavas and other tribes of Kodagu district, Karnataka, *Bull Bot Surv India*, 1995, **37** (1), 100-116.
- 7 Harsha VH, Hebbar SS, Shripathi V and Hegde GR, Ethnomedicobotany of Uttar Kannada District in Karnataka, Indian plants in treatment of skin diseases, *J Ethnopharmacol*, 2003, **84**(1), 37-40.
- 8 Vidyasagar GM and Prashantkumar P, Traditional herbal remedies for gynaecological disorders in women of Bidar district, Karnataka India, *Fitoterapia*, 2007, **78**, 48-51.
- 9 Seetharam YN, Kotresh K and Upalaonkar SB, Flora of Gulbarga district, Gulbarga University, Gulbarga, 2000.
- 10 Gamble JS and Fisher CEC, Flora of the Presidency of Madras, Vol. I-III, B.S.I., Calcutta, 1957.
- 11 Arjun Ram, Duraisamy Arul Joseph, Selvakumar Balachandar and Vijay Pal Singh, Medicinal plants from Siddha system of medicine useful for treating respiratory diseases, *Int J Pharm Anal*, 2009, **1**(2), 20-30.
- 12 Focho DA, Nkeng EAP, Fonge BA, Fongod AN, Muh CN, Ndam TW and Afegenui A, Diversity of plants used to treat respiratory diseases in Tubah, northwest region, Cameroon, *Afric J Pharm Pharmacol*, 2009, **3**(11), 573-580.
- 13 Garima G Patil, Prashanth Y Mali and Vijay V Bhadane, Folk remedies used against respiratory disorders in Jalgaon district, Maharashtra, *Nat Prod Rad*, 2008, **7**(4), 354-358.
- 14 Rosakutty PJ, Stella Roslin A and Ignacimuthu S, Some traditional folklore medicinal plants of Kanyakumari District (Tamil Nadu), *In: Ethnobotany and medicinal plants of*

- Indian subcontinent, by JK Maheshwari (ed), Scientific Publishers, Jodhpur, 2000, 369-375.
- 15 Das AK and Hui Tag, Ethnomedicinal studies of the *Khamti* tribe of Arunachal Pradesh, *Indian J Trad Knowledge*, 2006, **5**(3), 317-322.
 - 16 Vijigiri Dinesh and Sharma PP, Traditional uses of plants in indigenous Folklore of Nizamabad District, Andhra Pradesh, India, *Ethnobot Leaflets*, 2010, **14**, 29-45.
 - 17 Siwakoti M and Siwakati S, Ethnomedicinal uses of plants among the Sitar tribes of Nepal, *In: Ethnobotany and medicinal plants of Indian subcontinent* by J K Maheshwari (ed), Scientific Publishers, Jodhpur, 2000, 99-108.
 - 18 Shiddamallayya N, Azra Yasmeen and Gopakumar K, Hundred common forest medicinal plants of Karnataka in primary healthcare, *Indian J Trad Knowledge*, 2010, **9**(1), 90-95.