

Medicinal Plants of submontane forest in a part of Tarai and Bhawar of Kumaun Himalaya

Bhasker Joshi

Department of Botany, R. H. Govt. P. G. College, Kashipur (Kumaun University, Nainital) Uttarakhand, India-244713. E-Mail: bhaskerjoshihd@in.com

Abstract: The medicinal properties of forest vegetation was analyzed in a submontane forest of Tarai and Bhawar of Kumaun adjacent to Kashipur, at (29° 14-43.6)–(29° 19-50.5) E longitude and (79° 03-22.6)–(79° 04-23.2) N latitude at an elevation of 253.4–265.5 meter above the sea level, within the districts of Nainital and Udham Singh Nagar. 29 plants species belonging to 22 family, 26 genera, and 29 species were reported. Of these leaves in 19% cases, roots and whole plants in 16% cases, fruits and bark 13% cases are used. Based on life form 17 phanerophytes, 5 chamaephytes, 4 therophytes, 2 hemicryptophytes and 1 therophyte were recorded.

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Key Words: Ethnomedicinal, Kumaun Himalaya, Medicinal plant, Submontane forest, Tarai and Bhawar.

1. Introduction

The use of plants in curing and healing is as old as man himself (Hedberg, 1987). All cultures have folk medicine traditions that include the use of plants and plant products. The World Health Organization (WHO) estimates that 4 billion people or 80 percent of the world's population use herbal medicine for some aspect of primary health care. According to Ved Prakash (1998), more than 20,000 species of higher plants are used as medicines in the traditional treatment practices of indigenous cultures living around the world. Investigations on growth performance of medicinal plants have gained adequate attention in India. Ethnomedicinal studies on vegetation in tribal areas have been carried out by Chopra (1980), Sangai (1995), Shylaja *et al.* (1996), Bargali (1997), Chauhan *et al.* (1997), Jamwel and Kaul (1997), Karikanthimath *et al.* (1997), Manian and Gopalkrishnan (1997), Pandey *et al.* (1998), Singh and Singh (1998), Bargali *et al.* (2003), Natrajan and Paulsen (2000), Maruthi *et al.* (2000), Samvastar and Diwanji (2000), Hebbar *et al.* (2004), Vijayan *et al.* 2004, Chhetri *et al.* (2005), Kala (2005), Dobhal *et al.* (2007), Semwal *et al.* 2010 and Joshi (2011).

There are about 1500 to 2000 species with known medicinal worth in India, which support an estimated 5000 indigenous drug manufactures, which make about 2000 preparations in different parts of the country. It is believed that 80% of the raw material requirement is met from the forest only (Chopra, 1994).

Present study provides some information on medicinal property of submontane forest vegetation reported in a part of Tarai and Bhawar of Kumaun Himalaya.

2. Geographical Location

For the present study, the forests of Tarai and Bhawar area of Kumaun Himalaya adjacent to Kashipur were selected. The study sites situated in the foothills of Shivalik mountain of the Outer Himalaya and south-east to Corbett National Park at (29° 14-43.6)–(29° 19-50.5) E longitude and (79° 03-22.6)–(79° 04-23.2) N latitude at an elevation of 253.4–265.5 meter above the sea level, within the districts of Nainital and Udham Singh Nagar and occupies the middle reaches of the river Kosi and Dabaka. (Source: Office of Tarai West Forest Division, Kumaun, Ramnagar, Uttarakhand).

3. Material and Methods

In present study, the information about plants was obtained by frequent field visits, from experience of personals of forest department and the local natives (older household and women). Lists of medicinal plants that are being traditionally used by the local people of area have been prepared. The plants were identified with the help of a plant taxonomist and the forest flora of Kumaun (Osmoston, 1926), Flora Simlensis (Collet, 1971), Flora Nainitalensis (Gupta, 1968) and Flora of Mussoorie (Raizada, 1978).

4. Results

29 plants along with family, common name, vegetation type, plant parts used, active constituents, life form and medicinal uses are described below:

Ø *Acacia catechu* Willd.

Family: Mimosaceae; Common Name: Kattha, Khair; Vegetation Type: Tree; Plant parts: Wood; Constituents: Tannins; Life form: Phanerophyte.

Use: Diarrhoea, cleaning mouth and gums.

