Journal of Chemical, Biological and Physical Sciences

An International Peer Review E-3 Journal of Sciences

*Available online at*www.jcbsc.org

Section B: Biological Sciences

CODEN (USA): JCBPAT Research Note

Phyllanthus amarus Schum & Thonn: a multi-potential medicinal plant

Siddalinga Murthy SM

Department of Botany, ADB First grade College, Harapanahalli, Davangere district, Karnataka, India

Received: 30 January 2017**; Revised:** 13 February 2017; **Accepted:** 18 February 2017

Abstract: Plants have been used in traditional medicine for thousands of years and herbal medicines are much in demand throughout the world. Indian people have tremendous passion for medicinal plants and they use them for wide range of health related applications. *Phyllanthus amarus* Schum & Thonn is a widely used medicinal plant. It is a small, erect, annual herb that grows 30-40 cm in height. It is common throughout the hotter parts of India in waste lands, cultivated fields and shady places. Traditional medicinal uses of this plant have been collected from the ethnobotanical survey carried out in Harapnahalli taluk of Davangere district, Karnataka state, India. The plant is mainly used in the treatment of diseases like jaundice, diabetes, viral fever, dysentery and urinary disorders. Majority of the people in the study area use this plant for these health problems as it is easily available and has no side effects.

Key words: *Phyllanthus amarus*, traditional uses, human ailments, Karnataka, India

INTRODUCTION

Human beings were dependent on medicinal plants for their health problems since thousands of years. 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 diseases[1]. The World Health

Organization (WHO) has estimated that 80% of the populations in developing countries still rely on traditional medicines, mostly plant drugs, for their primary health care needs[2]. Demand for medicinal plant is increasingly felt, in both developing and developed countries due to growing needs of natural products being non-toxic and without any side-effects, apart from availability at affordable prices. The medicinal plant sector has traditionally occupied a pivotal position in the socio cultural, spiritual and medicinal areas of rural and tribal families [3]. The knowledge of medicinal plants has been accumulated in the course of many centuries based on different medicinal systems such as Ayurveda, Unani and Siddha. In India, it is reported that traditional healers use 2,500 plant species and 100 plant species serve as regular sources of medicine[4]. During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world[5].

Phyllanthus amarus Schum. & Thonn (Syn. *P. fraternus* Webster) is commonly called Country goose berry. It is called Nela nelli in local kannada language and Bhudhatrei or Bahupatra in Sanskrit. It belongs to the family Euphorbiaceae. The plant is native to western Pakistan and Western India. It is distributed in Tropical and sub- tropical regions of Asia, Africa, and America. It is common throughout the hotter parts of India in waste lands, cultivated fields and shady places. It is a small, erect, annual herb that grows 30-40 cm in height. Leaves are unipinnately compound. Leaf-lets are arranged in two rows on rachis, alternate, opposite and decussate, almost sessile, stipulate, and oblong, up to 1.5 cm long and 0.5 cm wide. Stem is slender, glabrous, light brown, and cylindrical. Branching is profuse towards upper region bearing 5-10 pairs of leaves, internodes are 1-3.5 cm long and slightly bitter in taste. Flowers are axillary, greenish, petals minute, 5 lobed, free, stamens 5, free, anthers subglobose style recurved and stigma is bifid. Fruit is capsule, smooth and globose. Flowering and fruiting in the plant is observed in all seasons.

MATERIALS AND METHODS

Harapanahalli, one of the taluks in Davangere district of Karnataka state is located at 14.8° North latitude and 75.98° East longitude. It has an average elevation of 633 meters above the sea level. The population in Harapanahalli taluk is 3, 02,003 as per the survey of census during 2011 by Indian Government. There are 1, 54,289 males (51%) and 1, 47,714 females (49%) in the taluk. The total geographical area of the study area is 143024 ha. Major part of the taluk lies in Krishna basin and is drained by Tungabhadra River. The taluk enjoys dryness in the major part of the year and hot summer. In general south west monsoon contributes 58% of total rain fall and north east monsoon contributes 22% of rain fall. The remaining 20% rain fall is received as sporadic rains in summer months. Normal annual average rainfall is 656 mm. Major part of taluk is covered by Red sandy loam soil and followed by black soil. Major crops cultivated in this region are Maize, Jowar, Ragi, Sunflower, Groundnut and Cotton. People of the study area exhibit a vast diversity in their culture, tradition and living system.

The information on medicinal plants used for treating various human ailments was obtained during the field survey of the study area. The surveys were conducted using ethno-botanical and Participatory Rural Appraisal (PRA) methods. Twenty four villages were selected in the study area on the basis of availability of herbal healers. A total of 26 herbal healers (21 men and 05women) of age group between 45 and 86 years belonging to different communities such as Swamiji, Pandit, Kuruba and tribes like Valmiki, Korava and Lambani were interviewed and recorded the information in a prescribed questionnaire[6]. The questionnaire revealed the name, age and address of herbal healer, date of interview, local and botanical names of drug plants, parts used, collected fresh or dried stored material, locality, dose

quantity, dose per day, method of drug preparation, care to be taken or the side effects if any and mode of administration. Ethnic as well as the cultural importance of drug plants were also recorded. Nevertheless several plants are used for treating various human ailments, the uses of *P. amarus* Schum. & Thonn: a multi-potential medicinal plant requires special mention.

