

Diversity of Antipyretic plants in Mizoram, Northeast India

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Abstract: A study of antipyretic plants was made in the state of Mizoram. After the study a total of 25 families were identified from 35 species. It also provides information about the diversity of antipyretic plants in the state. Conservation of antipyretic plants is essential for the future.

Keywords: Diversity, Antipyretic, Plants, Mizoram, Northeast India.

1. Introduction

Fever occurs due to the infection by virus, bacteria, protozoa and other microorganism that produce pyrogen. These pyrogen act on WBC which in turn produce endogenous toxins, they act on the anterior hypothalamus and the body temperature is elevated above 99° F causing fever (Chatterjee 1973). Fever leads to the disturbance in human physiology (Axelrod and Diringer, 2008) metabolism, increase blood pressure, pulse rate, cardiac output, respiration, liver cell damage, cold, cough in our body.

Healthcare and traditional system of medicine are used throughout the world and from centuries have been the original source for most of the drugs (Maurya and Srivastava, 2011). World health organization(WHO) has estimated more than 4000 million people of the world dependent on traditional medicines (Farnsworth *et al.*, 1985). India has centuries old rich heritage of medicinal plant due to diversity in environment for curing human illness. Mizoram (extended between latitude 21° 58'–24° 35' N and 92° 15' to 93° 29' E longitude) is a state in Northeast India and a part of Indo-Burma hotspot of the world. The unique position in the region rich plant diversity due to mountain terrain, altitudinal variation, topographical features, soil characteristics, climatic factors favours the luxurious growth of plants.

Herbal antipyretic plants used from time immemorial and are favoured over the chemical ones for their compatibility to the human physiological system, easy availability, rich knowledge about the traditional healing system (Sharma *et al.*, 2010). The antipyretic plants are used to eliminate fever (Chettri, 2009) and due to various reasons people are going back to herbal medicine (Graze *et al.*, 2011).

Less attention has been given by the ethnobotanists for exploring the ethnomedicinal diversity of antipyretic plants so this study was done to explore about the antipyretic plants in the region.

2. Material and Methods

The study area confined to the state of Mizoram, Northeast India and the region is inhabited by different ethnic groups. Regular field trips to different areas of the state was conducted between December, 2013 to January, 2014 covering all seasons and antipyretic plants were collected

actively used by the local people. The information on the ethnobotanical uses was gathered from ethnic groups and recorded from the local healers, village old man, women using semi-structured questionnaires. The collected plant with local name were identified with the help of flora (Hooker, 1975 and Kanjilal *et al.*, 1984) and standard literatures.

3. Result and Discussion

The study depict the great diversity of antipyretic plants in the region found a total of 35 plant species, distributed among 25 families were identified and documented. The dominant family with the largest number of three species belonged to Asteraceae, Piperaceae followed by Acanthaceae, Meliaceae, Malvaceae, Rutaceae, Verbenaceae and Zingiberaceae with two species each Apiaceae, Apocyanaceae, Cucurbitaceae, Cyperaceae, Labiateae, Liliaceae, Magnoliaceae, Menispermaceae, Mimosaceae, Myrsinaceae, Musaceae, Plantaginaceae, Rosaceae, Rubiaceae, Saxifragraceae, Solanaceae, Umbelliferae with one species each (Table 1, Figure 1). The status on the habit of the antipyretic plants depict the dominant species herbs followed by trees, shrubs and climbers as such herb (12 species) 34%, tree (11 species) 32%, shrub (6 species) 17% and climber (6 species) 17% (Table 1, Figure 2).

The study on the plant part(s) used for the procurement of the ingredient show that the most preferred form of use is leaf (11 species) 28%, followed by root (8 species) 20%, fruit (5 species) 13%, whole plant (4 species) 10%, bark (4 species) 10%, stem (2 species) 5%, rhizome (2 species) 5%, bulb (1 species) 3%, flower (1 species) 3% and seed (1 species) 3% (Table 1, Figure 3). The ethnobotanical usage that is method of formulation of crude drug preparation is concerned show that the most preferred form of use is decoction (23 species) 64%, fresh (5 species) 14%, infusion (3 species) 8%, powder (3 species) 8% and paste (2 species) 6% (Table 1, Figure 4).

