

Traditional phyto-antidotes used for snakebite by Bagata tribe of Eastern Ghats of Visakhapatnam district, Andhra Pradesh

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Abstract

The present study highlights the medicinal plants used for treating snakebite by Bagata tribe in Visakhapatnam district, Andhra Pradesh. This paper enumerates the traditional uses of 38 plant species belonging to 36 genera under 27 families that act as antidotes against snakebite. Eleven new practices were also reported.

Keywords: Snakebite, Phyto-antidotes, Bagata tribe, Eastern Ghats, Andhra Pradesh

INTRODUCTION

The entire agency track covers 6,298 Visakhapatnam district lies between 17°-15' and 18°-32' northern latitude and 18°-54' and 83°-30' eastern longitude. The region is characterized by diverse physiographic divisions ranging from plains along the coastal region to hilly areas of the Eastern Ghats flanking on north and west called agency division covering 6,298 km² i.e., 56.4% of the total geographical area of the district. It consists of 43 mandals, of which 11 are under agency area with altitudes varying between 900-1200 m. The population of the district is 38, 32,336 out of which 5, 57,572 is the tribal population comprising 14.55 per cent of the total district population. The predominant tribes in the district are *Bagata*, *Konda Dora*, *Valmiki*, *Konda kammara*, *Mukadora*, *Kotia*, *Gadaba*, *Porja* and *Khond* of which *Bagata* is the major community. As per 2001 census the total population of *Bagata* in the state is 1, 33,434 of which 1, 30,301 are inhabiting in the Eastern Ghats of Visakhapatnam district alone.

Bagata is one of the numerically preponderant and ethnically significant tribes of Andhra Pradesh and distributed predominantly in the scheduled areas of Visakhapatnam district. They occupy highest rung in the local social hierarchical ladder. It is a Telugu speaking community. *Bagatas* are mainly agricultural labourers. They are dependent on secondary forest produce for their living, which is why the incidents of snakebite are frequent among them. As they are widely depends on the forest they have rich heritage of traditional knowledge about health practices.

The rich forest flora and vast tribal population in the district have attracted a number of workers for ethnobotanical studies in the past (Banerjee 1974, Rao et al 2000, Rao et al 2001 and Rao et al 2006) but no works were reported exclusively on *Bagata* tribe and on snakebites necessitating the present investigation.

MATERIAL AND METHODS

Folk remedies consisting of simple methods of treatment developed by trial and error over a long period hold an important place in almost all societies. Ethnobotanical data were collected on snakebites during 2009-2010, from all categories of *Bagata* tribe by interviewing the medicine men, headmen, elderly persons, women and persons having thorough knowledge of plants. Field visits were made along with medicine men to identify species in the field and to know the local names. All the specimens were taxonomically identified and deposited in the herbarium of the department of Botany, Andhra University, Visakhapatnam. New practices were marked with an asterisk (Jain 1991, Kirtikar and Basu 2003).

ENUMERATION

Abrus precatorius L. Fabaceae VN: Gurivinda E: Crab's eye

*Root paste is applied on the bitten area just after bite and some of it is given orally.

Achyranthes aspera L. Amaranthaceae VN: Uttareni E: Prickly chaff flower

The roots are ground and the filtrate is taken orally. About 3 or 4 drops of leaf juice is poured into nose and mouth just after bite and some of it is applied on the bitten area.

Half cup of leaf and root juice is mixed with one spoonful of pepper powder and administered orally to dilute the poison and also some drops of leaf juice is poured into the ears and nose and two drops into the eyes.

Alangium salvifolium (L. f.) Wang. Alangiaceae VN: Uduga chettu E: Sage-leaved alangium

Root bark powder is applied on the bitten part immediately after bite which acts as an antidote.

Stem bark (10-20 g) crushed with rice washed water is administered twice in the first one hour of bite.

Amaranthus spinosus L. Amaranthaceae VN: Mullathotakura E: Prickly amaranth

Leaf paste is applied on the affected areas just after bite and leaves used as leafy vegetable thrice a week.

Andrographis paniculata (Burm. f.) Wall. ex Nees

Acanthaceae VN: Nela vemu E: King of bitters

Two spoonfuls of dry leaf powder is administered orally along

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with water and some leaf paste is applied on the bitten area soon after bite which acts as an antidote.

Dried root powder is given orally along with hot water as an antidote.

***Anogeissus latifolia* (Roxb. ex DC.) Wallich ex Beddome**

Combretaceae VN: Chirumanu E: Gum ghatti

Ten g of gum is ground with 20 g of root of *Desmodium gangeticum*. Paste is applied on the affected areas only once.

