



ISSN Print: 2394-7500
 ISSN Online: 2394-5869
 Impact Factor (RJIF): 8.4
 IJAR 2025; 11(1): 199-201
www.allresearchjournal.com
 Received: 12-11-2024
 Accepted: 14-12-2024

Sulochana Tripathi
 Research Scholar, Department
 of Botany, SGS Government
 Postgraduate College, Sidhi,
 Madhya Pradesh, India

Awadh Raj Singh
 Retired Principal, SGS
 Government Postgraduate
 College, Sidhi, Madhya
 Pradesh, India

Corresponding Author:
Sulochana Tripathi
 Research Scholar, Department
 of Botany, SGS Government
 Postgraduate College, Sidhi,
 Madhya Pradesh, India

Morphological characteristics of *Salvia plebeia* r. br. from vindhyan region of Madhya Pradesh

Sulochana Tripathi and Awadh Raj Singh

Abstract

The present paper is focused on morphological characterization of *Salvia plebeia* collected from Vindhyan region (M.P.) India. The study includes morphological description, stem and surface features like hairs and trichomes. The specific odor of the plant, characteristic quadrangular and hairy stem and simple as well as glandular hairs are the prominent features of the plant.

Keywords: Morphology, *Salvia plebeia*, trichomes

Introduction

The Lamiaceae family is generally called the mint family. Most of its species have strong smells and are used as spices, traditional medicines, and scents (Werker *et al.*, 1985) [18]. When it comes to diversity, *Salvia* is the biggest group in the Lamiaceae family, with almost 1,000 species that grow in a huge range of places. Along with 90 species in Eastern Asia and 250 species in Central and South America, the genus has 500 species in Central and South America (Walker *et al.*, 2004) [17]. India is a major diversity centre for most members of Lamiaceae in Asia (Vural and Adiguzel, 1996) [16].

A group of plants called *Salvia* species have been used for a long time and are still very useful today. The name of the genus comes from the Latin word "salveo," which means "to save or recover" (Hamlyn, 1969) [6]. *Salvia*, commonly known as sage, has multiple uses such as condiment, food additive, seasoning, spice and herbal tea (Demirci *et al.*, 2005) [4]. The seeds of *Salvia* species often produce mucilage on wetting (Hedge, 1982) [7]. This clear mucilage that the seeds give off on wetting is used to produce pleasant drinks (Estilai *et al.*, 1990) [5]. In the Eastern countries, that mucilage is used for the treatment of eye diseases. In addition to *Salvia* species (sage) were reported to be used for memory-enhancing purposes in European folk medicine (Perry *et al.*, 2003 and Orhan *et al.*, 2007) [15, 11]. Aside from being used as medicine, some species of *Salvia* are also growing as ornamental plants in parks and gardens. The hairy young leaves may have contributed to people's "perception" that the plant had healing qualities on the outside. Besides a few species, most *Salvia* species have not been studied in terms of their physical traits (Ozdemir and Senel, 1999; Ozdemir and Senel, 2001; Ceja-Romeo *et al.* 2005; Baran and Ozdemir, 2006 and Kaya *et al.*, 2007) [12, 13, 2, 1, 9]. In addition there are the papers dealing with glandular hairs and essential oil characteristics of *Salvia* species (Corsi and Bottega, 1999 and Kaya *et al.*, 2003) [3, 8]. Any morphological and anatomical study has found to be very rare. Therefore, in the present study, we aimed to introduce the morphological and anatomical characters of endemic *S. plebeia* in detail.

Materials and Methods

The plant samples were collected from natural populations. Some samples were used for morphological studies; some were dried as herbarium specimen and stored in Department of Botany, S.G.S. Govt. P.G. College, Sidhi (M.P.) India. Investigated species was collected from the location: Mauganj, Hanumana and surrounding area. The taxonomical description of the species follows Hedge (1982) [7]. The cross-sections of root, stem, leaf, petiole, calyx and corolla were prepared according to Ozkan *et al.* (2012) [14]. The classification of glandular hairs was made according to Werker *et al.*, (1985) [18] and Ozdemir and Senel (2001) [13].