Ø *Aegle marmelos* (L.) Correa

Family: Rutaceae; Common Name: Bel; Vegetation Type: Tree; Plant parts: Fruits; Constituents: Carbohydrates, Tannins; Life form: Phanerophyte.
Use: Diarrhoea, dysentery, digestive, appetizer and tonic.

Ø ***Asperagus racemosus Willd.***

Family: Liliaceae; Common Name: Satavar; Vegetation Type: Herb; Plant parts: Roots; Constituents: Saponins; Life form: Therophyte.
Use: Antioxytocis and galactagogue activity.

Ø ***Bauhinia malabarica Roxb.***

Family: Caesalpiniaceae; Common Name: Kachnar; Vegetation Type: Tree; Plant parts: Leaves and Bark; Constituents: Tannins; Life form: Phanerophyte.
Use: Vermifuge and antispasmodic.

Ø ***Biophytum sensitivum Zucc.***

Family: Oxalidaceae; Common Name: Lajalu; Vegetation Type: Herb; Plant parts: Roots and Leaves; Life form: Therophyte.
Use: Diuretic, antipyretic and swelling of body.

Ø ***Boerhaavia diffusa L.***

Family: Nyctaginaceae; Common Name: Punarnava; Vegetation Type: Herb; Plant parts: whole plant; Constituents: Alkaloids; Life form: Hemicryptophyte.
Use: Liver tonic, diuretic and anti-inflammatory.

Ø ***Bombax ceiba L.***

Family: Malvaceae; Common Name: Semul; Vegetation Type: Tree; Plant parts: Flower, Gum and Root; Constituents: Tannin, Carbohydrates and Fatty Acids; Life form: Phanerophyte.
Use: Gout and urinary tract infection.

Use: Gout and urinary tract infection.

Ø ***Cannabis sativa L.***

Family: Urticaceae; Common Name: Bhang; Vegetation Type: Shrub; Plant parts: Flowering tops; Constituents: Resins, Carbohydrate and Fatty Acids; Life form: Chamaephyte.

Use: Sedative and antiemetic.

Ø ***Cassia fistula L.***

Family: Caesalpiniaceae; Common Name: Amaltas; Vegetation Type: Tree; Plant parts: Leaves and Pods; Constituents: Glycosides; Life form: Phanerophyte.

Use: Laxative and skin disorders.

Ø ***Cathranthus roseaus (L.) G.Don***

Family: Apocynaceae; Common Name: Sadabahar; Vegetation Type: Shrub; Plant parts: Whole Plant; Constituents: Alkaloids; Life form: Chamaephyte.

Use: Antineoplastic agent.

Ø ***Centella asiatica (L.) Urb.***

Family: Apiaceae; Common Name: Brahmi; Vegetation Type: Herb; Plant parts: Whole Plant; Constituents: Triterpenoid Saponins and Glycosides; Life form: Hemicryptophyte.

Use: Brain tonic, antianxiety and antistress.

Ø ***Cuscuta reflexa Roxb.***

Family: Convolvulaceae; Common Name: Amar Bael; Vegetation Type: Climber; Plant parts: Whole Plant;

Constituents: Cuscutalin and Cuscutin; Life form: Phanerophyte.

Use: Vermifuge and heart tonic.

Ø ***Datura stromonium L.***

Family: Solanaceae; Common Name: Dhatura; Vegetation Type: Herb; Plant parts: Leaves and Flowering tops; Constituents: Alkaloids; Life form: Chamaephyte.

Use: Spasmolytic. Vomiting agent and motion sickness.

Ø ***Eucalyptus hybrid L.Herit.***

Family: Myrtaceae; Common Name: Safeda; Vegetation Type: Tree; Plant parts: Leaves; Constituents: Volatile oils; Life form: Phanerophyte.

Use: Antiseptic, diaphoretic and expectorant.

Ø ***Ficus racemosa L.***

Family: Moraceae; Common Name: Gular; Vegetation Type: Tree; Plant parts: Fruits; Life form: Phanerophyte.

Use: Blood disorders, piles and gonorrhoea.

Ø ***Ficus religiosa L.***

Family: Myrtaceae; Common Name: Pipal; Vegetation Type: Tree; Plant parts: Bark; Constituents: Tannins; Life form: Phanerophyte.

Use: Laxative and astringent.

