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ETHNOBOTANY OF *ANDROGRAPHIS LINEATA* WALLICH EX. NEES – AN ENDEMIC MEDICINAL PLANT OF INDIA

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ABSTRACT

The present exploration is an attempt to an ethnobotanical study was conducted in Eastern Ghats of Tamilnadu, for the investigation of medicinal plant used to treat several diseases by the local health healers. *Andrographis lineata* Wallich ex. Nees is an endemic medicinal plant used for medication. In Shevaroy Hills and Kolli Hills of Eastern Ghats it is employed in about 25 various uses of which 17 are higherto unreported from other areas of India. The indigenous information of the village dwellers, tribes, village herbalists, herbal practitioners and other traditional healers and the indigenous plant used for medicinal value were collected through personal interviewed and questionnaire during study visits. This result also proved that the plant is uses either whole plant or various parts like leaves, stem, root, flower, seed, etc. The plant parts are used in the form of decoction, juice, paste and powder. Plant is used for speedy recovery sickness like diabetes, jaundice, anti-diabetic, antipyretic, worms, snake bite, anti-inflammatory, skin diseases and antivenom. These usage are notable for further studies on current scientific manner.

INTRODUCTION

Plants have been used in traditional medicine for many thousands years (Abu-Rabia, 2005). The information of medicinal plants has been gathered in the course of several centuries based on various medicinal systems such as Ayurveda, Siddha, Unani, Homeopathy, Naturopathy, Amachi and Modern. In India it is reported that traditional healers use 2500 plant species and 100 species of plants benefit as usual source of medicine (Pei, 2001). Medicinal plants are the essential health care of rural households from the resource base for quickly growing pharmaceutical industry and cosmetic. Many workers were reported the worthiness of plants for the treatment of several diseases (Udayan et al., 2006; Alasesaboopathi, 2009; Hiremath et al., 2010; Rajendran and Manian, 2011; Karuppusamy Arunachalam and Thangaraj Parimelazhagan, 2011; Kuru Suresh et al., 2011; Franchis Xavier et al., 2011; Alagesaboopathi, 2011). The tribal community like Malayali that reside in this zone and use a extensive diversity of plants for the treatment of familiar disorders and ailments of men and livestocks. Andrographis lineata Wallich ex. Nees is a member of the Acanthaceae family and has been extensively used in health care traditions. Species of Andrographis Wallich ex.Nees (Acanthaceae) are used in the Indian systems of medicine namely Ayurveda, Siddha and Unani (Alagesaboopathi and Balu, 1999). The genus Andrographis as a whole is of potential importance to India. The genus exhibits antipyretic activities (Kirtikar and Basu, 1975). This genus consists of 40 species distributed in Tropical Asia (Anonymous, 1948). About twenty one species are distributed in India (Gamble, 1982) and all of them available in Tamilnadu (Henry *et al.*, 1987). Among the 21 species 18 species are reported to be endemic to India (Ahmedulla and Nayar, 1986). *Andrographis lineata* Nees (Fig.1) is an endemic medicinal herb (Ahmedulla and Nayar, 1986) found in wild in Shevaroy Hills (11°45′ - 11°55′ N latitude; 78°11′-78°20′ E longitude) (Salem district) and Kolli Hills (11°10′ - 11°30′ N latitude; 78°20′ - 78°30′ E longitude) (Namakkal district) of Eastern Ghats of Tamilnadu. *Andrographis lineata* Nees commonly called as Periyanangai in Tamil. Several medicinal properties such as snake bite, jaundice, antivenom, diabetes, antipyretic, anti-inflammatory, skin diseases, anti-diabetic and also as veterinary medicine have been attributed to this plant in the traditional method of Indian medicine (Alagesaboopathi, 1993; Balu and Alagesaboopathi, 1993; Balu and Alagesaboopathi, 1995; Ayyanar *et al.*, 2008). It is used as antibacterial, diuretic and hepatoprotective activity (Perumalsamy and Ignacimuthu, 2000; Santhi *et al.*, 2006; Sangameswaran *et al.*, 2007; Sangameswaran *et al.*, 2008).

Perennial erect herbs, 1.5-2 m tall, prominent root-stock, 80-100 cm long; stem and branches four angled; leaves 4-7.7 x 1.5 - 3.9 cm, thick, oblong, rounded at both

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ends; petiole 0.3 cm long, glabrous, with few hairs above, venation reticulate, nerves 6-10 pairs, inflorescence or racemes 10-15 cm long, terminal branched panicle, glandular, hairy. Bracts-4, ovate, acuminate; bracteoles - 2, pedicellate. Calyx 5-lobed, 6 mm long, unequal, glandular hairy. Corolla white with purplish blotches, up to 1.5 cm long, glandular hairy, upper lip bifid 6 mm long, shortly bifid; lower lip 6 mm long, with pink spot. Stamens 2, 8 mm long; anthers 2 mm long, bearded. Ovary oblong, 2 mm long, puberulous; style 1-5 mm long, pubescent. Capsule linear oblong, acute, 0.2 - 0.4 cm green when young, brownish - black when mature; seeds 6-12, ovoid, 1.5 mm across, pale-brown.