Stem bark paste is applied on the bitten area just after bite and some of it is taken along with water as an antidote.

***Aristolochia bracteolata* Lam. Aristolochiaceae VN: Gadida**

gadapaku E: Birth wort

Twenty ml of leaf juice is administered in conscious state or 5 drops of leaf juice poured into nose, mouth and ear in unconscious state immediately after bite.

Leaf paste is applied on the bitten area immediately after bite.

***A. indica* L. Aristolochiaceae VN: Nalla Eswari E: Indian birth wort**

About 2-4 spoons of root paste along with water is administered as an antidote to snake bite.

The root paste diluted with water in small quantities is applied on the bitten area soon after bite.

Root with roots of *Crotalaria laburnifolia* and *Achyranthes aspera* are taken in equal quantities and ground. One spoonful of paste is administered with a glass of water just after bite, meanwhile paste is applied on the affected areas works as an antidote.

***Butea superba* Roxb. Fabaceae VN: Moduga chettu E: Bastard teak**

*Inflorescence along with leaves of *Cinnamomum zeylanicum* is ground into paste and administered orally for 2 days.

***Calotropis gigantea* (L.) R. Br. ex Ait. Asclepiadaceae VN: Nalla jilledu E: Gigantic swallow wort**

Roots are crushed and aqueous extract is applied externally and some of it is also taken orally.

Root bark is ground into paste and made into pills. These pills are given orally for thrice a day as an antidote and latex is applied on the bitten area.

Leaves are ground along with the latex and made into small tablets and one pill is administered for every half an hour to act as an antidote.

***Calotropis procera* (Ait.) R. Br. Asclepiadaceae VN: Tella jilledu E: Swallow-wort**

*Roots ground along with pepper grains are administered orally.

About 2-3 drops of root juice is swallowed and 5-6 drops of juice is applied on the bitten area and also leaf latex is applied on the bitten area for every half an hour in a day.

***Cardiospermum halicacabum* L. Sapindaceae VN: Budda kakara E: Blister creeper**

A spoonful of leaf juice mixed with that of leaf juice of *Alternanthera sessilis* is administered immediately after bite.

***Cassia occidentalis* L. Caesalpinaceae VN: Tentapu E: Negro coffee**

Dried leaf powder is mixed with powder of long pepper and administered immediately after bite and some leaf paste is applied on the bitten area as an antidote.

***Cipadessa baccifera* (Roth) Miq. Meliaceae VN: Phaladonda**

*Five spoonfuls of root bark or stem paste is administered only once for temporary relief and leaf paste is applied on the bitten area.

***Citrus limon* Burm f. Rutaceae VN: Nimma E: Lemon**

Seeds are ground into paste by adding water and 2 spoons of it is given orally and some of it is applied on the bitten area.

***Cyclea peltata* (Lam.) Hook. f. & Thoms. Menispermaceae**

VN: Chanti maal E: Pataroof

*Root paste is applied on the affected area for 30 minutes once a day for 2 d.

***Euphorbia hirta* L. Euphorbiaceae VN: Reddy vari nana balu**

E: Snake weed

Leaves are pounded with two black peppers and the paste is administered orally as an antidote.

***Gloriosa superba* L. Liliaceae VN: Adavi naabhi E: Glory lily**

Root juice is applied on the bitten area to reduce pain.

***Gymnema sylvestre* (Retz.) R. Br. ex Schult. Asclepiadaceae VN:**

Podapathri E: Periploca of the wood

Root powder is sprayed on the bitten area as an antidote.

Leaf juice is applied on the bitten area soon after bite.

***Heliotropium indicum* L. Boraginaceae VN: Naga danthi**

E: Indian turnsole

Leaf paste is applied on the bitten area immediately after bite.

***Hemidesmus indicus* var. *indicus* (L.) R. Br. Periplocaceae**

VN: Gede sugandha pala E: Indian sarsaparilla

Root are ground with bulbs of *Allium sativum* (1:1). Paste is applied on the bitten areas as an antidote.

***Holarrhena pubescens* (Buch.-Ham.) Wall. ex G. Don**

Apocynaceae VN: Kodisa paala E: Ivory tree

Root juice together with water in equal quantities is given orally and some of it is applied on the bitten area.

***Holoptelea integrifolia* (Roxb.) Planch. Ulmaceae VN: Nemali**

chettu E: South Indian elm

*Stem bark with root of *Aristolochia bracteolata* and stem bark of *Oroxylum indicum* are taken in equal quantities is ground. Two spoons of this paste is administered with a glass of water soon after bite.

