



New Record of Medicinal Plants of the Sikkim Himalaya

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Abstract

The inventorization of medicinal plants of Sikkim Himalaya conducted and published the database of the Sikkim by SMPB in collaboration with FRLHT however there are some medicinal species available in the Sikkim Himalaya, which are yet not listed. Studying the herbarium of FRLHT in Sikkim State Forest Herbarium, the new representative species of medicinal plants of Sikkim were found and documented as additional information.

The enumerated list of the medicinal plants of Sikkim contains twenty eight medicinal plants which are included for the updating of the database of the Medicinal and Aromatic Plants of Sikkim.

Keywords: Medicinal Plants, Sikkim Himalayas, SSFH.

Introduction

The Sikkim bestowed with rich biodiversity, situated in the Eastern Himalaya, is a part of hot biodiversity of the world. The inventorization of medicinal plants database of Sikkim was developed by the State Medicinal Plant Board, Sikkim in the collaboration with Foundation for Revitalisation of Local Health Traditions (FRLHT), Bangalore (Sureshchandra *et al.*, 2016). This publication contains the database of sixteen hundred eighty one medicinal and aromatic plants of Sikkim.

This study is focused on the new medicinal plants of Sikkim along with their uses, to update the database of Medicinal and Aromatic Plants of Sikkim. Being the Sikkim Himalayas in the lap of the Tibetan plateaus bounding across the north, west and east districts, the people of the region so far adopted with the harassed climate, thus, the region has the different traditional medicine practices bearing the good medicinal plants' information. The traditional medicinal practices of Sikkim are unique, therefore, the impact of prevalent Traditional medicine and ethic practices cannot be ignored (Pradhan, 2020).

Thus, this paper reveals the newly recorded medicinal plants of Sikkim along with their distributions and medicinal uses.

Materials and Method

The representative specimens of Sikkim State Forest Herbarium (SSFH) studied specially focusing on the collection of FRLHT collection.

The specimens were examined in details with the taxonomic characters and identified correctly referring the different literatures (Hooker, J. D. 1872-1897; Hara, 1966, 1971).

The protologue of the specimens with the status and localities were included and documented.

Results

Enumerated representative specimens representing the east, west and north districts of Sikkim, having the medicinal potencies, studied and documented which were as under: -

(Abbreviations: Acc. No: Accession Number; Coll: Collection; F: Family; Loc. : Locality; U: Uses)