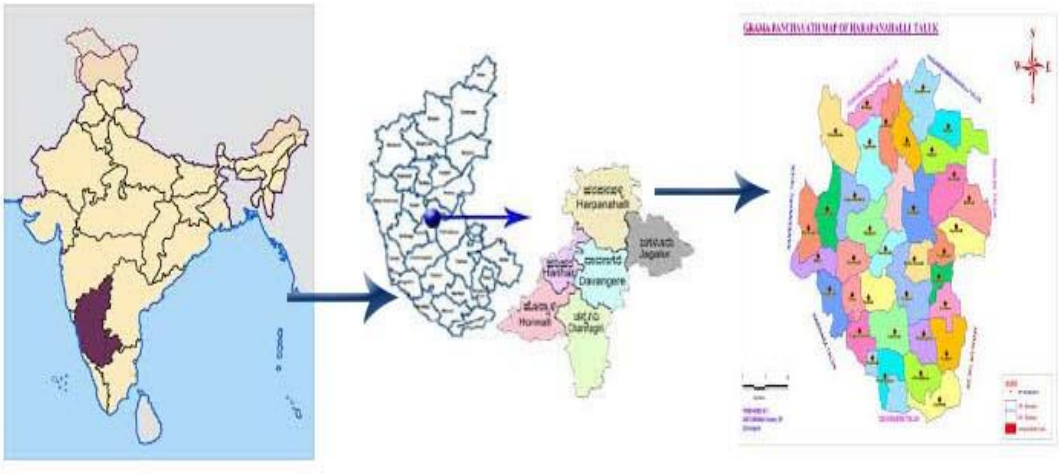

Figure 1: Location map of Harapanahalli taluk in Davangere district,Karnataka,India.

RESULTS AND DISCUSSION

According to the information revealed by the 26 herbal healers residing in the study area, the use of *P. amarus* is highly variable. This plant alone or in blended form with other plants is used for curing various human diseases. Use of this plant for treating the same disease is also variable among the different herbal healers. For instance, ten gm of leaf juice is taken orally twice a day for 4-5 days to cure jaundice. Whole plant of *P. amarus* with equal amount of roots of *Coccinia indica* and seeds of *Tephrosia purpuria* are crushed together making into powder. Ten gm of this powder is given with warm water thrice a day for treating jaundice. A handful of fresh twigs or 5 gm of dried plant powder is taken daily morning for reducing sugar level in case of diabetes. About 5 gm of shade dried plant powder is given with butter milk twice a day for 4 to 5 days to treat viral fever. Fresh plant paste is given with a cup of water twice a day for one week to cure urinary disorders. Dried plant powder is given with water 3 times a day for two days to treat blood dysentery. Leaf juice with little salt is applied on infected parts for skin diseases. Fresh leaves are chewed with betel leaves for tooth pain. Leaves of *P. amarus*, fruit rind of *Terminalia chebula* and seed coats of *Caesalpinia bonduc*, 5gm each are taken in 200 ml of water and boiled till it reduced to 100ml and filtered. One spoonful of this decoction is taken with little asafoetida daily once for treating diarrhea and stomach pain. Apart from these, the plant is also used in several other health problems such as dropsy, intermittent fevers, urinogenital disorders, scabies and wounds.

The traditional use of *P. amarus* was cross checked with the available literature. It is found that the plant is used for the similar and other purposes as well. It is used in the problems of stomach, genitourinary

system, liver, kidney and spleen. It is bitter, astringent, stomachic, diuretic, febrifuge and antiseptic. The whole plant is used in gonorrhea, menorrhagia and other genital affections. It is useful in gastropathy, diarrhoea, dysentery, intermittent fevers, ophthalmopathy, scabies, ulcers and wounds[7]. Leaves and fruits are used for treating jaundice, eye conjunctivitis and roots given to anemic patients in Andhra Pradesh[8].Whole plant is used for curing menstrual disorders in Kerala[9] and laves are used for skin diseases in Uttarakhand[10]. Whole plant is used for treating migraine and jaundice in Tamil Nadu[11]. *P. amarus* and *Zizyphus jujuba* Lam. were used for treating jaundice in Pakistan[12]. Topically, the plant is used for several skin problems ranging from skin ulcers, sores, swelling and itchiness, wounds, bruises, scabies, ulcers and sores, edematous swellings, tubercular ulcers, ringworm, scabby and crusty lesions. Its effect in excretory system is due to its antiurolithic property and is used in the dissolution of kidney stones[13]. Leaves of *P.amarus* with fruits *Cuminum cyminum* and sugar cubes reduce crushed with 30-40 ml water is taken to reduce body heat. As a laxative, whole plant is eaten directly. Whole plant crushed and tablets are prepared, taken twice a day for 10 days for treating jaundice and leucorrhea in Nizamabad district of Andhra Pradesh[14].

