

MICROMORPHOLOGICAL ANALYSES OF *LAMIUM ALBUM* L. TRIHOMES

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INTRODUCTION

The trichomes of the species which belong to the subfamily Lamioideae were rarely examined. One of the representatives from the subfamily is *Lamium*. According to available literature data, the trichomes of the *L. album* have not been yet examined.

As a part of the micromorphological, anatomical and chemical research of the *Lamium* species, in this paper the results of the structure of glandular and non glandular trichomes are reported.

Lamium album L. (Lamiaceae) is a perennial herb widely distributed in Europe (Ball, 1972). It is used in folk medicine as blood tonic, antispasmodic and antiinflammatory agent.

This species contains iridoids, flavonoids, phenolic acids, tanins, saponins and triterpenes as secondary compounds. The tanins in *Lamium* are responsible for its tranquillising, mildly astringent and haemostatic action, while saponins are responsible for a mild expectorant action. It may be used for sore throats and inflamed gums, as a compress for wounds, haemorrhoids, eczema and burns. It is useful remedy in menorrhagia and intestinal bleeding.

It is also used in the treatment of abnormal vaginal discharge (Bartram, 1995; Chevallier, 1996; Weiss, 1991).

MATERIAL AND METHODS

Aerial parts of the analyzed plants were collected at the flowering stage in July 2004 in Botanical Garden "Jevremovac" in Belgrade. A voucher specimen has been deposited in the Herbarium of the Institute of Botany and Botanical Garden "Jevremovac", Faculty of Biology, University of Belgrade, Serbia and Montenegro.

Scanning electron microscopy (SEM)

Small segments of stem, leaves and calyx were coated with a thin layer of gold (ion sputtering coating) in BALTEC-SCD 005 Sputtering Device. Observations were carried out on a JEOL JSM 6460 LV scanning electron microscope at 20 kV.

RESULTS AND DISCUSSION

On the stems two types of trichomes were found: nonglandular uniseriate elongated trichomes and glandular peltate trichomes with 4-celled heads. Abaxial and adaxial leaf surfaces were sparsely covered with nonglandular uniseriate elongated trichomes. Glandular peltate trichomes with 4-celled heads were found on adaxial leaf surface (Table 1).

Calyx was densely covered with numerous simple nonglandular uniseriate elongated trichomes among which the peltate glandular trichomes were distributed (Table 2).

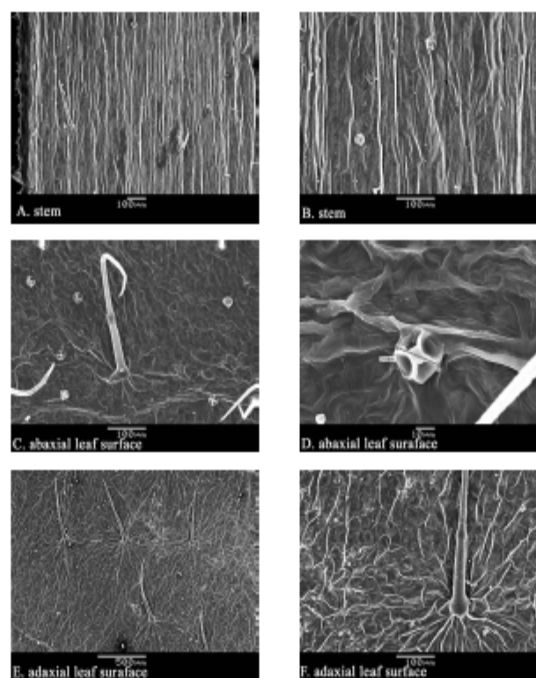


Fig. 1. SEM micrographs of stem and both leaf surfaces of *Lamium album*.

The trichomes are widely distributed over the aerial parts in many plant families (Fahn, 2000).

Their structure can vary widely among species (Werker, 2000). In the Lamiaceae family there are two main types of glandular trichomes: peltate and capitate (Fahn, 2000). Numerous studies of the trichomes in the Lamiaceae family have been carried out, from

morphological, ultrastructural, histochemical and chemical point of view (Werker, 2000 and references cited therein; Hallahan, 2000; Spring, 2000; Fahn, 2000).

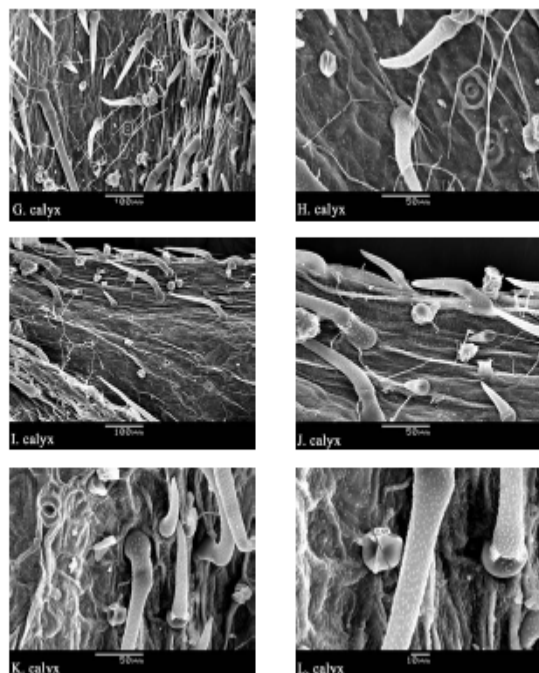


Fig. 2. SEM micrographs of calyx of *Lamium album*.

Many Lamiaceae species have been investigated because of their high content of essential oils, which are widely used in pharmaceutical preparation, perfumery and cosmetics. *L. album* is essential oil poor species.

Glandular peltate trichomes covered all vegetative organs but calyx is densely covered with them. The small amount of essential oil produced by glandular trichomes on calyx and leaf surface may act as a protection of the inner flower parts and leaf of *L. album* against herbivores and pathogens.

ABSTRACT

Micromorphology and distribution of trichomes on stem, leaves and calyx of *Lamium album* L. were investigated using scanning electron microscopy. On the stems, leaf and calyx two types of trichomes were found: nonglandular uniseriate elongated trichomes and glandular peltate trichomes with 4-celled heads.

CONCLUSION

Since the floral parts are used for medicine purposes as tinctures, the further analysis of calyx glandular trichomes chistochemistry, as well as essential oil compounds, could provide more data for medicinal usefulness.

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