1. *Acer thomsonii* Miquel, Arch. Neerl. 2: 470. 1867; Coll no. 103948; Coll Date: 27.05.2005; Loc.: Rambongla ; F: Aceraceae; Acc. No : SSFH SK003222; U: antibacterial activity (Sharma, 2013).
2. *Boehmeria macrophylla* var. *rotundifolia* (D. Don) W. T. Wang, Fl. Reipubl. Popularis Sin. 23(2): 337. 1995; Coll.: 104003; Loc. : Dikchu Road, Rigdah; F: Urticaceae; Acc. No.: SSFH SK003190. U: Insecticide, dermatitis. (Muhammed, 2010).
3. *Calceolaria mexicana* Benth., ; in DC., Prodr. 10: 205 (1846); Coll.: 10400; Coll Date:1.6.2005; Loc. : Nathula F: Scrophulariaceae; Acc. No.: SSFH SK003171 U: Folkmedicine (Cussy Poma et al ., 2017).
4. *Catunaregam spinosa* (Thunberg) Tirvengadam, Bull. Mus. Natl. Hist. Nat., sér. 3, Bot. 35: 13. 1978; Coll.: 103961; Coll Date: 29.05.2005; Loc. : F:Rubiaceae; Acc. No.: SSFH SK003211. U: Folk medicine (Patil and Khan, 2017).
5. *Daphniphyllum himalense* (Benth) Müller Argoviensis in A. Candolle, Prodr. 16(1): 4. 1869; Coll. 104025; dated 3.6.2005; Locality: Rumtek; F: Daphniphyllaceae; Acc. SSFH SK003223; U: Folk medicine (<http://temperate.theferns.info>).
6. *Debregeasia wallichiana* (Weddell) Weddell, Monogr. Urtic. 464. 1857; Coll.: 104022; Coll. Date: 3.6.2005; Loc. : Gangtok; F: Urticaceae Acc. No.: SSFH SK00 3218 U: Edible, fruit for wine, folk medicine.
7. *Dichrocephala integrifolia* (Linnaeus f.) Kuntze, Revis. Gen. Pl. 1: 333. 1891; Coll 104019; Coll Date: 31.05.2005; F: Asteraceae; R: Herbs, heads pale, greenish brown; Acc. No SSFH SK003226; U: Migraine/toothache (Agbor and Naidoo, 2015).
8. *Edgeworthia gardneri* Meisner, Denkschr. Regensburg. Bot. Ges. 3: 280. 1841; Coll. : 104015; Coll Date: 2.6.2005; Loc. :Pangthang; F: Thymaeliaceae; Acc. No.: SSFH SK003178. U: Metabolic disease, Traditional Tibetan Medicine (Hao *et al.*, 2018).
9. *Ficus neriifolia* Smith in Rees, Cycl. 14: *Ficus* no. 21. 1810; Coll.: 103980; Coll Date: 31.5.2005; Loc. : Pangthang; F: Moraceae; Acc. No.: SSFH SK003200 . U: folk remedy for conjunctivitis and boils (Kunwar *et al.* 2006).
10. *Fraxinus floribunda* Wall., ; in Roxb., Fl. Ind. 1: 150 (1820); Coll. 104026; Coll Date: 3.6.2005; Loc. : Rumtek; Acc. No.: SSFH SK00 3208. U : antioxidant (Subba and Mandal , 2015).
11. *Hypericum hookerianum* Wight & Arnott, Prodr. Fl. Ind. Orient. 1: 99. 1834; Loc.: Gangtok; F: Hypericaceae; Acc. No.: SSFH SK003228. U: mild to moderate depression and also as a topical

