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Prenylated *p*-Hydroxyacetophenone Derivatives from the Giant *Senecio johnstonii*

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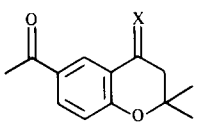
Key Word Index—*Senecio johnstonii*; Compositae; prenylated *p*-hydroxyacetophenone derivatives; umbelliferone derivative; alkylated resorcinol.

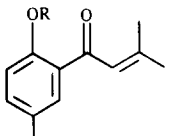
Abstract—The extract of the aerial parts of *S. johnstonii* afforded five known prenylated *p*-hydroxyacetophenone derivatives, scopoletin and 5-pentadecyl resorcinol together with the tridecyl derivative. The chemotaxonomic situation is discussed briefly.

Introduction

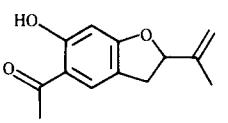
The group of giant *Senecios* contains three species, all restricted to East Africa [1]. As the relationship of this group to other groups of *Senecio* is of interest we have studied the chemistry of one species, *S. johnstonii* Oliv. ssp. *adnivalis* (Stapf) C. Jeffrey var. *erici-rosenii* (R. E. & T. L. E. Fries) C. Jeffrey, grown from seeds, collected from Mt Karisimbi in Rwanda. The main constituent is the methyl ether of 2-senecioyl-*p*-hydroxyacetophenone (**4**) [2]. Furthermore, the *p*-hydroxyacetophenone derivatives **1** [3], **2** [4], **3** [5] and **5** [6] as well as scopoletin (**6**) and the 5-alkyl resorcinols **7** [7, 8] and **8** [8] were present. The structures were elucidated by their high field ^{1}H NMR spectra which were compared with those of authentic samples.



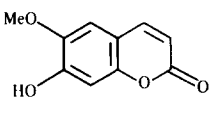
1 X = H_2
2 X = O



3 R = H
4 R = Me



5



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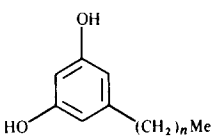

7 *n* = 14
8 *n* = 12

The results show that the typical furoeremophilanes, present in most groups of *Senecio* and related genera like *Euryops*, *Ligularia* and *Othonna*, are absent. Prenylated *p*-hydroxyacetophenones have been reported from some *Senecio* species, however, so far mainly euparin-like derivatives [9]. The diketones **3** and **4** have never been isolated from *Senecio* species. Prenyl-*p*-hydroxyacetophenone was reported from only three species [10–12].

Scopoletin (**6**) is also rare in *Senecio*, it has been reported from only one species [13]. The resorcinol derivatives **7** and **8** have so far been isolated in the Compositae only from a *Baccharis* species. Thus the chemistry of *S. johnstonii* is relatively unusual. The analysis of this species may indicate that it is derived from a very old lineage within *Senecio* as the prenylated *p*-hydroxyacetophenones are more accumulated in other tribes especially in the Eupatorieae.

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Experimental

The air-dried aerial parts (200 g) were extracted with MEOH–Et_2O–petrol, 1:1:1, at room temperature. The extract obtained was separated by CC, TLC and HPLC as reported previously [14]. Finally 10 mg **1**, 100 mg **2**, 100 mg **3**, 1.5 g **4**, 200 mg **5**, 50 mg **6**, 350 mg **7** and 170 mg **8** were isolated. The compounds were identified by comparing the 400 MHz ^{1}H NMR spectra with those of authentic material.

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