The essential objective of this exploration was to assess the diversity of ethnomedicinal plant of Eastern Ghats used by regional health healers and report the traditional medical practices followed in healing diseases. Similar ethnobotanical studies have been reported in various parts of India to note the traditional information that has been vanishing (Alagesaboopathi et al., 1999; Alagesaboopathi and Balu, 1999; Anand et al., 2006; Kadavul and Dixit, 2009; Kiruba et al., 2006; Nandagopalan et al., 2011; Umapriya et al., 2011). An attempt has been made to collect and documenting indigenous information through ethnobotanical studies is essential for the conservation of biological resources and their sustainable utilization.

MATERIALS AND METHODS

Systematic study visits for ethnobotanical investigation were undertaken during December 2010 to January 2012 in Shevaroy Hills and Kolli Hills of Eastern Ghats of Tamilnadu. The detailed first hand information was collected from village dwellers, village herbalists, herbal practitioners, elder and experienced tribal people, local medicine men and their traditional healers through personal interviewed and questionnaire. The detailed information like plant parts used, method of drug preparation, mode of application / administration, dosage and duration, name of sickness etc. The ethnobotanical uses of *Andrographis lineata* were cross scrutinized and identified with the help of flora books. (Gamble, 1936; Henry *et al.*, 1987; Matthew, 1991) and found that these values are not declared specimens were collected and deposited in the Department of Botany, Government Arts College (Autonomous), Salem for future reference.

RESULTS AND DISCUSSION

Ethnomedicinal uses.

1. Decoction of the leaves (50 ml) is taken with hot water orally twice a day in snake bite.
2. Paste of leaves is applied on the place of snake bite, scorpion sting and insecticide.
3. Decoction of the leaves (50 ml) is taken with hot water thrice a day for 4 to 6 days in malarial fever.
4. Leaves are ground and made into paste and applied externally to cure skin diseases. Decoction of the plant is used in skin disorders.
5. Fresh leaf juice (50 ml) is taken with hot water internally twice a day for four to six days in diabetes. It is also used in case of anti-diabetic and fever.
6. The leaf powder mixed with sugar and drink to cure jaundice.
7. The juice of the leaves is applied externally in action of swellings, wounds and skin eruptions.
8. The decoction of the leaves is used the treatment of constipation and astringent.
9. The whole plant is pounded and the paste is used for dog bite.
10. The leaf paste is given for stomach pain, two times a day for two days.
11. Fresh leaf juice is given orally thrice a day for one week to treat diuretic.
12. The whole plant is used in bronchitis and biliousness.
13. Leaf juice (50 ml) mixed with hot water is given internally thrice a day 3 days in antipyretic.
14. Ethno veterinary uses
15. Decoction of leaves is used in malarial fever in cow, sheep, goats, buffalo and dog.
16. Leaves is used of diuretic in cattle, sheep and goats.
17. Paste of leaves is applied to interdigital space in animals suffering from foot and mouth disorders.
18. Decoction of leaves is applied to wounds and inflammed zones.
19. Paste of leaves is used to treat itch and skin diseases in cow, buffalo, goat and sheep.
20. The fresh roots are powdered and the poultice is applied to wound effected by snake bite or scorpion sting.
21. The leaf paste is given for the treatment of constipation in cattle, two times a day for 3 to 5 days.
22. Leaves are used in case of dysentery in goats and indigestion in cattle.
23. The flowers and seeds are used as an anthelmintic in cattle.
24. The leaf powder is mixed with coconut oil and this ointment is applied to rabid dog bite.
25. Leaves are crushed and applied on the place of snake bite.
26. The roots and leaves are used in case of diarrhoea in cattle, goats and sheep.

It is revealed that the difference parts of the plant (*Andrographis lineata* Nees) is used by tribes, village dwellers, village herbalists, local medicine men and other traditional healers for the cure of several human and livestock disorders. A desire has been made to the pharmaceutical industries, pharmacologists, phytochemists, scientists, pharmacists etc to carryout further scientific investigation to find out more beneficial phytochemical constituents for the support of human communities.

Fig -1. *Andrographis lineata* in natural habitat

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