

Medicinal plants used against dysentery, diarrhoea and cholera by the tribes of erstwhile Kameng district of Arunachal Pradesh

A Kar and S K Borthakur*

Department of Botany, Gauhati University, Guwahati-781014, Assam, India

*Correspondent author, E-mail: skb_gu1@yahoo.co.in; Phone: 0361-2570530

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Abstract

The present paper deals with 35 plant species used against dysentery, diarrhoea and cholera by the tribes of erstwhile Kameng district of Arunachal Pradesh. Personal observations on the method of utilization along with botanical names of the plants, parts used and dose regime presented here are part of the empiric knowledge confined to the ethnic groups. The paper emphasizes the conservation of the indigenous plant wealth through commercial cultivation and also for developing new and more efficacious remedies after detailed pharmacological and clinical investigations on these plants.

Keywords: Arunachal Pradesh, Kameng district, Medicinal plants, Tribes, Dysentery, Diarrhoea, Cholera, Conservation.

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Introduction

Man has long been associated with the plant kingdom from the time of his existence. Plants provide us food, clothes and other necessities and amenities for comfortable and safe living. The vast expanse of the plant kingdom contains substantial number of trees, herbs and shrubs which have unique medicinal value. These plants have already made inroads into the pharmacopoeia of advanced nations like the USA, UK, Russia, Australia, Germany, Canada, China and Japan to the tune nearly of 25 to 40%^(Ref1).

There are some 42 million cases annually and an estimated 75,000 deaths across the globe due to amoebic dysentery alone². WHO estimated that every year 58 million people suffer from diarrhoea in terms of death, illness and disability due to unsafe drinking water, hygiene and sanitation. About 94% death from diarrhoea occurs worldwide which is

considered as biggest childhood killer³, Enteropathogenic bacteria are mainly responsible for diarrhoea and dysentery⁴.

Dysentery is an affliction characterized by inflammation of the large intestine or colon. It may be caused by certain protozoa like *Entamoeba histolytica* (causes amoebic dysentery or amoebiasis) and *Bacillus subtilis* and *B. cereus* (bacillary dysentery). Some other microorganisms which cause dysentery and diarrhoea are *Escherichia coli*, *Shigella flexneri*, *S. dysenteriae*, *S. boydii*, *Aeromonas hydrophyla* and *Campylobacter* sp. Amoebic dysentery is a more serious condition than bacillary dysentery. Discharge of mucus, dyspepsia, anaemia and general weakness are the characteristic symptoms of amoebic dysentery. In more serious cases, the liver may be affected and this condition is known as hepatic amoebiasis. Loss of weight and loss of appetite are also

associated with it. Diarrhoea is a deviation from the established rhythm of bowel movement. It is characterized by an increase in frequency and fluidity of stools. The causes of diarrhoea may be due to dysentery, food poisoning, viral infection, allergy to certain foods, bacterial infection in the body, malaria, indigestion, side effects of certain medicines, malnutrition, worms, shocks, change of climate, etc. Cholera is an acute epidemic disease caused by an organism called *Vibrio cholerae*. The main symptoms are evacuation of copious rice water stools accompanied by agonizing cramp and severe collapse. It spreads mainly through contaminated water and poor sanitary conditions⁵⁻⁷.

Study area

Present study has been carried out on the indigenous people of erstwhile Kameng district of Arunachal Pradesh, now comprises three districts, viz. East Kameng, West Kameng and Tawang districts. The three districts lie between 90°15' to 92°40' East longitude and 26°54' and 28°01' North latitudes. The area is bounded by Tibet region of China in the North, Bhutan in the West, Kurung Kurme and Papumpare districts of Arunachal Pradesh on East and Sonitpur district of Assam in the South. It covers an area of 13,641sq km. The area varies

