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DOREMA AUCHERI, THE FIRST UMBELLIFEROUS PLANT FOUND TO PRODUCE EXUDATE FLAVONOIDS

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Key Word Index—*Dorema aucheri*; Apiaceae; lipophilic exudate; methylated flavones.

Abstract—Aerial parts of *Dorema aucheri* exhibit a lipophilic exudate material which was shown to contain several flavone methyl esters.

INTRODUCTION

In the course of our studies on the occurrence and distribution of exudate flavonoids in angiosperms, we have examined *Dorema aucheri* Boiss., a large umbelliferous plant that is endemic to Iran [1].

RESULTS AND DISCUSSION

The lipophilic material obtained by rinsing aerial parts of *Dorema aucheri* with chloroform was found to contain the following methylated flavones: scutellarein 6,7,4′-trimethyl ether (salvigenin), 6-methoxyluteolin (nepetin), 6-hydroxyluteolin 6,7-dimethyl ether (cirsiliol) and 6-hydroxyluteolin 6,7,4′-trimethyl ether (eupatorin). Eupatorin, as the major flavonoid component, was obtained in crystalline form, while salvigenin occurred in a small amount and nepetin and cirsiliol were found only as trace constituents.

None of these flavones is a rare product, nor is the occurrence of exudate flavonoids a rare phenomenon any more, being well known from many angiosperm families [2]. This is the first time, however, that they have been encountered externally in a member of the Apiaceae. This result confirms once more that external accumulation of flavonoid aglycones is more widespread than had been thought previously and that the number of families concerned is still increasing [3]. It also confirms that careful observation of their localization is required, whenever flavonoid aglycones are found in the free state.

EXPERIMENTAL

Aerial parts of *Dorema aucheri* were collected in June 1992 in the vicinity of Jasuch, Province of Kohkiluye-Boyrahmad, Iran. A voucher specimen (AR 337 E) has been deposited in the herbarium of the Department of Biological Sciences, Shahid Beheshty University, Teheran, Iran. Dried material was rinsed with chloroform to dissolve externally accumulated lipophilic material. The concd exudate was defatted (MeOH, − 10°) and passed over Sephadex LH-20, eluted with MeOH, to separate the flavonoids from the dominating terpenoids. The flavonoid portion was further chromatographed over Polyamide SC-6, eluted with toluene and increasing quantities of MeCOEt and MeOH. From some combined frs the major flavone crystallized from EtOH. It was purified by recrystallization from glacial HOAc to yield pure eupatorin, mp 192–194° (lit.: 196–198°). Three further flavones were isolated from the filtrate by prep. TLC on silica gel. Frs were monitored by TLC on silica gel (toluene–MeCOEt, 9:1) and on polyamide DC-11 (toluene–petrol$_{100-140°}$–MeCOEt–MeOH, 12:6:2:1; toluene–MeCOEt–MeOH, 12:5:3). Chromatograms were viewed under UV before and after spraying with Naturstoffreagenz A. Terpenoids were visualized by spraying the silica plate with $MnCl_2$ reagent, followed by heating [4]. Flavonoid aglycones were identified by direct comparisons with markers, as well as by their UV spectra.

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