Results & Discussion

Morphological properties

The root of the taxon is 18 - 33 cm in length and taproot in shape. There is brown and hard bark on the root. The plant has two different stem. One of them has flowers; it is named as fertile stem. Another stem has no flowers; it is named as sterile stem. Sterile stem is prostrate, leafy, fertile stem is procumbent-ascending, unbranched. Leaves are trisect or pinnatisect with two pairs of lateral segments. Terminal segments are linear oblong. Leaves are 1.4-2.5 x 0.9-2 cm in size. Petiole is 0.3-0.8 cm in length. The flowers are at the

base of bracts, arranged verticillately on the plant and the verticillasters are 2-6 (-8) flowered. The calyx shape is tubular-campanulate, 0.7-1.1 x 0.3-0.5 cm in size and is colored as pale green to yellow. The upper lip of calyx is tridentated and the lower lip is bidentate and its size is 0.4-0.7 cm. The corolla is pale violet to white. The stamen type of the plant is A. Filaments are 0.2 - 0.4 cm and style is 1-1.5 cm long. The nutlets are pale-brown and rounded to trigonus, ovoid in shape and its size 1-2.3 x 2.5-3 mm. The details of morphological parameters are shown in table-1 and figure-1.

Table 1: Morphological measurements of plant organs of *S. plebeia* R.Br.

Parameters	Min (cm)	Max (cm)	Mean	SD
Root length	12	30	2.00	5.00
Stem length	15	50	12.00	5.50
Leaf length	1.5	3.5	2.00	0.50
Calyx length	0.60	1.10	0.50	0.01
Corolla length	0.50	1.30	0.20	0.11
Pedicel length	0.30	0.50	0.04	0.05
Stamen length	1.00	1.50	0.50	0.14
Style length	1.00	1.50	0.20	0.02

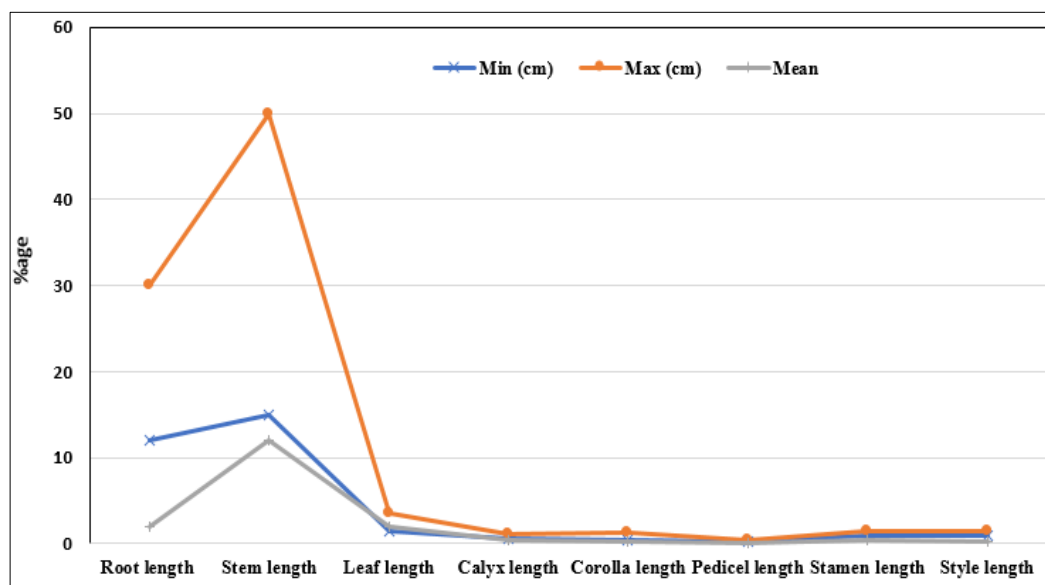


Fig 1: Graph analysis of percentage morphological measurements of plant organs of *S. plebeia* R.Br.

Conclusion

The information on morphological features along with surface characteristics is rare in the literature.