from Tropical to Alpine agro-climatic regions. Temperature varies from -12°C to 32°C . The erstwhile Kameng district is inhabited by six major tribes belonging to Indo Mongoloid racial stock, viz. *Monpa*, *Aka*, *Sherdukpen*, *Miji*, *Nishi* and *Puroik*⁸. The tribes of the district are very familiar with the herbal medicines that are abundantly available in and around their habitations for treating various diseases. Due to poor sanitary, lack of safe drinking water, lack of hygienic awareness, the incidences of dysentery, diarrhoea and cholera are prevalent among these ethnic groups. Modern healthcare is not accessible to the people because of remoteness of the area and poor communication network. Under the circumstances, the natural preparations are the only option left to them to contain diseases. Authors undertook ethnobotanical field work among these tribal people to find out and to record the medicinal plants used by them against dysentery, diarrhoea and cholera.

Methodology

The field study was undertaken

during 2003 to 2006. The data presented here are based on first-hand information collected through personal contact with the practitioners, priests, village heads and senior villagers at different localities inhabited by *Monpa*, *Aka*, *Sherdukpen*, *Miji* and *Nishi* tribes in erstwhile Kameng district who have knowledge of the curative properties of plants, the patients in different villages, and also of author's personal observations on the application of the remedies and the results obtained thereof. Plants involved, parts used for preparation of the remedies, method of preparation, dosages, mode of use were also recorded. Each prescription was considered authentic only after confirmation from five informants/patients at different localities and by cross checking at different times. The voucher specimens were collected during the investigation and herbarium specimens were prepared following conventional herbarium techniques⁹. The specimens were identified by the authors with the help of herbarium specimens of Botanical Survey of India, Eastern Circle, Shillong and the Herbarium of Botany Department, Gauhati University. The voucher specimens

have been deposited in the Herbarium of Botany Department, Gauhati University for future reference.

Results and Discussion

During investigation a total of 35 plants were recorded to be used against dysentery, diarrhoea and cholera by the tribes of erstwhile Kameng district. The results of the study are presented in the Tables 1-3, comprising botanical name, family, local name(s), habit, part(s) used, method of preparation and dosage regime. The 35 plant species involved are distributed in 35 genera and 29 families. Out of these, 5 families are of monocotyledonous plants represented by 5 genera and 5 species, and 23 families are of dicotyledonous plants represented by 29 genera and 29 species and 1 species is of pteridophytes. All the medicinal uses of plants recorded in this study are either not reported earlier or not widely recorded in important publications on Indian medicinal plants¹⁰⁻¹⁵. These remedies have been fairly well accepted by a majority of the tribal population in the study area for generations.

Table 1: Plants used against dysentery

| S. No. | Botanical name/Family | Local name | Place of occurrence & Collection no. | Habit | Part(s) used, method of preparation & dosages |
|--------|--|--|--------------------------------------|------------|---|
| 1 | <i>Acorus calamus</i> Linn. Araceae | <i>Ging Paychay</i> (<i>Dirang Monpa</i>) | Namchoo, Dirang (Kar 20) | Herb | 100g fresh rhizome grinded with little water and juice extracted is used against blood dysentery. Dose: One teacup, thrice daily after meals, for two days. |
| 2. | <i>Angiopteris evecta</i> (Forst.) Hoffm./ Angiopteridaceae | <i>Bokka</i> (<i>Aka</i>) | Jamiri, Sessa (Kar 15) | Shrub | Fresh rhizome is grinded by adding a little water and juice is extracted. Dose: Two table spoons, once daily for five days after meal. |
| 3 | <i>Bauhinia vahlii</i> Wight. & Arn./ Caesalpinaceae | <i>Lingchirijong</i> (<i>Miji</i>) | Salari (Kar 44) | Small tree | Five mature seeds are roasted in a pan without oil. Dose: Crushed seeds are chewed and taken once daily for three days. |

