

## ETHNIC USES OF SOME MONOCOTYLEDONOUS PLANTS IN THE DARJEELING HIMALAYAN REGION

S.K. Rai and R.B. Bhujel  
*Department of Botany,  
Kalimpong College, Kalimpong-734301 (India).*

### ABSTRACT

Ethnobotany of Darjeeling Himalayan region has its bearing to the richness and diversity of the vegetation. The folk use of monocotyledonous plants alone find their significance in the recent ethnobotanical study. Their traditional use in socio-cultural and economic aspects among different ethnic communities living in villages and fringe areas in Darjeeling have been studied. Information on various uses of 30 monocotyledonous plants is presented below along with their ecological status.

### INTRODUCTION

One of the vital parts of Eastern Himalaya, the district of Darjeeling lies between 26° 27' and 27° 13' N latitude and 87° 59' and 88° 53' E longitude. While the total area covered by the district is 3254.7 sq km, the 2329 sq km area is occupied by the hills with an altitudinal variation between 130 m (at Sukuna) to 3660 m (at Phalut). The region harbours a large number of plant species with wide range of their diversity and distribution (Das, 1995; Bhujel, 1996a). The region was explored by Sir J.D. Hooker in 1848-49, and thereby making an immense contribution to the *Flora of British India*. Other botanists who explored the region include D. Don (1821, 1825), Thomas Anderson (1832-70), C.B. Clarke (1876, 1885), Robert Pantling (with Sir George King 1898) and Sir W.W. Smith (1909). After the publication of the *Flora of British India*, a number of botanists such as A.M. Cowan & J.M. Cowan (1929), H. Hara (1966, 1971), H. Kanai (1968, 1971), H. Ohashi (1975), A.P. Das (1986, 1995, 2000), A.J.C. Grierson and D.G. Long (1983-1987, 1991, 1999) and H.J. Noltie (1984, 2000) made significant contribution to the flora of this region.

Bhujel (1996a) has also analysed the structure of vegetation in Darjeeling hills, which showed the formations of categories like tropical,

semi-evergreen, riverine, moist subtropical, moist temperate, mixed broad-leaved, subalpine coniferous, Rhododendron-forests and secondary grasslands in different parts of the district.

Different groups of people inhabiting this region from the time immemorial, include the Nepali, Bhutia and Lepcha communities (O'Malley 1907). The people living in villages and far flung areas depend completely on the forest resources for maintaining their day-to-day needs like medicine, food, fuel, and household articles. The history of various ethnic uses of the plants of Darjeeling district probably dates back to the time of their arrival (Rai *et al.*, 1998). The existence of traditional knowledge on medicinal plants and their uses are more common among the spiritual healers locally known as *Jhankri*, *Bijuwa*, *Boongthing*, *Phedangma* and *Lama* (Rai & Bhujel, 1999). However the detailed picture of the direct man-plant relationship with their diverse cultural heritage of this region have not been documented so far. A few assorted publications on ethnobotanical observations have been made by Bhujel (1996b), Bhujel *et al.* (1984), Yonzon & Mandal (1982), Yonzon *et al.* (1984, 1985, 1996), Lama (1989), Rai *et al.* (1998) and Rai & Bhujel (1999). But most of these studies are concentrated on the dicotyledonous plants with few records of monocots. In the floristic works of Cowan & Cowan (1929), H.J. Noltie (1994, 2000), some subsidiary notes on the ethnobotanical uses of some monocotyledonous plants have been provided. Biswas & Chopra (1956) while recording the medicinal plants of Darjeeling and Sikkim Himalayas have also enumerated a few monocotyledonous plants. However, the notes and the data recorded so far are quite insignificant to the expected vast amount of traditional knowledge existing in this region.

## MATERIALS AND METHODS

For the present survey, some thrust areas were selected at first. These areas were visited regularly for observations and development of understanding and relations with the local people, so that they feel free to divulge their long protected traditional knowledge. Herbal practitioners from this region like *Jhankri*, *Bijuwa*, *Boongthing*, *Phedangma* and *Lama*, were interviewed regularly and the plants in question were spotted/recognised with their help and also with the help of experienced village folks. Specimens were properly recorded in the field note book, processed and mounted in the herbarium sheets (following Jain & Rao, 1977), identified using literature, matched at NBU-Herbarium and at BSHC, Gangtok, and finally deposited in the Herbarium of the Department of Botany, Kalimpong College.

