



UTILISATION AND DISTRIBUTION OF MEMBERS OF MENTHINAE (LAMIACEAE) IN THREE DISTRICTS OF JAMMU PROVINCE (J&K)

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ABSTRACT

Jammu province of J&K state exhibits marked altitudinal, climatic and ecological variations. This variability is responsible for the rich biodiversity in the region which supports many aromatic species of subtribe Menthinae (tribe Mentheae: subfamily Nepetoideae: family Lamiaceae) viz. *Mentha arvensis*, *Mentha longifolia*, *Mentha spicata*, *Mentha piperita*, *Origanum vulgare*, *Thymus serpyllum* and *Micromeria biflora*. Of these, *M. spicata* and *M. piperita* are the cultivated forms, whereas the rest are wild types. Regarding the distribution of members of Menthinae in Jammu, Udhampur and Kathua districts of Jammu Province, fragmentary information is on the record. In order to locate present taxa in these less explored areas, surveys were conducted during 2016-17 and data were gathered. Besides, information regarding their utilisation was obtained from the local inhabitants. Present communication entailing data on distribution and utility of seven aromatic taxa is likely to instigate local people for cultivating these on large scale for commercial purpose.

KEYWORDS: *Lamiaceae*, *Menthinae*, *Distribution*, *Utility*, *Jammu Province*.



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Received on: 03-06-2017

Revised and Accepted on: 28-09-2017

DOI: <http://dx.doi.org/10.22376/ijpbs.2017.8.4.b365-369>



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INTRODUCTION

The North-West Himalaya, of which Jammu province of Jammu and Kashmir state forms a prominent part, exhibits wide altitudinal (300-2401 masl), climatic and ecological variations. This variability has contributed to rich biodiversity of Jammu region¹ which supports many medicinally important taxa of family Lamiaceae, particularly subtribe Menthinae (tribe mentheae; subfamily Nepetoideae). *Mentha arvensis* L., *M. longifolia* (L.) Huds., *M. spicata* L., *M. piperita* L., *Origanum vulgare* L., *Thymus serpyllum* L. and *Micromeria biflora* (Buch.-Ham. ex D. Don) Benth. are the members of Menthinae reported from this region¹⁻⁵ Using these members for medicinal and/or culinary purpose is the age old culture of the local inhabitants. Regarding the exact locations of these species in Jammu, Udhampur and Kathua districts of Jammu Province, scattered information is available²⁻⁴. The present communication highlights the areas of occurrence of members of Menthinae in the three districts and their usage by local people for different purposes

MATERIALS AND METHODS

Frequent collection trips were made to different areas of three districts of Jammu province during 2016-2017 to locate members of subtribe Menthinae. Before arranging various trips, brief information on the occurrence of potential Menthinae members was gathered through personal contacts with the local inhabitants (often post

graduate students, employees and gardeners of the University of Jammu) and after surveying the literature available. . The altitudes, latitudes and longitudes of different sites supporting these taxa were determined using altimeter of Garmin make (given in parenthesis along each location in text) Wild and cultivated members were photographed and one/two specimens of these were collected planted in the Botanical garden of University of Jammu. Voucher specimens prepared of seven taxa namely, *Mentha longifolia*, *Mentha arvensis*, *Mentha spicata*, *Mentha piperita*, *Origanum vulgare*, *Thymus serpyllum* and *Micromeria biflora* vide numbers 15797, 15798, 15799, 15803, 15802, 15801 and 15800 were deposited in the Herbarium of University of Jammu. Information on habitat, vernacular names, use and methods of utilisation of present species was gathered through repeated enquires to local people, both male and female in the age groups of 22-55 years, during frequent field trips. Different populations of each species were studied for morphological aspects during blooming period and identified using Flora of Jammu and plants of neighborhood², Flora of British India³ and Flora of Udhampur⁴

RESULTS AND DISCUSSION

Jammu Province of J&K state is represented by seven species of subtribe Menthinae viz. *Mentha arvensis*, *Mentha longifolia*, *Mentha spicata*, *Mentha piperita*, *Origanum vulgare*, *Thymus serpyllum* and *Micromeria biflora*. Local names, wild versus cultivated statuses and flowering period of these taxa are given in table 1.

Table 1
Status and flowering period of seven members of subtribe Menthinae.