| S. No. | Botanical name/Family | Local name | Place of occurrence & Collection no. | Habit | Part(s) used, method of preparation & dosages |
|--------|--|---------------------------------------|--|---------------|---|
| 4 | <i>Cassia obtusifolia</i> Linn. Caesalpiniaceae | <i>Palakarpotochay</i> (Tawang Monpa) | Seijusa, Tippi, Seppa, Bana (Kar 11) | Herb | Two dry fruits are boiled in one tea cup of water until it becomes half, then the residue is sieved out. Dose: Half a teacup, once daily, for three days. |
| 5 | <i>Centella asiatica</i> (Linn.) Urban/ Apiaceae | <i>Watsay pesu</i> (Aka) | Jamiri, Bana, Seppa, Bameng (Kar 13) | Herb | About 100g of whole plants is made into paste and consumed with rice. Dose: Once daily for three days. |
| 6 | <i>Cyperus brevifolius</i> (Rottb.) Hassk. Cyperaceae | <i>Shayle</i> (Tawang Monpa) | Kitpi, Mokto, Dirang, Rupa, Salari (Kar 83) | Herb | Ten fresh tubers are crushed and made into a paste and used against blood dysentery. Dose: Half a teaspoon is used once daily for five days. |
| 7 | <i>Elaeagnus parvifolia</i> Wall. ex Royle/ Elaeagnaceae | <i>Damrep</i> (Tawang Monpa) | Rupa, Salari, Dirang, Mokto, Kitpi (Kar 84) | Shrub | Ripe fruits are taken as such. Dose: 10 to 15 fruits, once daily, for six days. |
| 8 | <i>Erythrina arborescens</i> Roxb./ Fabaceae | <i>Nat-aheg</i> (Tawang Monpa) | Bomdila, Dirang, Mokto, Kitpi, Bomdir, Tawang, Rupa, Salari (Kar 80) | Small tree | Tender leaves are crushed and juice is extracted and used against blood dysentery. Dose: Two table spoons, once daily for five days. |
| 9 | <i>Garcinia pedunculata</i> Roxb./ Clusiaceae | <i>Meba</i> (Nishi) | Seppa (Kar 88) | Big tree | Fresh fruits are sliced and properly dried in the sunlight and stored for future use. Two dried pieces are soaked in one tea-cup of water for overnight. Dose: Infusion drunk in the morning after meal, once daily for a week. |
| 10 | <i>Houttuynia cordata</i> Thunb./ Houttuyniaceae | <i>Mumarang</i> (Kalaktang Monpa) | Kalaktang, Rupa, Jamiri, Bomdila, Seppa, (Kar 162) | Herb | 50g fresh root is boiled in a glass of water until it becomes half. Dose: Half a glass, twice daily for a week. |
| 11 | <i>Hydrocotyle sibthorpioides</i> Lamk./ Apiaceae | <i>Grang Kejong</i> (Nishi) | Seppa, Seijusa, Bhalukpong, (Kar 182) | Herb | Fresh plants are crushed and juice is extracted. Dose: Three table spoons, twice daily for five days. |
| 12 | <i>Litsea cubeba</i> (Lour.) Pers./ Lauraceae | <i>Minzay</i> (Aka) | Bhalukpong, Seppa (Kar 191) | Tree | Fresh fruits are grinded and made into paste. Dose: Two tablespoons of paste is mixed in half a glass of water and taken for a week. |
| 13 | <i>Melodinus khasianus</i> Hook.f./ Apocynaceae | <i>Zoge</i> (Dirang Monpa) | Tenga, Rupa, Dirang (Kar 183) | Shrub | Fresh leaves are crushed and made into paste. One tablespoon of paste is mixed with a tea cup of warm water and taken. Dose: Once daily for four days. |
| 14 | <i>Musa velutina</i> Wendl. & Drude/ Musaceae | <i>Kappa-lonchi</i> (Nishi) | Seijusa, Tippi, Durga mandir (Kar 195) | Herb | Fresh stem juice is collected and used against blood dysentery. Dose: One tablespoon is taken once daily for five days. |
| 15 | <i>Oroxylum indicum</i> Vent. Bignoniaceae | <i>Mano</i> (Nishi) | Seijusa, Tippi, Bhaluk-pong (Kar 177) | Tree | 150 g of stem bark and 100g of leaves are boiled in ten glasses of water till the quantity becomes one third and then the residue is sieved out. Dose: One glass thrice daily after meals for five days. |
| 16 | <i>Paederia foetida</i> Linn. Rubiaceae | <i>Epitari</i> (Miji) | Nafra, Rupa, Mokto (Kar 176) | Annual twiner | Fresh leaves are crushed and juice is extracted. Dose: One table spoon, thrice daily for five days. |