## ENUMERATION

The enumeration of the collected specimens has been made alphabetically irrespective of their taxonomic positions. The arrangement contains the botanical name, family, field number, local name and their ethnic uses. The abbreviations used are: Fn: field number, Nep: Nepali, Lep: Lepcha, Ln: Local name, Bhu: Bhutia. All field numbers are to be treated as "*Rai et Bhujel*".

1. *Acorus calamus* L. (Araceae) Fn: 0459; Ln: *Bojho* (Nep.), *Ruklop* (Lep.); Status: Cultivated.

Dried rhizomes are also found in the local markets.

- i. About 200-300 gm of rhizome is pounded and boiled for few hours, and 1-2 tea spoonful of table salt is added. The concoction is taken in a clean cotton cloth and used for massage in case of bodyache, rheumatism and osteoarthritis.
- ii. Small pieces of the rhizome are given orally in case of gastritis and stomach pain.
- iii. It is chewed directly in case of tonsillitis and cough.

2. *Allium wallichii* Kunth. (Liliaceae) Fn: 0500; Ln: *Gopa sag* (Nep); Status: Frequent.

The young inflorescence and the entire aerial parts are eaten as vegetable, sometimes used as substitute of onion in cooking by the villagers.

3. *Amomum subulatum* Roxb. (Zingiberaceae) Fn: 0688; Ln: *Alaichi* (Nep); Status: Cultivated.

Mature seeds are crushed and the powder is used as flavouring agent to various food items and beverages. Fruits are marketed commercially.

4. *Anthogonium gracile* Wall. ex Lindl. (Orchidaceae) Fn: 0149; Status: Frequent.

Freshly collected pseudobulb is crushed to make paste and applied externally on boils.

For bone fracture and joint dislocation the paste is applied externally and then bandaged for 3-5 days, which is retained for 21-27 days along with the dressings and changing in between.

5. *Asparagus racemosus* Willd. (Liliaceae) Fn: 0521; Ln: *Satamuli* (Nep.); Status: Cultivated; rare in wild.

- i. Freshly collected tuberous root is crushed and 150-200 ml of filtered extract is given orally in case of diabetes and tuberculosis.
- ii. The paste of tuberous root is also applied externally in case of bone fracture and joint dislocation; bandaged for 3-5 days. The treatment is continued for 21-27 days while changing the paste in between.

6. *Belamcanda chinensis* (L.) DC. (Iridaceae) Fn: 0225; Ln: *Tarware* *paal*; Status: Cultivated.

Freshly collected rhizome (about 1-1.5 mm long) is given orally in case of stomachache and as antidote to food poisoning (*harital*). Its oral administration causes diarrhoea, which eliminates the poisonous substances. Sometimes 250-300 ml of juice extracted from the rhizome is also used.

7. *Calamus erectus* Roxb. (Araceae) Fn: 0543; Ln: *Phyakre* (Nep.), *Rhong*, *Rons* (Lep.); Status: Frequent.

- i. Mature stem is debarked and split to make baskets, straps to carry loads, cradles and rain cover frames. Numerous types of furnitures are also made from the cane. These products are regularly marketed.
- ii. Ripe fruits are eaten eagerly by villagers and are also marketed.

8. *Calamus leptospadix* Griff. (Araceae) Fn: 0717; Ln: *Bet* (Nep.); Status: Frequent.

- i. The canes are used to make furnitures.
- ii. Young shoots are debarked, boiled and cooked as vegetables by villagers.

9. *Canna edulis* Ker-Gawler (Cannaceae) Fn: 0643; Ln: *Phul tarul* (Nep.); Status: Cultivated.

- i. Fleshy rhizomes are washed cleanly and boiled. It is eaten as staple food by villagers.
- ii. *Jaur* (Nep.) or *Chhyang* (Bhut.) a traditional fermented beverage is also prepared from the boiled rhizome.

10. *Coix lachryma-jobi* L. (Gramineae) Fn: 0036; Ln: *Bong-su* (Nep.);  
Status: Cultivated

- i. Freshly collected root is crushed and the filtrate (about 150-200 ml) is given orally as anthelmintic and vermifuge.
- ii. The mature grains are roasted and eaten by the village people.

