

following evidence: white crystals, mp 199-202°; molecular formula (hrms)  $C_{11}H_{12}O_4$ ;  $^1H$ -nmr signals at  $\delta$  7.94 (dd, 1H,  $J=6.7$  and  $2.7$  Hz, X part of a system ABX, H-6), 7.55-7.35 (m, 2H, AB part of a system ABX, H-7 and H-8), 6.15 (s, 1H, H-1), 4.23-4.10 (def. t, 2H, 2 H-3), 3.86 (s, 3H,  $CH_3OOC$ ), 3.22 (dd,  $J=4.0$  and  $8.0$  Hz, 2 H-4).

Compound E, mp 252-255° [ $\alpha$ ] $^{18.5}_D - 177.4$ , was identified as decentapicrin A on the basis of its spectroscopic properties (ms, ir, uv,  $^1H$  nmr, and  $^{13}C$  nmr) and comparison with an authentic sample (9).

Compound F, mp 280°, was identified as a mixture of steroid glucosides by spectral data and comparison with authentic specimens (10). Acid hydrolysis gave their aglycone, identified by gc as a mixture of  $\beta$ -sitosterol (55.6%), stigmasterol (19.0%), and campesterol (20.1%); the sugar was identified as glucose by gc of its trimethylsilyl derivative.

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

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#### 7-METHYLJUGLONE, DIUVARETIN, AND BENZYL BENZOATES FROM THE ROOT BARK OF *UVARIA KIRKII*

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The isolation of antitumor and antibacterial agents from some *Uvaria* species (1,2) has stimulated much interest in the chemical studies of these plants. Thus, uvaretin and 1,2,3,4,6,7-hexamethoxyxanthone have previously been isolated from the root bark of the title plant (3). In this communication, the isolation of 7-methyljuglone, diuvaretin, benzyl benzoate, and 2-methoxybenzyl benzoate from *Uvaria kirkii* Hoof. f. is reported.

#### EXPERIMENTAL

**PLANT MATERIAL.**—The plant was collected from coastal Tanzania in July 1984, and identified at the herbarium, Botany Department, University of Dar es Salaam, where a specimen is deposited.

**EXTRACTION AND ISOLATION.**—Soxhlet extraction of dried root bark (500 g) with *n*-hexane followed by evaporation gave an extract that separated into a liquid layer and a viscous mass. The  $CH_2Cl_2$  elution of the viscous mass through a silica gel column gave uvaretin (160 mg), mp 165° ( $CH_2Cl_2$ ), lit (4) mp 162-165°. Elution with  $CH_2Cl_2$ -MeOH (19:1) gave diuvaretin (80 mg), purified by preparative tlc. Both uvaretin and diuvaretin were identified spectroscopically by ir,  $^1H$  nmr, and ms (4).

Chromatography of the liquid layer on silica gel with *n*-hexane- $CH_2Cl_2$  (4:1) gave benzyl benzoate (1.2 g) and 2-methoxybenzyl benzoate (400 mg) which were purified by preparative tlc and identified spectroscopically. Further elution gave 7-methyljuglone (20 mg), mp 118-120° (*n*-hexane), lit. (6) mp 120-121°.

Naphthoquinones have not previously been isolated from an *Uvaria* species. The occurrence of benzyl benzoates in this plant is further support for the already proposed biosynthetic pathway for compounds found in *Uvaria* species (7).

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#### PRESENCE OF RHOEAGENINE IN *FUMARIA PARVIFLORA*

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The alkaloids of *Fumaria parviflora* Lam. (*F. caespitosa* Loscos) (Papaveraceae) (1) have been the subject of several investigations (2-26). From these studies, the following alkaloids have been identified: adlumicine (2, 3), adlumidicine (2, 4), (+)-adlumidine (5), (+)-adlumine (5), (-)-adlumine (6), (+)-bicuculline (5-8), ( $\pm$ )-bicuculline (3, 11), bicucullinine (narceimine) (11), (-)-cheilanthifoline (3, 5), coclaurine (3), coptisine (7), (-)-corlumine (5), cryptopine (3, 6, 8), dehydrocheilanthifoline (12), dihydrofumariline (4), dihydroanguinarine (3), fumaramidine (7), fumaramine (6, 7, 14-16), fumaridine (6, 7, 14-16), fumariflorine ethyl ester (7), fumarilicine (10), (+)-fumariline (7), fumaritine (7, 10), (+)- $\alpha$ -hydrastine (6, 7), (+)-isoboldine (3, 7), izimirine (17), lahoramine (18), lahorine (18), 8-methoxydihydroanguinarine (13), methylhydrastinium (19), *N*-methyladlumine (3), *N*-methylhydrastine (9, 19), *N*-methylhydrastine (9), *N*-methyloxohydrastine (9, 19), narlumidine (20), norjuziphine (3), noroxyhydrastinine (7), 8-oxocoptisine (4), oxysanguinarine (3, 4), (+)-parfumidine (7, 8, 10), (+)-parfumine (7, 10, 21), (+)-parviflorine (7, 10), protopine (3, 6, 7, 8, 22, 23), the quaternary salt of protopine (24), sanguinarine (3, 25), (-)-scoulerine (3), (-)-stylopine (7), and ( $\pm$ )-stylopine (26).

We now describe the isolation and identification of rhoeagenine from the leaves and twigs of this species. This is the first rhoeadine-type alkaloid from *Fumaria*. The rhoeadine alkaloids are biogenetic derivatives of protopines, and direct evidence exists for the incorporation of labeled protopine into rhoeadine in *Papaver rhoeas* L. (27). Rhoeadines have only been found among the Papaveraceae where they are concentrated in the closely related genera *Papaver* and *Meconopsis*, with an isolated occurrence in *Bocconia* (28, 29). All the sections of *Papaver* contain rhoeadines, but the abundance and distribution of the different alkaloids varied considerably from one section to another. The sources of rhoeagenine are described in a recent review on rhoeadine alkaloids (30).

#### EXPERIMENTAL

**PLANT MATERIALS.**—The cultivated plant used in this investigation was collected from the Institute of Medicinal Plants, Budakalász, Hungary, May 1982 (182-00606115), and authenticated by Dr. G. Sag and Dr. J. Guédès, Museum National d'Histoire Naturelle, Paris, France (195/82). An herbarium specimen of the plant material is being preserved in the laboratory.

**EXTRACTION, ISOLATION, AND IDENTIFICATION.**—The ground, dried aerial parts (10 kg) were worked up by standard procedures (acid-base extraction) to give 110 g of total bases. Silica gel (2 kg) chromatography using  $C_6H_6$ , followed by a gradient of  $CH_2Cl_2/MeOH$ , resulted in the isolation of