

BIFLAVONOIDS IN THE JULIANIACEAE

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Abstract—Amentoflavone and agathisflavone are reported in the leaves of species belonging in both genera of the Julianiaceae. This strongly supports a close affinity with the Anacardiaceae, and in particular with the tribe Rhoeae.

INTRODUCTION

The Julianiaceae is a small family of two genera, *Amphiptyerygium* Schiede ex Standl. (4 spp.) and *Orthopterygium* Hemsley (1 sp.), from southern and central America. Although initially considered to be allied to the Juglandales or Fagales [1-3], the Julianiaceae have been increasingly considered close to the Anacardiaceae [4-14], and have been included in it by some authors [15-17]. Young [17] has even proposed "that *Amphiptyerygium* and *Orthopterygium* be considered as a subtribe, the Julianiinae, of the Rhoeae (Anacardiaceae)".

In Cronquist's [18] synoptic arrangement of the Sapindales, the families Anacardiaceae, Burseraceae and Julianiaceae are grouped together, all sharing the presence of vertical intercellular secretory canals in the bark. The Anacardiaceae and Julianiaceae have one apotropous ovule per locule in contrast to the Burseraceae, which has two epitropous ovules per locule.

The Anacardiaceae and Burseraceae are two of only 15 angiosperm families in which biflavonols have been reported [19]. Amentoflavone has been reported in both families, but agathisflavone is confined to the tribe Rhoeae of the Anacardiaceae [19, 20] and the genus *Blepharocarya*. Although the latter is sometimes given family status [21], the presence of agathisflavone has been used to suggest an affinity with the tribe Rhoeae in the Anacardiaceae [20], and this has been supported by subsequent anatomical and morphological study [22]. This paper reports an investigation of the biflavonoids in the Julianiaceae.

RESULTS AND DISCUSSION

The leaves of *O. huacuui* (A. Gray) Hemsley and *A. amplifolium* Hems. & Rose were found to contain agathisflavone and amentoflavone. The presence of these two biflavonoids suggests that the Julianiaceae are closely related to the Anacardiaceae. The presence of agathisflavone, in particular, suggests that *Amphiptyerygium* and *Orthopterygium* are related to genera in the tribe Rhoeae. This study clearly supports the previous work on wood anatomy [5, 7, 10, 11, 23-25] and serology [16] which have suggested that affinities of the Julianiaceae are anacardiaceous. Furthermore, our results are in accord with earlier conclusions, made on the basis of palynology

[13] and leaf and heartwood flavonoids [17], that the Julianiaceae ought to be included in the tribe Rhoeae of the Anacardiaceae. However, work currently in progress suggests that the Rhoeae is a somewhat ill-defined taxon, and the precise affinities of *Amphiptyerygium* and *Orthopterygium* within the group have yet to be clarified.

EXPERIMENTAL

Voucher specimens and their locations are as follows: *Amphiptyerygium amplifolium* Hems. & Rose, Pringle 8769, NSW; *Orthopterygium huacuui* (A. Gray) Hems., Smith 5726, UNSW. Extraction and identification of biflavonols was carried out using methods described previously [20].

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