

# SHORT COMMUNICATION

## CONSTITUENTS OF *ARTEMISIA AFRA*\*

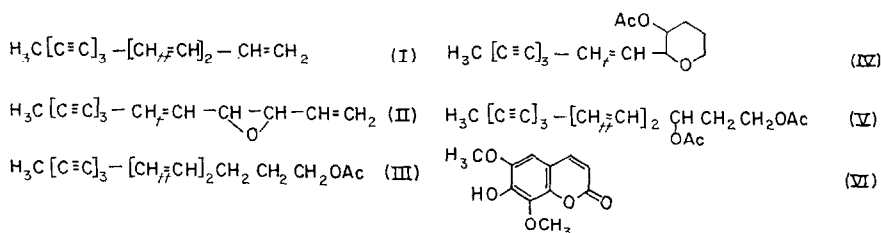
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THE ONLY South African species of *Artemisia*, *A. afra* Jacq. (section Abrotanum Bess.), is reported to contain scopoletin in the flowerheads.<sup>1</sup> It was of interest to compare the other constituents in *A. afra* with those of the old world *Artemisia* species, and the results are reported below.

The roots were found to contain, besides isomeric coumarins (mainly VI) the known acetylenes I–V<sup>2</sup>), while the aerial parts contain thujone and umbelliferone-derivatives but no acetylenes as has been found in more or less all the previously investigated *Artemisia* species:



These results show, that the *A. afra* is chemically related to the European *Artemisia* species, though in none of the 60 species already investigated were these constituents found together. The roots of *A. annua* L. and *A. pontica* L. and the leaves of *A. abrotanum* L. (all also belonging to the section Abrotanum) contain only I and II, while other species mostly contain one or other different acetylenes. However, the biogenetically closely related compounds I–V are relatively widespread in the tribe Anthemideae and they are related too to the more typical *Artemisia*-acetylenes, e.g. IX and X. The already established pathways given in Scheme 1 shows these connections starting with the important very common precursor VII. Coumarins<sup>3</sup> and thujone<sup>4</sup> have often been isolated from *Artemisia* species.

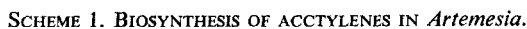
\* Part CCIV in the series "Polyacetylenic Compounds". For Part CCIII see F. BOHLMANN and T. BURKHARDT, *Chem. Ber.* **105**, 521 (1972).

<sup>1</sup> J. A. GOODSON, *Biochem. J.* **16**, 429 (1922).

<sup>2</sup> F. BOHLMANN, *Fortschr. Chem. Org. Naturstoffe* **XXV**, 1 (1967).

<sup>3</sup> T. A. GEISMAN and M. A. IRWIN, *Pure Appl. Chem.* **21**, 167 (1970).

<sup>4</sup> W. KARRER, *Konst. und Vorkommen Org. Pflanzenstoffe* p. 218, Birkhäuser Verlag, Basel (1958).



Fresh, ground material of *A. afra* was extracted with Et<sub>2</sub>O and the resulting extract separated by column chromatography and TLC. The isolated compounds were identified by comparison with authentic samples using UV, IR, NMR and MS as well as TLC. 500 g roots contained 0.3 mg I, 5 mg II, 2 mg III, 5 mg IV, 1 mg V and 100 mg VI + isomers.

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