Botanical Name	Local name	Status	Flowering period
<i>Mentha arvensis</i>	Ban-pudina	Wild	August-September
<i>Mentha longifolia</i>	Horse-mint	Wild	July-September
<i>Mentha spicata</i>	Spear-mint	Cultivated	August-September
<i>Mentha piperita</i>	Pepper-mint	Cultivated	July-September
<i>Origanum vulgare</i>	Jangli-tulsi	Wild	June-September
<i>Thymus serpyllum</i>	Creeping-thyme	Wild	May-July
<i>Micromeria biflora</i>	Ban-ajwain	Wild	July-September



Figure 1
a-f. Plants of *Mentha piperita*, *Mentha arvensis*, *Mentha longifolia*, *Mentha spicata*, *Thymus serpyllum* and *Micromeria biflora* growing in the wild.

As evident from table 1, of the four water-loving species of genus *Mentha*, *M. arvensis* and *M. longifolia* are wild forms and *M. spicata* and *M. piperita* are the cultivated ones. Plants of *M. arvensis* (Fig. 1a) are perennial, erect (9-70 cm), bearing hairy, serrated oppositely placed leaves (2-6×1-2 cm) and white to pink flowers arranged in spikes. Bhellum⁵ in 1997 has reported *M. arvensis* from Batote and Bhaderwah. Presently, this species was located at Banechak in Bishnah and Botanical garden of Jammu University (305masl, N 32° 43.240' E 074° 51.990') in Jammu district. Leaf extracts of this species, known to have anti-microbial components⁶, are used by locals for seasoning dishes and to treat liver and spleen diseases, indigestion, asthma and jaundice. *M. longifolia* (Fig. 1b), the perennial species with long leaves, is commonly found in marshes, riversides and canal banks. Its erect to creeping stem (35-120 cm) supports oblong leaves (5.5-10.5×1.4-3.2 cm), having dorsal green and ventral white surface. White to purple flowers of this species are arranged in verticillasters. Populations of *M. longifolia* have been reported so far from canal banks of Jhajjar in Jammu district², Mashka, Chambore, Gusalta da Nal in Kathua district⁷⁻⁸, Patnitop and Katra in Udhampur district⁹⁻¹⁰, Paneju at Bhaderwah in Doda district¹¹ and Gabbar forest in Poonch district¹². Populations of this species have been noted presently at Botanical garden of Jammu University (305masl, N 32° 43.240' E 074° 51.991') Bishnah (292masl, N 32° 59.104' E 74° 83.56'), Lalyana, R.S Pura (332masl, N 32° 65.053' E 74° 83.382'), Talab Tillo (326masl, N 32° 76.012' E 74° 83.136'), Domana, Lower Muthi, Bawa-Da-Talab, Marh-Pariyal, Jaswan in Jammu district, Phalata, Omara, Ladan Power house in Udhampur district (751masl, N 32° 56.255' E 75° 09.501')

and Bani (1745masl, N 32° 46.251' E 75° 47.436') in Kathua district). Leaf decoctions of *M. longifolia*, because of having antimicrobial properties^{13,1} are used by local populations for treating fever, headache and digestive disorders. *M. spicata* (Fig. 1c) is a rhizomatous, perennial species, having erect square stem (32-110 cm). It supports leaves (6-10×1.7-3.2 cm) with serrated margins and white to pink flowers (2.7-3 mm long) arranged in spikes. Chander¹¹ in 2005 found this species near Bhella in Doda district. During current surveys, this species was located at Palli Morh, Bishnah (287masl, N 32° 59.381' E 74° 82.899'), Talab Tillo (291masl, N 32° 71.254' E 74° 82.743'), Botanical garden of Jammu University (304masl, N 32° 43.236', E 074° 51.991') and Bawa-Da-Talab in Jammu district. Both fresh and dried leaves of this species are used as spice various dishes and for preparing tea by locals. Medicinally, leaf extracts of this species are known to cure toothache, gastric disorders and muscular pain¹⁵⁴. *M. piperita* (Fig. 1d) is a rhizomatous, perennial species that has erect square stem, bearing dark green leaves (3.2-4.8- ×1-1.8 cm) with toothed margins. Its purple flowers (5-8 mm) with four lobed corollas are arranged in verticillasters. Because of pepper-mint leaves having cooling sensation, these are used for flavouring ice-creams, chewing gums, toothpastes, medicines and for seasoning dishes. Leaf decoctions of this species are effective against fever, appetite loss, dandruff, asthma, anxiety and acne¹⁵. Presently, plants of *M. piperita* have been located at Indian Institute of Integrative Medicine (303masl, N 32° 71.65' E 72° 83.2'), Jammu and Botanical garden of Jammu University (301masl, N 32° 43.279' E 074° 52.054). *Origanum vulgare*, is a perennial herb, growing from 20-80 cm. It bears oppositely arranged

