Acta Farm. Bonaerense **19** (1): 69-71 (2000)
Recibido el 12 de octubre de 1999
Aceptado el 7 de febrero de 2000

The Distribution of Iridoids in *Labiatae Sensu Lato*

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SUMMARY. Iridoids, present in many plants used in the popular medicine, are important taxonomic markers in *Sympetalae*. The distribution of this compound in the families *Verbenaceae* and *Labiatae* have been of great value to delimit the boundary between the two families. In this work we show the distribution of these compound in *Labiatae sensu lato*.

RESUMEN. "La distribución de Iridoids en *Labiatae sensu lato*". Los iridoides, presentes en muchas plantas usadas en la medicina popular, son importantes marcadores taxonómicos en las *Sympetalae* y su distribuición en las familias Verbenaceae y Labiatae ha sido de gran valor para la delimitación entre estas familias. En este trabajo mostramos la distribuición de estes compuestos en *Labiatae sensu lato*.

INTRODUCTION

Iridoids are present in many herbal preparations used as bitter tonics, sedatives, febrifuges, cough medicines, remedies for wounds and as hypotensives. Nevertheless, for a long time, they were not considered particularly important as a pharmacologically active class of compounds. More recently, however, several investigations have revealed that iridoids exhibit a wide range of bioactivity including cardiovascular, hypoglycemic, antiinflammatory, antitumor, antiviral and immunomodulator activities, among others[1].

Iridoids have also been extensively used as taxonomic markers in *Sympetalae*. The presence or absence of certain types of iridoids has been a valuable chemotaxonomic indicator [2-6]. Iridoids can be divided into two main groups, carbocyclic and seco-iridoids, which are abundant in *Lamiales* and *Gentianales* (sensu Dahlgren [7]), respectively.

Among the families where carbocyclic iridoids have been found *Verbenaceae* and *Labiatae* deserve comments. Many species from these taxa have been used in the traditional medicine and some of the proclaimed activity could be related to these compounds. As iridoids have been demonstrating interesting biological activities and the chemotaxonomy is one of the criteria for selecting plants for phytotherapeutic investigation, the aim of this work is to show the distribution of this compound in the new system for the classification of the *Labiatae*.

The classification of the *Labiatae* and its relation to the family *Verbenaceae* is still being discussed. Most recently Cantino *et al.* [8] proposed to limit the *Verbenaceae* to the subfamily *Verbenoideae* and to transfer the other subfamilies to *Labiatae*, which would then be subdivided in eight subfamilies.

As previously reported by Rimpler *et al.* [4], in the former family *Verbenaceae*, the species of the subfamily *Verbenoideae*, with a ventral plantation, accumulate C-4 carboxylated iridoids, such as for instance theviridoside (Fig. 1a). On the other hand, the species with ovules dorsally attached, occurring in the subfamilies *Viticoideae, Chloanthoideae* and *Caryopteridoideae*, as well as in the *Labiatae*, did accumulate mainly C-4 decarboxylated iridoids, such as ajugol [4, 6] (Fig. 1b). It thus appears that the distribution of

KEY WORDS Iridoids, *Labiatae*, Taxonomy, *Verbenaceae*.
PALABRAS CLAVE: Iridoides, *Labiatae*, Taxonomia, *Verbenaceae*.

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