The presented results here are therefore compared with other similar studies on the members of family Lamiaceae. Metcalfe and Chalk (1972)¹⁰ demonstrated that the characteristic feature of family Lamiaceae is the quadrangular stem with well-developed collenchymas and supporting tissues at the corners.

Acknowledgement

The authors are grateful to authority of S.G.S. Govt. P.G. College Sidhi to carry out this work.

References

1. Baran P, Ozdemir C. The morphological and anatomical characters of *Salvia napifolia* Jacq. in Turkey. Bangladesh J Bot. 2006;35:77-84.
2. Ceja-Romeo J, Paz Perez-Olvera C, Rivera-Tapia J. Anatomical studies of Mexican *Salvia* species

Erythrostachys Epl. (Lamiaceae). Bol Soc Bot Mex. 2005;76:53-59.

3. Corsi G, Bottega S. Glandular hairs of *Salvia officinalis*: New data on morphology, localization and histochemistry in relation to function. Ann Bot. 1999;84:657-664.
4. Demirci B, Demirci F, Dönmez AA, Franz G, Paper DH, Baher KHC. Effects of *Salvia* essential oils on the chorioallantoic membrane (CAM) assay. Pharm Biol. 2005;43:666-671.
5. Estilai A, Hashemi A, Truman K. Chromosome number and meiotic behavior of cultivated chia, *Salvia hispanica* (Lamiaceae). Hort Sci. 1990;25:1646-1647.
6. Hamlyn P. The Marshall Cavendish, Encyclopedia of Gardening. Garrod and Lofthouse International, London. 1969;19.
7. Hedge IC. Flora of Turkey and the east Aegean Islands. In: Davis PH, Edmondson JR, Mill RR, Tan K, editors. *Salvia* L. Edinburgh Univ Press. 1982;7:400-461.

8. Kaya A, Demirci B, Baher KHC. Glandular trichomes and essential oil of *Salvia glutinosa* L. South Afr J Bot. 2003;69:422-427.
9. Kaya A, Goger F, Baher KHC. Morphological, anatomical and palynological characteristics of *Salvia halophia* endemic to Turkey. Nordic J Bot. 2007;25:351-358.
10. Metcalfe JR, Chalk L. Anatomy of the Dicotyledons. Oxford Univ Press. 1972;2:1041-1053.
11. Orhan I, Kartal M, Naz Q, Esaz A, Yılmaz G, Kan Y, *et al.* Antioxidant and anticholinesterase evaluation of selected Turkish *Salvia* species. Food Chem. 2007;103:1247-1254.
12. Ozdemir C, Senel G. The morphological, anatomical and karyological properties of *Salvia sclarea* L. Turk J Bot. 1999;23:7-18.
13. Ozdemir C, Senel G. The morphological, anatomical and karyological properties of *Salvia forskahlei* L. (Lamiaceae) in Turkey. J Econ Taxon Bot. 2001;19:297-313.
14. Ozkan A, Curat D, Kulak M. Morphological properties and chemical compositions of some sesame (*Sesamum indicum* L.) populations cultivated in Kilis, Turkey. Afr J Agric Res. 2012;7(19):3029-3033.
15. Perry NSL, Bollen C, Perry EK, Ballard C. *Salvia* for dementia therapy: Review of pharmacological activity and pilot tolerability clinical trial. Pharmacol Biochem Behav. 2003;75:651-659.
16. Vural A, Adiguzel N. A new species from Central Anatolia: *Salvia aytachii* M. Vural et N. Adigüzel (Labiatae). Turk J Bot. 1996;20:531-534.
17. Walker JB, Sytsma KJ, Treutlein J, Wink M. *Salvia* (Lamiaceae) is not monophyletic: Implications for the systematics, radiation and ecological specialization of *Salvia* and Tribe *Menthae*. Am J Bot. 2004;91:1115-1125.
18. Werker E, Ravid U, Putievsky E. Structure of glandular hairs and identification of the main components of their secreted material in some species of the Labiatae. Isr J Bot. 1985;34:31-45.