Ø ***Holarrhena antidysenterica Wall.***

Family: Apocynaceae; Common Name: Inderjhon; Vegetation Type: Tree; Plant parts: Bark; Constituents: Alkaloids; Life form: Phanerophyte.

Use: Antidysenteric and febrifuge.

Ø ***Holoptelea integrifolia Planch.***

Family: Ulmaceae; Common Name: Kanju; Vegetation Type: Tree; Plant parts: Leaves; Constituents: Tannins; Life form: Phanerophyte.

Use: Pyrrhoea and cleaning mouth and gums.

Ø ***Justicia adhatoda Nees***

Family: Acanthaceae; Common Name: Vasaka; Vegetation Type: Shrub; Plant parts: Leaves; Constituents: Alkaloids; Life form: Chamaephyte.

Use: Expectorant, bronchitis and cough.

Ø ***Murraya koenigii Spreng.***

Family: Rutaceae; Common Name: Karipatta; Vegetation Type: Shrub; Plant parts: Whole Plant; Constituents: Volatile oils; Life form: Phanerophyte.

Use: Dysentery and antidote in poisoning.

Ø ***Piper nepalense Miq. (E.)***

Family: Piperaceae; Common Name: Pipali; Vegetation Type: Herb; Plant parts: Fruits; Constituents: Volatile oils; Life form: Therophyte.

Use: Cough and bronchitis.

Ø ***Plumbago zeylanica L.***

Family: Plumbaginaceae; Common Name: Chitrak; Vegetation Type: Shrub; Plant parts: Root and Bark; Constituents: Plumbagin; Life form: Chamaephyte.

Use: Anoxia, to cure hydrocoel and also used for skin diseases.

Ø ***Rauwolfia serpentina* Benth.**

Family: Apocynaceae; Common Name: Sarpgandha;
Vegetation Type: Herb; Plant parts: Roots;
Constituents: Alkaloids; Life form: Therophyte.

Use: Malaria.

Ø ***Ricinus communis* L.**

Family: Euphorbiaceae; Common Name: Arandi;
Vegetation Type: Tree; Plant parts: Seeds;
Constituents: Fixed Oils; Life form: Phanerophyte.

Use: Laxative.

Ø ***Terminalia arjuna* W & A.**

Family: Combretaceae; Common Name: Arjun;
Vegetation Type: Tree; Plant parts: Bark;
Constituents: Tannins; Life form: Phanerophyte.

Use: Cardiac disease, diuretic and astringent.

Ø ***Terminalia bellerica* Roxb.**

Family: Combretaceae; Common Name: Bahera;
Vegetation Type: Tree; Plant parts: Fruits;
Constituents: Tannins; Life form: Phanerophyte.

Use: Diarrhoea and dysentery.

Ø ***Terminalia chebula* Retz.**

Family: Combretaceae; Common Name: Harar;
Vegetation Type: Tree; Plant parts: Fruits;
Constituents: Tannins; Life form: Phanerophyte.

Use: Diarrhoea and dysentery.

Ø ***Vitex negundo* L.**

Family: Verbenaceae; Common Name: Simalu;
Vegetation Type: Shrub; Plant parts: Whole Plant;
Constituents: Alkaloids; Life form: Phanerophyte.

Use: Rheumatic arthritis, mental disorder and backache.