- remedy for infected wounds and inflammatory skin diseases (Asgarpanah, 2012).
12. *Ilex excelsa* (Wallich) Wallich, Numer. List. no. 4328. 1831; Coll.: 104033; Coll Date: 2.6.2005; Loc. :Mangan; F: Aquifoliaceae; Acc. No.: SSFH SK003207; U: antimicrobial activity from seed oil.
 13. *Impatiens parviflora* Candolle, Prodr. 1: 687. 1824; Coll.: 104000; Coll Date: 1.6.2005; Loc. : Lagyap R.F.; F: Balsaminaceae; Acc. No.: SSFH SK003170. U: Folk medicine (Singh et al., 2017).
 14. *Lagerstroemia indica* Linnaeus, Sp. Pl., ed. 2. 1: 734. 1762; Coll.: 103967; Coll Date: 30.5.2005; Loc. : Rangpo; F: Lythraceae; Acc. No.: SSFH SK003216; U: anti-inflammatory, analgesic, antipyretic, antioxidant, anticancer, antimicrobial, anti-Alzheimer's, antidiabetic, hepatoprotective (Ali, 2019).
 15. *Maesa indica* (Roxburgh) A. de Candolle, Trans. Linn. Soc. London, Bot. 17: 134. 1834; Coll. : 103946; Coll Date: 27. 05.2005; Loc. : Rabongla; F: Myrsinaceae; Acc. No.: SSFH SK003189. U: treatment of blood purification and anthelmintic ailments (Shanmugam *et al.*, 2016).
 16. *Maesa ramentacea* (Roxburgh) A. de Candolle, Prodr. 8: 77. 1844; Coll.: 103992; Coll Date: 1.6.2005; Loc. : Lagyap, R.F; F: *Myrsinaceae*; Acc. No.: SSFH SK003177.; U: Ethnomedicine (Ramhan *et al.*, 2005).
 17. *Mangifera sylvatica* Roxburgh, Fl. Ind. 2: 438. 1824; Coll.: 104032; Coll Date: 2.6.2005; Loc. : Dikchu Road; F: Anacardiaceae; Acc. No.: SSFH SK003210. U: Folk Medicine (Zhang *et al.*, 2020).
 18. *Oenanthe thomsonii* C. B. Clarke in J. D. Hooker, Fl. Brit. India. 2: 697. 1879; Coll.: 104016; Coll. Date: 31.5.2006; Loc. :Pangthang; F: Apiaceae; Acc. No.: SSFH SK00 3217; U: Traditional Medicinal Plant (Li and Li, 2019).
 19. *Ostodes paniculata* Blume, Bijdr. 620. 1826; Coll.: 103943; Coll Date: 26.05.2005; Loc.: Reshi; F: Euphorbiaceae; Acc. No.: SSFH SK003199; U: Folk medicine (Lalramnghinglova, 2016).
 20. *Photinia notoniana* Wight & Arn., ; Prodr. Fl. Ind. Or. 1: 302 (1834); Coll.: 103979; Coll Date: 31.5.2005; Loc. : Pangthang; F: Rosaceae; Acc. No.: SSFH SK003207 U : Medicine (<http://gbpihed.gov.in>).
 21. *Phyllanthus glaucus* Wallich ex Müller Argoviensis, Linnaea. 32: 14. 1863; Coll: 103951; Coll Date: 28.05.2005; Loc: Yukson; F: Euphorbiaceae; Acc. No. SSFH SK003218. U: Folk medicine (<https://www.ncbi.nlm.nih.gov/articles/PMC4854999>)
 22. *Rhododendron maddenii*, J. D. Hooker, *Rhododendr. Sikkim-Himalaya*. 2: t. 18. 1851; Coll.: 104013; Coll Date: 2.6.2005; Loc. : Chungthang; F: Ericaceae; Acc. No.: SSFH SK003179.
 23. *Sanicula elata* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 183. 1825; Coll.: 103974; Coll. Date: 31.5.2005; Loc. : Pangthang; F: Apiaceae; Acc. No.: SSFH SK003194 U: Folk medicine (Bekalo *et al.*, 2009).
 24. *Sapium baccatum* Roxb., ; Fl. Ind. ed. 2, 3: 694 (1832); Coll. Coll Date: Loc. : F: Acc. No.: SSFH SK003183. U: Antifungal (Ahmed *et al.*, 2009).

25. *Symplocos ramosissima* Wallich ex G. Don, Gen. Hist. 4: 3. 1837; Coll.: 103978; Coll Date: 31.5.2005; Loc. : Pangthang; F: Symplocaceae; Acc. No.: SSFH SK003195
U: Ethnomedicine (Acharya, 2009)
26. *Tanacetum cinerariifolium* (Treviranus) Schultz Bipontinus, Tanaceteeen. 58. 1844; Coll. 103982; Coll Date: 31.5.2005; F: Asteraceae; Acc. No.: SSFH SK003176; U: Traditional Medicine (Ahrajbian *et al.*, 2021).
27. *Toricellia tiliifolia* de Candolle, Prodr. 4: 257. 1830; Coll. : 103949; Loc.: Yuksom; F: Toricelliaceae; Acc. No. SSFH SK003221; U: Ethnomedicine (Xiong *et al.*, 2020).
28. *Viola serpyllifolia* Humb. & Bonpl. ex Willd., Syst. Veg., ed. 15 bis [Roemer & Schultes] 5: 391. 1819; Coll.: 103981; Coll Date: 31.5.2005; Loc.: Pangthang; F:Violaceae; Acc. No.: SSFH SK003175
U: Folk medicine, ear ache, cough (Foster and Duke, 2014).