***Kalanchoe pinnata* (Lam.) Pers. Crassulaceae VN: Ranapala**

Leaves with roots of *Rauvolfia serpentina* are taken in equal quantities are ground. Two spoons of paste mixed in a glass of hot water is administered soon after bite. Meanwhile paste is applied on the bitten area.

***Mimosa pudica* L. Mimosaceae VN: Atti patthi E: Touch-me-not**

Leaves are ground along with leaves of *Leucas aspera* (1:1) and paste is applied on the bitten area soon after bite.

***Momordica charantia* L. (Cucurbitaceae) VN: Kakara E: Bitter gourd**

Handful of leaves is chewed or half cup of leaf juice is administered to get vomiting which helps to remove poison.

***Momordica dioica* Roxb. ex Willd. Cucurbitaceae VN: Angakara**

E: Small bitter gourd.

The root is ground along with sour starch water and given orally and some drops are poured into the nose.

***Opuntia dillenii* (Ker-Gawl.) Haw. Cactaceae VN: Naaga jemudu**

E: Prickly pear

*Twenty g of phyllode is ground along with 10 g of stem bark of the same plant and paste is applied on the bitten area and also 2 spoons of the above paste is administered with a glass of water twice a day for 2 d.

***Plumbago zeylanica* L.** Plumbaginaceae VN: Tella chitramoolam

E: Ceylon lead wort

*The root paste is applied over the bitten area immediately after bite and some of it is taken orally.

***Rauvolfia serpentina* (L.) Benth. ex Kurz** Apocynaceae

VN: Pathalagaridi E: Sarpentina root

Roots are crushed along with the roots of *Calotropis gigantea* and the extract is given orally.

Root paste is applied on the bitten area soon after bite. Root paste along with that of *Azadirachta indica* and 3 black pepper seeds are made into paste and the extract is administered in 3 spoons only as an antidote.

Root decoction is given orally as an antidote.

***Sansevieria roxburghiana* Schult. & Schult. f.** Agavaceae VN:

Nagasarpam E: Bladder dock

Two spoons of rhizome paste mixed with half spoon of lime water is administered only once after bite and some of the paste is applied on the bitten area.

***Strychnos nux-vomica* L.** Loganiaceae VN: Mushini E: Snake wood

Root bark paste or seed paste is applied on the bitten area and also one spoonful of it is given orally along with water.

***Tiliacora acuminata* (Lam.) Miers** Menispermaceae VN: Theega mushidi

*Leaf paste or root paste is applied on the bitten area soon after bite.

***Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thoms.**

Menispermaceae VN: Thippa theega E: Gulancha tinospora

Roots ground along with that of *Rauvolfia serpentina*, *Momordica dioica* and stem of *Alstonia scholaris* and made into paste. It is applied on the bitten area and also it is made into pea seed sized pills, 2 pills are administered with a glass of hot water soon after bite.

Leaf extract is administered along with black pepper 3-4 times a day as an antidote.

Whole plant extract mixed with black pepper powder is made into decoction and 5 spoons is given soon as an antidote.

***Trianthema portulacastrum* L.** Aizoaceae VN: Tella galijeru

E: Horse-purslane

*Roots ground into paste by adding thick rice washed water and filtered through the fine cloth. Quarter cup of juice is administered soon after the bite to weaken the effect of poison.

***Vitex negundo* L.** Verbenaceae VN: Vavili E: Negundo

About 1-2 spoons of root extract is administered orally for every one hour.

The leaves are ground and taken orally along with water and a part of leaf paste is applied on bitten area.

***Wattakaka volubilis* (L. f.) Stapf** Asclepiadaceae VN: Bandi guriya

E: Sneezing silk cotton

The young leaves are crushed and eaten to get the vomiting, administered for removal of poison.

Two or three leaves are ground along with 2 seeds of pepper and 3 leaves of *Ocimum tenuiflorum* and administered thrice a day

for 2 d.

***Wrightia arborea* (Dennst.) Mabberly** Apocynaceae VN: Thella pala

*Latex is applied on the bitten area soon after bite and twice for one day only.