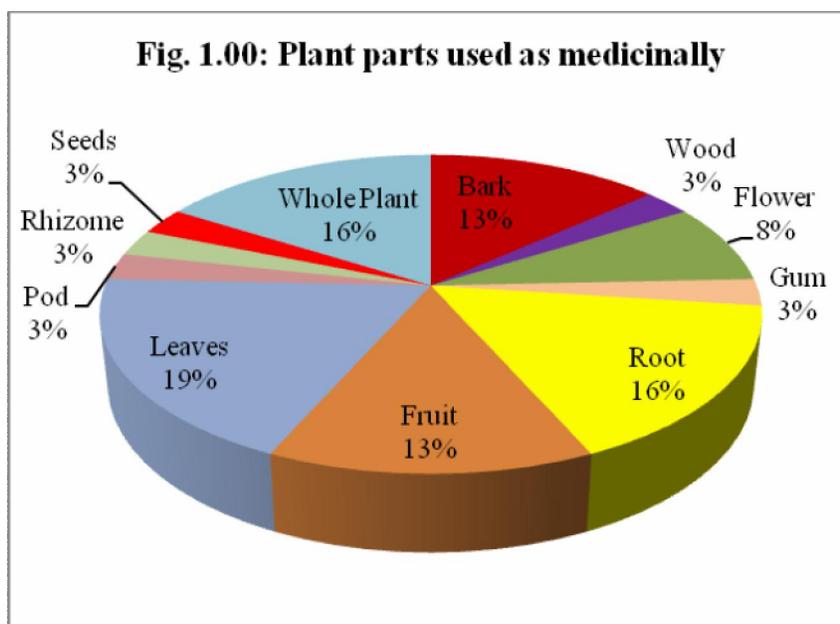
Ø ***Zingiber capitatum* Roxb.**

Family: Zingiberaceae; Common Name: Ban Haldi;
Vegetation Type: Herb; Plant parts: Roots and
Rhizome; Constituents: Alkaloids; Life form:
Geophyte.

Use: Antiseptic and used in skin care.

5. Discussion

Based on extensive survey, frequent field visit and interviews it was found that nearly 29 plants species belonging to 22 families, 26 genera, and 29 species are being used by people to care various diseases. Of these leaves in 19% cases, roots and whole plants were used in 16% cases, fruits and bark 13% cases (Fig. 1.00) were used. Based on life form 17 phanerophytes, 5 chamaephytes, 4 therophytes, 2 hemicryptophytes and 1 therophytes were recorded. Most of the species identified as medicinal plants are trees in comparison to herbs and shrubs. Bargali *et al.* (2003) studied 22 medicinal plant species in Jagdalpur district of Chhattisgarh. Chhetri *et al.* (2005) reported that the tribal people of Sikkim and Darjeeling Himalayan region in India utilized 37 species of plants belonging to 28 different families as antidiabetic agents. Dobhal *et al.* (2007) studies 29 species of medicinal plants distributed in 28 genera and 20 families. Vijayan *et al.* (2004) reported different parts of 18 medicinal plants belonging to 14 different families used in the traditional system of medicine collected from Nilgiris were tested for their antiviral activity.



6. Conclusion

The use of plants as medicinally is found in the Rig Veda. Information on the use of medicinal plants is found in books. Excessive use of allopathic medicine, peoples are unaware about the importance of plants as medicinally. Kapoor and Mitra (1979) estimated that about 540 plant species are in use in different formulations in India. Present time younger generation does not take interest in these plants and there is a possibility of losing this knowledge in future. Therefore, this study purposeful for making interest about the use of plants as medicinally likes local tribal and this study will also helpful for new researchers for finding other unknown uses of these plants.

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Correspondence Address

Dr. Bhasker Joshi
Kashipur, Uttarakhand (India). 244713. Phone: 91-9760358365, 91-9808971254
E-Mail: bhaskerjoshi@phd@yahoo.com / bhaskerjoshi@phd@in.com