4. Conclusion

The study revealed that the ethnic peoples of study area used traditional medicinal plants for treatment of fever. The world is witnessing the resurgence of herbal system of medicine. The ethnomedicinal plants having antipyretic activity should be subjected to clinical investigation Proper regulatory mechanism is recommended to ensure safety and efficacy of

herbal product. The herbal heritage must be protected for future which may ultimately lead to the development of new molecule for human health as well as national economy. There is an urgent need to formulate suitable strategies for conservation of these ethnobotanical heritage by domestication and cultivation.

5. Acknowledgement

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Table 1: Antipyretic plants with local name, family, habit, part(s) used and ethnobotanical usage

Botanical name	Local name	Family	Habit	Part(s) used	Ethnobotanical usage
<i>Adhatoda vasica</i> Nees	Kawldawi	Acanthaceae	Shrub	Leaf/root	Decoction
<i>Ageratum conyzoides</i> L.	Vailenhlo	Asteraceae	Herb	Stem	Decoction
<i>Allium sativum</i> L.	Purunvar	Liliaceae	Herb	Bulb	Fresh
<i>Alstonia scholaris</i> R.B.	Thuamriat	Apocyanaceae	Tree	Bark	Infusion
<i>Andrographis paniculata</i> Nees.	Hnakhuapui	Acanthaceae	Herb	Whole plant	Decoction
<i>Ardisia colorata</i> Roxb.	Hnuthlum	Myrsinaceae	Tree	Bark	Decoction
<i>Artemisia indica</i> Wild.	Sai	Asteraceae	Shrub	Leaf	Paste
<i>Azadirchta indica</i> A.Juss.	Nimthing	Meliaceae	Tree	Leaf	Decoction
<i>Bergenia ligulata</i> (Wall) Engl.	Pandamdawi	Saxifragaceae	Herb	Root	Decoction
<i>Centella asiatica</i> (L.) Urban	Hnabial	Umbelliferae	Herb	Whole plant	Decoction
<i>Chukrassia tabulstris</i> A.Juss	Zawngtei	Meliaceae	Tree	Fruit	Decoction
<i>Citrus sinensis</i> L.	Serthlum	Rutaceae	Tree	Leaf	Decoction
<i>Clerodendron serratum</i> Spreng	Phuhnamsreh	Verbenaceae	Shrub	Root	Decoction
<i>Cucurma longa</i> L.	Aieng	Zingiberaceae	Herb	Rhizome	Decoction
<i>Gossypium arboreum</i> L.	La	Malvaceae	Shrub	Root	Decoction
<i>Hedyotis scadeus</i> Roxb.	Laikingtuibur	Rubiaceae	Shrub	Root/Leaf	Decoction
<i>Hydrocotyle javonica</i> Thub.	Hlovaidawr	Apiaceae	Herb	Whole plant	Decoction
<i>Kyllinge monocephala</i> Roxb.	Artelubawk	Cyperaceae	Herb	Root	Decoction
<i>Michella champaca</i> L.	Nghau	Magnoliaceae	Tree	Flower/Fruit	Decoction
<i>Mikania micrantha</i> Kunth.	Japanhlo	Asteraceae	Climber	Leaf	Decoction
<i>Momordica charantia</i> L.	Changkha	Cucurbitaceae	Climber	Leaf	Fresh
<i>Musa superba</i> Roxb.	Tumbu	Musaceae	Tree	Fruit	Decoction
<i>Ocimum sanctum</i> L.	Lalram	Labiatae	Herb	Leaf	Fresh
<i>Parkia roxburghii</i> D.Don	Zawngtah	Mimosaceae	Tree	Root	Decoction
<i>Piper beetle</i> L.	Panruang	Piperaceae	Climber	Leaf	Fresh
<i>Piper longum</i> L.	Vokohuli	Piperaceae	Climber	Fruit	Infusion
<i>Piper nigrum</i> L.	Thingmarcha	Piperaceae	Climber	Fruit	Powder
<i>Plantago major</i> L.	Kelbaan	Plantaginaceae	Herb	Whole plant	Decoction
<i>Prunus cerasoides</i> D.Don	Tlaizawng	Rosaceae	Tree	Bark	Decoction
<i>Solanum violaceum</i> L.	Samtawk	Solanaceae	Herb	Root	Decoction
<i>Tinospora sinensis</i> (Lour.) Merr.	Vankaihrol	Menispermaceae	Climber	Stem	Infusion
<i>Urena lobata</i> L.	Schnnep	Malvaceae	Shrub	Leaf	Decoction
<i>Vitex peduncularis</i> Wall ex Schauer	Thingkikawila	Verbenaceae	Tree	Leaf/Bark	Paste/Powder
<i>Zanthoxylum armatum</i> Roxb.	Arhikveh	Rutaceae	Tree	Seed	Powder
<i>Zingiber officinale</i> Rosc.	Sawhthing	Zingiberaceae	Herb	Rhizome	Fresh