RESULTS AND DISCUSSION

This study has brought out to light traditional and indigenous knowledge on medicinal plants comprising 38 plant species belonging to 36 genera under 27 families used by *Bagata* people as an antidote to snake bites. They fall under 14 herbs, 11 shrubs, 9 trees and 4 climbers. These are presented alphabetically along with botanical name, family, vernacular, English names, flowering and fruiting period, locality and ethnomedicinal uses. Asclepiadaceae is the dominant family with 4 spp. followed by Fabaceae, Menispermaceae and Apocynaceae with 3 spp. each, Amaranthaceae and Aristolochiaceae are with 2 spp. each and other families viz., Acanthaceae, Agavaceae, Aizoaceae, Alangiaceae, Boraginaceae, Cactaceae, Caesalpiniaceae, Combretaceae, Crassulaceae, Cucurbitaceae, Euphorbiaceae, Liliaceae, Loganiaceae, Meliaceae, Mimosaceae, Periplocaceae, Plumbaginaceae, Rutaceae, Sapindaceae, Ulmaceae and Verbenaceae are with one spp. each. New medicinal practices were observed in *Abrus precatorius*, *Butea superba*, *Calotropis procera*, *Cipadessa baccifera*, *Cyclea peltata*, *Holoptelea integrifolia*, *Opuntia dillenii*, *Plumbago zeylanica*, *Tiliacora acuminata*, *Trianthema portulacastrum* and *Wrightia arborea* (Jain 1991 and Kirtikar and Basu 2003).

Some of the plants recorded in this paper have also been described earlier. *Achyranthes aspera*, *Andrographis paniculata*, *Aristolochia bracteolata*, *Gymnema sylvestre*, *Heliotropium indicum*, *Plumbago zeylanica*, *Strychnos nux-vomica*, *Tiliacora acuminata*, *Tinospora cordifolia* and *Wattakaka volubilis* were also reported by Reddy et al (1996) for snakebites in Nallamalais, Eastern Ghats. Maiti and Mishra (2000) observed *Aristolochia indica*, *Calotropis gigantea*, *Rauvolfia serpentina* and *Vitex negundo* to contain anti-venom drugs by Santals, Savaras and Mahatos of Midnapore district of West Bengal. *Andrographis paniculata* and *Calotropis procera* are enumerated herbal antidotes for snakebite by Banjara people of Umarkhed region in Maharashtra (Bhogaonkar and Kadam 2007). Chitralekha and Jain (2008) reported *Achyranthes aspera*, *Andrographis paniculata*, *Anogeissus latifolia* and *Calotropis procera* in folklore claims on snakebite among some tribal communities of Central India. *Andrographis paniculata*, *Strychnos nux-vomica* and *Wattakaka volubilis* are reported to have crude drugs used for poisonous bites by Adivasis of Rayalaseema region, Andhra Pradesh (Johnson et al 2008). *Rauvolfia serpentina* is reported for herbal remedies in the treatment of scorpion sting and snake bite from Malwa region of Madhya Pradesh (Dwivedi Sumeet et al 2009). Hiremath and Taranath (2010) observed *Achyranthes aspera*, *Aristolochia indica* and *Calotropis gigantea* in traditional phytotherapy for snakebites by tribes of Chitradurga district, Karnataka. Thirumalai et al (2010) mentioned *Achyranthes aspera*, *Aristolochia bracteata*, *Andrographis paniculata*, *Hemidesmus indicus*, *Strychnos nux-vomica* and *Vitex negundo* for the treatment of jaundice and snakebites in Vellore district of TamilNadu.

Bagatas are chiefly forest dependent community. They are dependent on secondary forest produce for their living, which is why the incidents of snakebite are more frequent among them. After snakebite, they tightly tie the area above the bitten area with a rope and suck the bad blood and immediately take near to the medicine man. The local medicine man gives medicine commonly called

'*pasaru mandu*'. The plant species commonly used against the snakebite of *Naja naja* and other poisonous snakes are *Achyranthes aspera*, *Andrographis paniculata*, *Aristolochia indica*, *Calotropis gigantea*, *Cipadessa baccifera*, *Rauvolfia serpentina*, *Tinospora cordifolia* and *Wattakaka volubilis*. Medicine man always gives '*podapatri*' (*Gymnema sylvestre*) against snake bite of '*podapamu*' (*Russels viper*) and *Achyranthes aspera*, *Holoptelea integrifolia* and *Trianthema portulacastrum* are specially used against the bites of King cobra. The health practices always blend with magico-religious beliefs. *Bagata* tribe believes that, after the treatment of medicine man, the victim of the snakebite should not sleep throughout the night and not even close the eyes, if not, the medicine would not work.

CONCLUSION

The Eastern Ghats of Visakhapatnam district comprises of a large population of *Bagata* tribal community. These forest dwellers lives in forests and possess a vast knowledge on plants. From the above results and discussion, it is evident that a thorough study of anti-venom preparations of the above mentioned plants is essential. Since the tribes living in forest area often observe the positive effects of their preparations, they have developed strong belief in their own prescriptions.

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