Discussion

The information regarding the uses of the new medicinal plants reports was studied and found several uses for the different ailments such as *Dichrocephala integrifolia* (Linnaeus f.) Kuntze for Migraine/toothache (Agbor and Naidoo, 2015), *Daphniphyllum himalense* (Benth) Müller for folk medicine (<http://temperate.theferns.info>), *Acer thomsonii* Miquel for antibacterial activity (Sharma, 2013), *Toricellia tiliifolia* de Candolle for ethnomedicine (Xiong *et al.*, 2020), *Phyllanthus glaucus* Wallich ex Müller for folk medicine (<https://www.ncbi.nlm.nih.gov/articles/PMC4854999>), *Debregeasia wallichiana* (Weddell) Weddell for folkmedicine, *Oenanthe thomsonii* C. B. Clarke for traditional medicinal plant (Li and Li, 2019), *Lagerstroemia indica* Linnaeus for anti-inflammatory, analgesic, antipyretic, antioxidant, anticancer, antimicrobial, anti-Alzheimer's, antidiabetic, hepatoprotective (Ali, 2019), *Catunaregam spinosa* (Thunberg) Tirvengadam for folk medicine (Patil and Khan, 2017), *Mangifera sylvatica* Roxburgh for folk medicine (Zhang *et al.*, 2020), *Ilex excelsa* (Wallich) Wallich for folk medicine, *Hypericum hookerianum* Wight & Arnott for mild to moderate depression and also as a topical remedy for infected wounds and inflammatory skin diseases (Asgarpanah, 2012), *Boehmeria macrophylla* var. *rotundifolia* (D. Don) W. T. Wang; for insecticide, dermatitis (Muhammed, 2010), *Maesa indica* (Roxburgh) A. de Candolle for treating blood purification and anthelmintic ailments (Shanmugam *et al.*, 2016), *Sapium baccatum* Roxb. as antifungal properties (Ahmed *et al.*, 2009), *Fraxinus floribunda* Wall. as antioxidant (Subba and Mandal, 2015), *Rhododendron maddenii*, J. D. Hooker for folk medicine, *Edgeworthia gardneri* Meisner for metabolic diseases and traditional Tibetan Medicine (Hao *et al.*, 2018), *Maesa ramentacea* (Roxburgh) A. de Candolle for ethnomedicine (Ramhan *et al.*, 2005), *Tanacetum cinerariifolium* (Treviranus) Schultz for the traditional Medicine (Ahrajbian *et al.*, 2021), *Viola serpyllifolia* Humb. & Bonpl. ex Willd. for ear ache and cough. (Foster and Duke, 2014), *Calceolaria mexicana* Benth. for folk medicine (Cussy-Poma *et al.*, 2017), *Impatiens parviflora* Candolle for folk medicine (Singh *et al.*, 2017), *Photinia notoniana* Wight & Arn., for medicine (<http://gbpihed.gov.in>), *Ficus*

nerifolia Smith for conjunctivitis and boils (Kunwar *et al.*, 2006), *Ostodes paniculata* Blume for folk medicine (Lalramnghinglova, 2016), *Symplocos ramosissima* Wallich ex G. Don as ethnomedicine (Acharya, 2009) and *Sanicula elata* Buchanan-Hamilton ex D. Don as folk medicine (Bekalo *et al.*, 2009).

Usually, these plants are harvested in Sikkim Himalaya either for the individual uses or as the ingredients of Traditional Medicine. During the study, it was learnt that the people of the region were known with the medicinal uses of these plants since time immemorial but there must be proper regulation for the plant uses. As the mountainous ecology is very fragile and bestowed several species in association, so, the unscrupulous collection of medicinal plants may be checked before the permanent damage (Cuomu, 2013). Thus, the sustainable regulation of medicinal plants is necessary for the sustainable approach.

Eventually, the finding of twenty eight medicinal plants of Sikkim enrich the database of Sikkim which can fetch the market for the economic revival of the society developing the approaches of sustainable collection and awareness on the resources' productivity for the furtherance, along with the policy driven approach of regulatory mechanism and scientific framework.

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