11. *Costus speciosus* (Koen.) J.E. Smith (Zingiberaceae) Fn: 0182; Ln: *Betlauree* (Nep.); Status: Cultivated

Juice of freshly collected stem (about 150-200 ml) is orally administered in case of burning, jaundice, juvenile diabetes and other urinary troubles.

12. *Curcuma longa* L. (Zingiberaceae) Fn: 0466; Ln: *Hardi* (Nep.); Status: Cultivated.

- i. A pinch amount of powder prepared from the rhizome is dissolved in 200ml of lukewarm water and given orally at bedtime in case of cough and cold.
- ii. The powder is popularly used as a colouring agent in the preparation of various food items. It is also marketed commercially.

13. *Curcuma zedoaria* (Berg.) Rosc (Zingiberaceae) Fn: 0075; Ln: *Kalohaledo* (Nep.); Status: Cultivated.

Cleanly washed rhizome is cut into small pieces (C. 0.5-1 cm) and given orally as antidote to food poisoning (harital), which induces diarrhoea to eliminate poisonous substances. It is also effective against stomachache and loss of appetite.

14. *Cynodon dactylon* (L.) Pers. (Gramineae) Fn: 0544; Ln: *Dubo* (Nep.); Status: Abundant.

Freshly collected root is crushed and filtered through cotton cloth. The juice (C. 200-250 ml) is given orally in cases of liver cirrhosis, indigestion and burning in urination.

15. *Dactylorhiza hatagirea* (D. Don) Soo (Orchidaceae) Fn: 0497; Ln: *Panch amle* (Nep.); Status: Endangered

- i. Paste prepared from the root is applied externally on cuts and injuries.

- ii. Dried root-tuber is one of the ingredients of incense used by Buddhist lamas; also found in the local markets.

16. *Dendrocalamus hamiltonii* (Gramineae) Fn: 0669; Ln: *Choya bans* (Nep.), *Yemyot-pao* (Lep.); Status: Cultivated.

Young shoots (Nep. *Tama*) upto 2 feet high, are cut into small slices and boiled. A few burning charcoal is also added on it. It is then cooked as vegetables. Boiled shoots are also available in the market. On further preservation it turns sour, (Nep. *Meso*), which is used for making pickles.

17. *Dioscorea bulbifera* L. (Dioscoreaceae) Fn: 0441; Ln: *Gittha* (Nep.), *Kachem*, *Kuching* (Lep.); Status: Cultivated.

The tuberous root (Yam) and bulbils (vegetative) are boiled with dry ashes and eaten as the staple food by the villagers.

18. *Dioscorea hamiltonii* Hook.f. (Dioscoreaceae) Fn: 0139; Ln: *Bantarul* (Nep.), *Pumbok*, *Pa-sok -bok* (Lep.); Status: Threatened.

The tuberous root (Yam) is boiled and eaten as staple food especially on *Maghe sankranti*. People go to bath early in the morning and put small piece of raw yam on the forehead as *tika*. Also sold in markets.

19. *Dioscorea pentaphylla* L. (Dioscoreaceae) Fn: 0140; Ln: *Rani Bhyagur* (Nep.), *Sili-kussok* (Lep.); Status: Cultivated

The tuberous yam is boiled to eat but is quite fibrous. However, the villagers eat it once a year because it is believed to be anthelmintic and wormifuge.

20. *Eleusine coracana* (L.) Gaertn. (Gramineae) Fn: 0601; Ln: *Kodo*; (Nep.), *Maung-zo* (Lep.); Status: Cultivated.

Various food items are prepared from the ground grains. The traditional fermented beverage *Janr* (Nep.) or *Chhyang* (Bhu.) is also prepared which is a very popular alcoholic beverage found in Darjeeling Himalaya. It is also marketed locally.

21. *Hedychium ellipticum* Buch.-Ham. ex Smith (Zingiberaceae) Fn: 0158; Ln: *Sunkyawara* (Nep.), *Tingbook-rip* (Lep.); Status: Cultivated.

The inflorescence is offered to the deity by the *Jhankri*, *Bijuwa* and *Phedangma* during the ceremony of 'Gurupuja', the worship of their sacred teacher. It is observed on the full moon day of "Bhadav" month as per Vikram Sambat calendar.