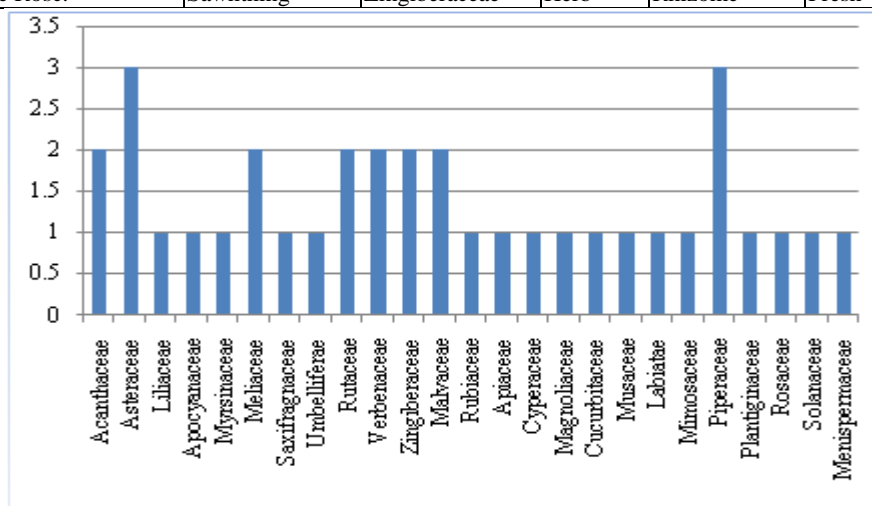


Figure 1: Family wise distribution of plants

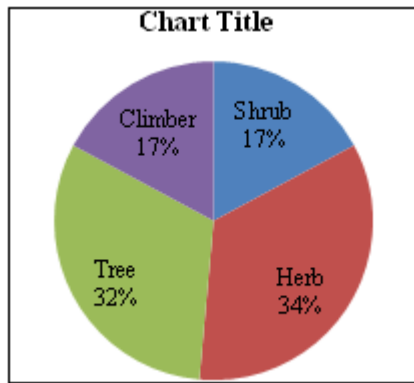


Figure 2: Habit of the plants with percentage

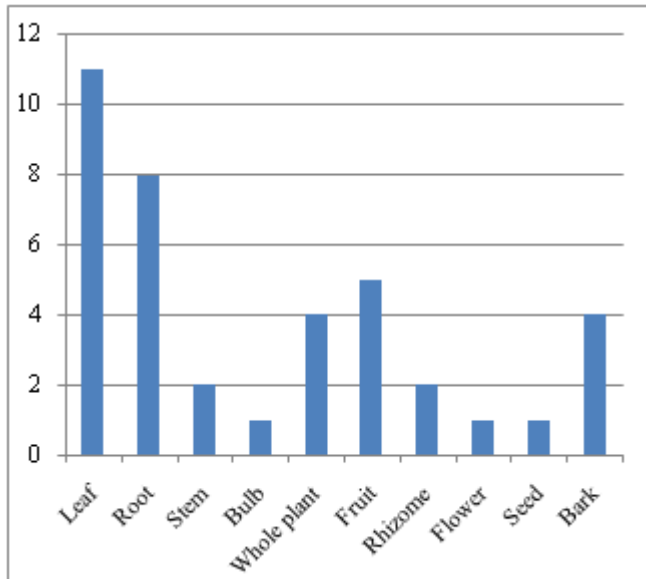


Figure 3: Number of different plant parts used

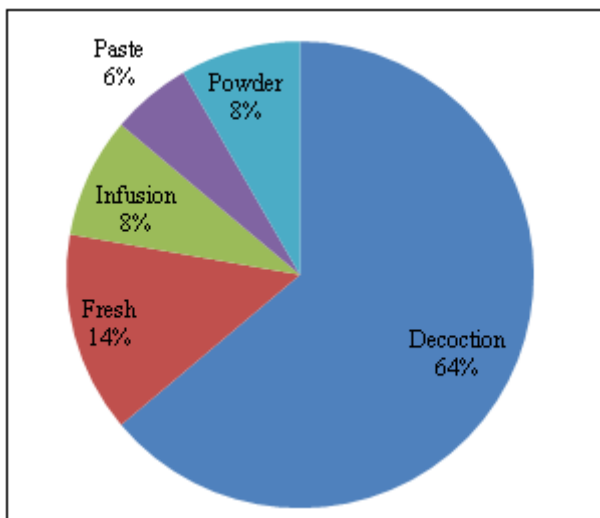


Figure 4: Ethnobotanical usage with percentage

- [3] Chettri, D. R. Medicinal plants used as antipyretic agents by the traditional healers of Darjeeling Himalaya. *Indian Journal of Traditional Knowledge*. 2009, 3 (3):271 – 274.
- [4] Farnsworth, N. R., Akerete, U., Binjal, A.S., Soejarto, D. D and Guo, Z. Medicinal Plant in therapy. *Bull. World Health Organization* 1985, 63(6):965-981.
- [5] Graz, B., Kitua, A. U and Malebo, H. M. To what extent can traditional medicine contribute a complementary or alternative solution to malaria control programme. *Malaria* 2011, 10 (Suppl.) S6 <http://www.malariajournal.com/content/10/S1/S6>.
- [6] Hooker, J. D. The flora of British India. Vol.1 – VII, L. Reeve, Co. London. UK 1975.
- [7] Kanjilal, U. N., Kanjilal, P. C and Das, A. Flora of Assam. Vol.1-V Avon Book Company, Delhi.1982.
- [8] Maurya, U. and Srivastava, S. Traditional India Herbal Medicine used as antipyretic, antiulcer, antidiabetic and anticancer. *A Review International Journal of Research in Pharmacy and Chemistry*. 2011, 1 (4): 1152 – 1159.
- [9] Sharma, J. P., Srivastava, A., Thakur, S. P., Barpeta, P. K and Singh, S. Herbal medicine as antipyretic: A comprehensive review. *International Journal of Pharmacy and Lifesciences*. 2010, 1(1): 18 -22.

Author Profile



Ramachandra Laha received his PhD degree from Mizoram University in Forestry in 2003. Presently, he is Professor and Dean, School of Life Science, Mizoram University. His research interests are Biodiversity, Regeneration, Molecular Biology.

References

- [1] Axelrod, Y. K. and Diringer, M. N. Temperature management in acute neurological disorders. *Neurologic Clinics*. 2008, 26 (2): 585-603.
- [2] Chattarjee, C. C. Human physiology Vol. II, New Central Book Agency, Kolkata, India. 1973.