leaves with toothed margins and produces spikes with pink to purple flowers. Previous reports indicated the existence of this species in Kathua district⁷, Katra, Patnitop and Mata Vaishno Devi forests in Udhampur district^{9,10} and Shahdara Sharief in Rajouri district¹². During present surveys, plants of this species have been found at Sanasar (1951masl, N 33° 04.697' E 075° 19.585') in Udhampur district. *O. vulgare* is in great demand these days because of its use in Italian cuisines like Pizza and Pasta. Oil extracted from its leaves is used for flavouring perfumes and food items. Besides, leaf decoctions are used for curing cold, fever, toothache, stomachache, body swellings, high blood pressure, heart diseases, cancer and as herbal tea¹⁶. *Thymus serpyllum* (Fig. 1e) and *Micromeria biflora* (Fig. 1f) inhabit moist and shady temperate regions at high altitudes (1951-2401 masl) along roadsides, hills, riversides and in rock crevices¹⁷. *T. serpyllum* is a prostrate undershrub (17-20 cm) with creeping stem which bears ovate leaves (5-8 mm long) and pink to purple flowers (4-5mm long) arranged in clusters on each spike. Creeping-thyme is reported to occur in Patnitop and Sanasar in Udhampur district⁹. Presently, this species has been found at Kud (1702masl, N 33° 05.912' E 75° 30.381'), Patnitop (1982masl N 33° 08.460' E 75° 32.547') and Sanasar (2401masl, N 33° 05.406' E 075° 16.068') in Udhampur district. Its strongly fragrant leaves help to cure fever, cold, cough, weak vision, menstrual, gastric and liver disorders, asthma and toothache. These also provide aromatic tea¹⁷. *Micromeria biflora* grows well in light and moist soil along rocks, riverbanks and roadsides. This species forms tufts of aromatic, glabrous, suberect stems bearing entire, ovate leaves (5-6 mm long, 3-4 mm broad) having thick margins. Pink to purple flowers (2-3

mm) are arranged in axillary whorls. It has been reported earlier from canal banks in Jammu, Nandni and Jhajjar in Jammu district², Chambore, Khaddi, Kardoh, Asso in Kathua district^{7,8}, Katra, Mata Vaishno Devi forests and Patnitop in Udhampur district⁹, Batote and Banihal in Ramban district, Tathri and Chinta in Doda district, Kishtwar district^{11,12}. During present explorations, this species was also found at Kud (1700masl, N 33° 03.859' E 75° 29.369') and Sanasar (2104masl, N 33° 05.961' E 075° 18.522') (Udhampur district). While the leaves of this species are used for flavouring lentil soups and curries, its root paste is known to treat toothache, wounds and ulcers and to enhance fat digestion¹⁸. The significance of the present documentation lies in providing base-line to explorers, interested in collecting and studying different accessions of species of Menthinae for morphological and cytological variability. This endeavor will assist in identifying promising genotypes that can be further used for breeding purpose. Besides, knowledge regarding the medicinal value of various taxa will prompt farmers to cultivate these for commercial purpose.

ACKNOWLEDGEMENTS

The first author is thankful to the Head, Department of Botany for providing necessary facilities. Besides, the help rendered by Dr. Harish Chander in identifying the plants is also acknowledged.

CONFLICT OF INTEREST

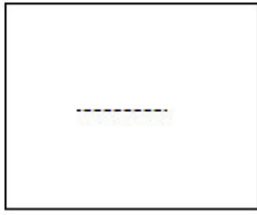
Conflict of interest declared none.

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We sincerely thank the above reviewers for peer reviewing the manuscript