22. *Imperata cylindrica* (L.) P. Beauv. (Gramineae) Fn: 0179; Ln: *Siru* (Nep.); Status: Abundant.

Freshly collected root is crushed and filtered juice (about 200-300ml) is orally administered as anthelmintic and wormifuge.

23. *Kaempferia rotunda* L. (Zingiberaceae) Fn: 0102; Ln: *Bhuin champo* (Nep.); Status: Cultivated

The paste prepared from rhizome along with the roots of *Laportea terminalis* (Urticaceae) and aerial parts of *Viscum articulatum* or *Viscum album* (Loranthaceae) are applied externally on bone fracture, joint dislocation, bandaged for 3-5 days. The treatment is continued for 21-27 days depending on the seriousness of the damage, by changing the paste.

24. *Phrynium placentarium* (Lour.) Merr. (Marantaceae). Fn: 0111; Ln: *Kamaiko-pat* (Nep.); Status: Cultivated.

Mature and healthy leaves are framed in bamboo strips to make 'Ghoon', the rain cover. It is popularly used by the tea and *Cinchona* plantation workers and the farmers in the villages.

25. *Smilax aspericaulis* Wall. (Smilacaceae). Fn: 0047; Ln: *Kukurdaini/Datiwan* (Nep.); Status: Frequent.

- i. Young shoots are boiled and cooked as vegetable.
- ii. Brushing of teeth with the mature stem is believed to be effective against pyorrhoea and gingivitis.

26. *Streptolirion volubile* Edgew. (Commelinaceae). Fn: 0231; Status: Sparse.

- i. Juice prepared from the root is applied externally on wounds of vital organs such as ear, nose and naval.
- ii. The young inflorescence is boiled and cooked as curry by the village people.

27. *Satyrium nepalense* D. Don (Orchidaceae). Fn: 0017; Status: Common.

The young inflorescence is boiled and cooked as vegetable by the villagers.

28. *Thysanolaena latifolia* (Roxb. ex Hornem) Honda (Gramineae). Fn: 0076; Ln: *Amliso* (Nep.), *Pushok-tin*, *Pachyor* (Lep.); Status: Cultivated.

Paste prepared from the rootstock is applied externally on boils.

The *Jhankri*, *Bijuwa*, *Phedangma*, *Boonthing* and *Lamas* offer its young shoots and inflorescence during religious ceremonies.

iii. Dried inflorescence is used as broom and marketed commercially.

29. *Tupistra aurantiaca* Wall. (Liliaceae) Fn: 0527; Ln: *Nakima* (Nep.); Status: Threatened.

i. Roots are cut down into small pieces (0.3-0.5 cm) and given orally in case of food poisoning (harital).

ii. The inflorescence is cooked as vegetable and consumed to cure bodyache, cold and fever; also sold in local markets.

30. *Wallichia densiflora* Mart. (Arecaceae). Fn: 0760; Ln: *Thakro* (Nep.), *U-Pe*, *Oho* (Lep.); Status: Frequent.

The mid rib of pinna from mature leaflets are collected to prepare a small broom, which is used as hair comb by villager women.

## DISCUSSION

The Darjeeling Himalayan region harbours one of the ethnobotanically richest flora of the nation. The vegetation of this region is dominated by the dicotyledonous plants, a fact observed in most part of the world. Analysis of the past and present records on the flora revealed that the monocot-dicot ratio is approximately 1 : 2.5 (Bhujel, 1996 a).

During the survey, 30 monocotyledonous plants have been recorded of which 16 are found to be medicinal for the treatment of various kinds of diseases, and two of them are also marketed. The prevalence of the practices of folk medicine is generally found at the places where the amenities of modern society are not available. The tough hill terrain and



vast natural barriers force them to depend on herbal healing and forest resources. 15 plants are found as potential food and its additives, and two are culturally significant. There are 11 edible plants which are marketed regularly, and have thus, become the source of some income in cash.

The documentation of the ethnic uses of plant resources is very important for a variety of reasons. The basic data, provided for economically important plants should encourage further studies aiming at their large-scale cultivation and economic welfare. The facts and figures in case of ethnomedicinally important plants should be pursued for further studies including chemical and pharmacognostic analysis.

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