| S. No. | Botanical Name/Family | Local Name | Place of occurrence & Collection no. | Habit | Part(s) used, method of preparation & dosages |
|--------|---|----------------------------------|---|------------|--|
| 17 | <i>Picrorhiza scrophulariiflora</i> Pennell Scrophulariaceae | Hongleng Mukpo (Tawang Monpa) | Duangba, Sangey, Sangrila, Arathree (Kar 152) | Herb | Dry roots are crushed and made into powder. Dose: One table spoon of the powder mixed in a tea-cup of warm water is taken once daily for two days. |
| 18 | <i>Pogostemon benghalense</i> (Burm.f.) Kuntze Lamiaceae | Nano (Aka) | Seijusa, Bhaluk-Pong (Kar 140) | Shrub | Fresh leaf juice. Dose: One tea cup, daily for three days. |
| 19 | <i>Psidium guajava</i> Linn. Myrtaceae | Bepsile sheng (Dirang Monpa) | Seijusa, Tippi, Jamiri (Kar 46) | Small tree | Fresh tender leaves are crushed and juice is extracted. Dose: Half a tea-cup is taken once daily for five days |
| 20 | <i>Rumex acetosella</i> Linn. Polygonaceae | Shaydong (Dirang Monpa) | Namchoo, Dirang (Kar 29) | Herb | Fresh leaves are crushed and juice is extracted. Dose: Two tablespoons thrice daily for five days. |
| 21 | <i>Sonchus wightianus</i> DC. Asteraceae | Balakhar (Tawang Monpa) | Salari, Kitpi (Kar 208) | Herb | Fresh roots are crushed and juice is extracted. Dose: Three table spoons once daily for five days. |
| 22 | <i>Spilanthes calva</i> DC. Asteraceae | Dugoneo (Aka). | Bana, Pompoli, Pachi (Kar 38) | Herb | Flower heads are crushed and juice is extracted. Dose: One tablespoon daily for five days. |
| 23 | <i>Thalictrum foliolosum</i> DC. Ranunculaceae | Yengchera (Dirang Monpa) | Salari, Mokto, Rupa (Kar 260) | Herb | 50g fresh rhizome is grinded and juice is extracted. Dose: Four table spoons once daily for three days in the morning. |
| 24 | <i>Woodfordia fruticosa</i> (Linn.) Kurz/Lythraceae | Hing (Dirang Monpa) | Nafra, Salari, Dirang (Kar 267) | Shrub | Fresh flowers are directly taken against blood dysentery. Dose: Ten flowers are taken, once daily for four days. |
| 25 | <i>Zanthoxylum armatum</i> DC./Rutaceae | Ngyang (Dirang Monpa) | Rupa, Dirang, Salari (Kar 269) | Shrub | Five dry fruits are made into powder. Dose: The powder is mixed in curry and taken once daily for three days. |



