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### THE FLAVONOIDS OF *ALKANNA ORIENTALIS*

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*Alkanna orientalis* (L.) Boiss. (Boraginaceae) is endemic to the southern part of the Sinai peninsula. Little is reported on the flavonoids of the Boraginaceae. The flavonoids of *A. orientalis* were identified by pc, uv, and ms as: kaempferol-3-glucoside, kaempferol-3-rutinoside, quercetin-3-glucoside, quercetin-3-rutinoside, kaempferol-3,6-dimethyl ether, and small amounts of its 7-glucoside. Kaempferol-3,6-dimethyl ether represents the major flavonoid. The 7-glucoside of kaempferol 3,6-dimethyl ether was first reported in *Centaurea jacea* (1) and later in *Tetragonotheca ludoviciana* (2). The chromatographic and uv data are in agreement with those reported in the literature for the 7-glucoside (1,2). The chromatographic, uv, and ms data of kaempferol 3,6-dimethyl ether are also in agreement with those reported in the literature (1,3,4).

### EXPERIMENTAL

GENERAL PROCEDURES.—Uv spectra were recorded with a Beckman model 26. Whatman No. 1 and 3MM paper was used for pc.

PLANT MATERIAL.—The aerial parts of the plant were collected in April 1983, from the area around St. Catherine in the Sinai peninsula. It was identified by Prof. Dr. M.N. El-Hadidi, the Herbarium, Cairo University. Voucher specimens are deposited at the Herbarium, NRC.

EXTRACTION AND ISOLATION.—The plant material was extracted with 70% EtOH. The extract was subjected to column chromatography on polyamide (6S from Riedel), eluting with H<sub>2</sub>O followed by increasing concentrations of EtOH. The fractions were further purified using small columns of Sephadex LH-20. Identification of the flavonoids was carried out according to standard methods including acid hydrolysis, enzymic hydrolysis (5,7), hydrogen peroxide oxidation (7,8), and uv analysis (6,7).

Full details of the isolation and identification of the compounds are available on request to the senior author.

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