References

- [1] Bargali K. Leaf survival in relation to environmental stress, leaf and plant traits among *Quercus leucotrichophora* seedlings. *Journal of Environmental Biology* 1997; 18:383-390.
- [2] Bargali SS, Shrivastava SK, Joshi, VK, Bargali K. Some less known ethnomedicinal plants of Jagdalpur district of Chhattisgarh state. *The Botanica* 2003; 53:192-197.
- [3] Chauhan HS, Singh K, Patra DD. Studies on litter production, nutrient cycling and yield potential under (5-6 year old) poplar (*Populus deltoides*) and Eucalyptus interplanted with aromatic crops in Tarai region of Uttar Pradesh. *Journal of Medicinal and Aromatic Plant Sciences* 1997; 19:1034-1038.
- [4] Chhetri DR, Parajuli P, Subba, GC. Antidiabetic plants used by Sikkim and Darjeeling Himalayan tribes, India. *J. Ethnopharmacology* 2005; 99:199-202.
- [5] Chopra, K. Evaluation and pricing of non timber forest products: A study for Raipur district of Madhya Pradesh (India). *Paper presented at the 3rd conference of the International Society of Ecological Economics*, Costa Rica. 1994.
- [6] Chopra, R.N. Glossary of Indian Medicinal Plants. 1980.
- [7] Collet, H. *Flora Simlensis*. 3rd impression. 1971.
- [8] Dobhal P, Sawan S. Sharma N. Studies on medicinal plants of two villages of Chakrata forest division (Uttarakhand). *Annals of Forestry* 2007; 15(2):351-357.
- [9] Gupta, R.K. *Flora Nainitalensis*. Navayug Traders. New Delhi. 1968. 489.
- [10] Hebbar SS, Harsha VH, Shripathi V, Hegde GR. Ethnomedicines of Dharwad District in Karnataka, India-plants used in oral health care. *J. Ethnopharmacology* 2004; 94:261-266.
- [11] Hedberg I. Research on medicinal and poisonous plants of the Tropics: 9-15. *In past present and future in medicinal and poisonous plants of the Tropics* (ed) AJM Leewenberg. International Book Distributor, Dehradun, India. 1987.
- [12] Jamwel M, Kaul BL. Comparative morphology studies in three different populations in samples of Kalmegh (*Andrographis paniculata* Nees.). *Crop Improvement* 1997; 24:65-68.
- [13] Joshi B. The Magical Herb "Euphorbia hirta L." An Important Traditional Therapeutic Herb for Wart Disease among the Vangujjars of Forest near Kashipur, Uttarakhand. *New York Science Journal* 2011; 4(2):96-97.
- [14] Kala CP. Ethnomedicinal botany of the Apatani in the eastern Himalayan region in India. *J. Ethnobiol. and Ethnomedicine* 2005; 1:11.
- [15] Kapoor SL, Mitra R. *Herbal drugs in India Pharmaceutical Industry*. NBRI, Lucknow, India. 1979.
- [16] Karikanthimath VS, Mulge R, Hosamani MM. Evaluation of elite cardamom growth parameter in clonal nursery. *Crop Research* 1997; 4:283-288.
- [17] Manian K, Gopalkrishnan. Physiological basis for the ecological performance of *Eucalyptus globules* Labill: nutritional stress, growth performance and oil yield. *Indian Forester* 1997; 123:1188-1196.
- [18] Maruthi KR, Krishna V, Manjunatha BK, Nagaraja VP. Traditional medicinal plants of Davangere district, Karnataka with reference to cure skin diseases. *Environment and Ecology* 2000; 18:441-446.
- [19] Natrajan B, Paulsen BS. Ehnopharmacological study from Thane district Maharashtra India; Traditional knowledge compared with modern biological science. *Pharmaceutical Biology* 2000; 38:139-151.

- [20] Osmaston AE. *A Forest Flora for Kumaun*. International Book Distributors, Dehradun, India. 1926.
- [21] Pandey V, Sharma JR, Nagri AA, Sharma A. Effect of soil moisture status on economic performance and divergence in *Cymbopogon spe*. *Journal of Medicinal and Aromatic Plant Sciences* 1998; 20:388-393.
- [22] Raizada MB. *Flora of Mussoorie*. Bishen Singh & Mahendra Pal Singh, Dehradun. 1978. 645.
- [23] Samvastar S, Diwanji VB. Plant sources for the treatment of jaundice in the tribals of western Madhya Pradesh of India. *J. Ethnopharmacology* 2000; 73:313-316.
- [24] Sangai SK. Growth performance of *Glossecardia bosvallea* (Asteraceae), a wild medicinal plant in relation to density, interspecific and intraspecific competition. *Flora and Fauna* 1995; 1:49-50.
- [25] Semwal DP, Saradhi PP, Kala CP, Sajwan BS. Medicinal plants used by local Vaidyas in Ukhimath block, Uttrakhand. *Indian Journal of Traditional Knowledge* 2010; 9(3):480-485.
- [26] Shylaja MR, Sankar AM, Nair GS, Mercy KA. Response of *Catharanthus roseus* L. to nitrogen, phosphorus and potassium fertilization. *Indian Cocoa, Arecanut and Spices Journal* 1996; 20:83-88.
- [27] Singh M, Singh CP. Growth and yield response of lemon grass (*Cymbopogon flexuosus*) to nitrogen. *Journal of Medicinal and Aromatic Plant Sciences* 1998; 20:383-385.
- [28] Ved Prakash. Indian medicinal plants-current status-I. *Ethnobotany* 1998; 10:112-121.
- [29] Vijayan P, Raghu C, Ashok G, Dhanaraj SA, Suresh B. Antiviral activity of medicinal plants of Nilgiris. *Indian J. Med. Res.* 2004; 120:24-29.

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