CONCLUSIONS

The rural people of Harapanahalli taluk are highly dependent on the traditional herbal medicine because of their poor socio-economic conditions and availability of effective drug plants. *P. amarus* was found to be very effective medicinal plant against jaundice, viral fever, gastrointestinal and urinogential problems in the study area. The data collected on the traditional uses of this plant will serve as a good source for further research work on this plant. It also provides some valuable information to phytochemists and pharmacologists in screening and assessing active substances against human diseases.

ACKNOWLEDGEMENTS

I am thankful to all the traditional healers and rural people of Harapanahalli taluk in Davangere district of Karnataka state for sharing their valuable information on traditional knowledge of medicinal plants.

REFERENCES

1. S.S. Yadav, S.H. Patil, Traditional medicines and health care system of tribals of Satpuda region, Maharastra State. *New Botanist*, 2000, 27(1): 51-65.
2. J.P. Ranbirchandra Mohanty, N.R. Bhuyan, P.K. Kar, L.K. Nath, Medicinal plants used against gastrointestinal tract disorders by traditional healers of Sikkim, Himalayas. *Indian J Tradit Knowle*, 2007, 6(4): 606-610.
3. R. Venkataswamy, H. Mohamad Mubarack, A. Doss, T.K. Ravi, M. Sukumar, Ethnobotanical study of medicinal plants used by Malasar tribals in Coimbatore district of Tamil Nadu (South India). *Asian J Exp Biol Sci*, 2010, 1(2): 387-392.
4. P. Revathi, T. Parimelazagan, Traditional knowledge on medicinal plants by the Irula Tribes of Hasnur Hills, Erode District, Tamilnadu. *Indian J Ethnoleaflets*, 2010, 14: 136-160.

5. Chellaiah Muthu, Muniappan Ayyanar, Nagappan Raja, Savarimuthu Ignacimuthu, Medicinal plants used by traditional healers in Kancheepuram district of Tamil Nadu, India. *J Ethnobiol Ethnomed*, 2006, 2:43.

6. Minoo Prabia, M.N. Reddy, Protocol for ethno-medicinal studies. In Trivedi PC (eds), *Ethnobotany*, Avishkar Publishers, Jaipur (Raj), India. 2002, pp. 383-393.

7. Jay Ram Patel, Priyanka Tripathi, Vikas Sharma, Nagendra Singh Chauhan, Vinod Kumar Dixit, *Phyllanthus amarus*: Ethnomedicinal uses, phytochemistry and pharmacology: A review. *J Etnopharmacol*, 2011, 138(2): 286-313.

8. M. Rudrapal, N. Sridhar, M. Raghavendra, Plants used by traditional healers in East Godavari district of Andhra Pradesh, India. *Indian J Nat Prod Resour*, 2012, 3(3): 426-431.

9. N.P. Rajith, D.V. Ambily, Vipin Mohan Dan, P. Sree devi, V. George, P. Pushpangadan, A survey on ethnomedicinal plants used for menstrual disorders in Kerala. *Indian J Tradit Knowle*, 2012, 11(3): 453-460.

10. Jyotsana Sharma, R.D. Gaur, Sumeet Gairola, R.M. Painuli, T.O. Siddiqi, Traditional herbal medicines used for the treatment of skin disorders by the *Gujjar* tribe of sub-himalayan tract, Uttarkhand. *Indian J Tradit Knowle*, 2013, 12(4): 736-746.

11. P .Balakrishnan, K.C. Prema, Ravindran, J. d Philip Robinson, Ethnobotanical studies among villagers from Dharapuram taluk, Tamil Nadu, India. *Global J Pharmacol*, 2009, 3(1): 08-14.

12. Gul Jan, Mir Ajabkhan, Farzana, Ethnomedicinal plants used against jaundice in Dir Kohistan Valleys (NWFP), Pakistan. *Ethnobot leaflets*, 2009, 13: 1029-1041.

13. Sonia Verma, Hitender Sharma, Munish Garg, *Phyllanthus Amarus:* A Review. *J Pharmacogn Phytochem*, 2014, 3(2): 18-22

14. Vijigiri Dinesh, P.P. Sharma, Traditional uses of plants in indigenous folklore of Nizamabad district, Andhra Pradesh, India. *Ethnobot Leaflets*, 2010, 14: 29-45.

Corresponding author: Siddalinga Murthy SM

Department of Botany, ADB First grade College, Harapanahalli, Davangere district,

Karnataka, India

On line publication Date: 18.02.2017