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Contribution to the systematic knowledge of *Lamium multifidum* and *L. orientale* (Lamiaceae)

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Abstract

Some morphological, anatomical, palynological and karyological features of *Lamium multifidum* and *L. orientale* (Lamiaceae) naturally occurring in Turkey have been studied. Additional information was added to the previous description of these species. Anatomically, both *L. multifidum* and *L. orientale* had an annual taproot, stems quadrangular in cross-section, leaves bifacial. The nutlets were ovoid in outline and trigonous in cross section, blackish-dark brownish, with glabrous surface. The pollen grains of both species were tricolpate, shape subprolate, ornamentation reticulate. In both species, the somatic chromosome number resulted 2n = 14. The anatomical and palynological features, chromosome number and morphological characters of both species were reported for the first time in this study.

Key words: anatomy, karyology, morphology, palynology, *Wiedemannia*

Introduction

Lamium Linnaeus (1753: 579) is the type genus of Lamiaceae. This genus is composed of about 40 species which are herbaceous annuals and perennials distributed from North Africa to Eurasia (Mennema 1989). The centre of diversity of *Lamium* is clearly found in Irano-Turanian and Mediterranean phytogeographic regions (Mennema 1989, Mabberley 1997). This genus is represented by 33 taxa in Turkey, of which 5 endemic to the country (Güner *et al.* 2012).
Various studies have been carried out on *Lamium*, concerning morphology and anatomy (Slavica *et al.* 2006, Baran & Özdemir 2009, 2011, 2013, Celep *et al.* 2011, Özdemir & Baran 2012), palynology (Abu-Asab & Cantino 1994, Kallajxhiu *et al.* 2014), cytology (Gill 1983) and other systematic studies (Lord 1979, 1980, 1982, Ryding 2003, Rudy 2004, Rosenbaumova´ *et al.* 2004, Karlsson & Milberg 2008).

The genus *Wiedemannia* Fischer & Meyer (1837: 51) (Lamiaceae) was represented by two species in Turkey: *W. orientalis* Fischer & Meyer (1837: 52) and *W. multifida* (Linnaeus 1753: 579) Benth. in De Candolle (1848: 503). The latter species was initially described as *Lamium multifidum*. *Wiedemannia* was segregated from *Lamium* for its lightly bilabiate and 10-veined calyx. On the other hand, *W. multifida* and *W. orientalis* were included in *Lamium* by Krause (1903) and Ryding (2003) according to other morphological features. This classification was followed by Harley *et al.* (2004) and Govaerts *et al.* (2010). Bendiksby *et al.* (2011) investigated phylogenetic relationships in *Lamium* using nuclear and chloroplast DNA sequence data. Their molecular results showed that *Wiedemannia* is phylogenetically nested within *Lamium*.

Lamium multifidum L. is an Irano-Turanian element which grows on calcareous slopes, volcanic steep, hedgerows, cornfields in the northern and eastern regions of Turkey. *L. orientale* (Fisch. & C.A.Mey.) Krause (1903: 137) is widely distributed in Turkey and grows on stony hillsides, steppe, fields, roadsides (Mill 1982). There is no anatomical, palynological, karyological and ecological study on *L. orientale* and *L. multifidum* in the literature.

In this study, it was aimed to investigate morphological, anatomical, palynological, karyological features of these species, to utilize these characters for systematic purposes.

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