Melodinus khasianus



Thalictrum foliolosum



Campylandra aurantiaca



Swertia hookerii

Table 2: Plants used against diarrhoea

| S. No. | Botanical name/Family | Local name | Place of occurrence & Collection no. | Habit | Part(s) used, method of preparation & dosages |
|--------|--|-------------------------------|--------------------------------------|-------|--|
| 1 | <i>Campylandra aurantiaca</i> Baker/ Liliaceae | <i>Thermum</i> (Dirang Monpa) | Dirang village, Bhugan (Kar 9) | Herb | Fresh inflorescences are directly consumed. Dose: Two inflorescences, once daily in the morning for five days. |
| 2 | <i>Dipsacus inmeris</i> var. <i>mitis</i> (D. Don) Nasir Dipsacaceae | <i>Brymon</i> (Tawang Monpa) | Tawang, Mokto, Bomdir (Kar 70) | Herb | One mature root is properly dried in sunlight, crushed and made into powder. Dose: One tablespoon of powder is mixed in a tea cup of warm water, once daily for five days. |
| 3 | <i>Swertia hookerii</i> C. B. Clarke/Gentianaceae | <i>Rinku</i> (Miji) | Sela (Kar 218) | Herb | Fresh roots are crushed and juice is extracted. Dose: Two tablespoons, once daily for five days. |

Table 3: Plants used against cholera

| S. No. | Botanical name/Family | Local name | Place of occurrence & Collection no. | Habit | Part(s) used, method of preparation & dosages |
|--------|--|--|---|---------------------|--|
| 1 | <i>Carica papaya</i> Linn. Caricaceae | <i>Khulumu</i> (Aka) | Seijusa, Bhaluk-pong, Tippi (Kar 134) | Shrub | Fresh seeds are made into paste. Dose: One tablespoon of the paste mixed with a tea cup of warm water, twice daily for three days after meals. |
| 2 | <i>Curcuma aromatica</i> Salisb./ Zingiberaceae | <i>Thekshadu</i> (Aka) | Tippi Bhaluk-pong, Seppa, Jamiri (Kar 63) | Herb | Fresh rhizomes are crushed and made into paste. Dose: Two tablespoons, thrice daily after meals for two days. |
| 3 | <i>Mangifera indica</i> Linn. Anacardiaceae and <i>Citrus aurantifolia</i> (Christm.) Swingle Rutaceae | <i>Am</i> (Aka) <i>Chuluk mazappa</i> (Kalaktang Monpa) | Seijusa, Bhaluk-pong, Tippi, Seppa (Kar 168) | Tree Shrub | Two teaspoons of juices of tender leaves mixed with two tablespoons of citrus juice. Dose: Four table spoons thrice daily after meal for a week. |
| 4 | <i>Piper longum</i> Linn. Piperaceae and <i>Ocimum sanctum</i> Linn. Lamiaceae | <i>Likadu</i> (Dirang Monpa) <i>Mahnjor</i> (Dirang Monpa) | Tippi, Pacha, Jamiri (Kar 138) and Dirang, Salari, Seppa, Seijusa (Kar 138) | Climber Herb | Two tablespoons of piper powder mixed with two table spoons of leaf juice of ocimum leaves. Dose: Four tablespoons of the mixture, twice daily after meals for two days. |
| 5 | <i>Rhus hookeri</i> Sahni & Bahadur/Anacardiaceae | <i>Moitulung</i> (Sherdukpen) | Salari, Rupa, Dirang (Kar 18) | Tree | 50g dry fruits soaked in a glass of water for three hours. Dose: Two glasses of the infusion, twice daily for three days. |

Conclusion

In erstwhile Kameng district as elsewhere in the country, there is yet to develop a proper management system for herbal medicine. Traders and villagers indiscriminately collect the plants from wild. Large scale medicinal plant collection is a regular feature in the district. Traders from Balipara, Tezpur, Bhalukpong, Tinsukia and Guwahati collect medicinal plants in bulk quantities and bring them down from hills for selling at Kolkata and Delhi markets. Unless there is some check in collection and marketing of medicinal plants from wild habitats in the district in terms of trade restrictions and steps for commercial cultivation there is every possibility of depletion of these medicinal plants. The detailed recording of prescribed doses, administrations and relevant aspects of the prescriptions can lead to the development of new or alternative drugs through further investigations on phytochemistry, pharmacognosy, pharmacology, toxicity and clinical aspects.

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