

CONSTITUENTS OF *SOLANUM DASYPHYLLUM* FRUIT

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In the search for plant chemicals with anticonvulsant properties, chemical examination of fruits of *Solanum dasyphyllum* Schum et Thonn (Solanaceae), a potent local anticonvulsant drug (1), was initiated. Scopoletin, which has been reported to have anticonvulsant (2), cardiovascular (hypotensive) (4), and neuromuscular properties (5), was isolated in this plant and quantified. Fourteen additional known natural compounds were isolated and identified in the processed extracts.

## EXPERIMENTAL

**PLANT MATERIAL.**—*S. dasyphyllum* was grown from seed around the premises of the Forestry Research Herbarium in Ibadan, Nigeria, and a voucher specimen (FHI 86010) was deposited at the Herbarium. Fruits collected between January and April 1981, and those harvested from authenticated plants grown in Ile-Ife were used in the chemical analyses, procedures of which are available on request to the author.

**EXTRACTION, ISOLATION, AND IDENTIFICATION OF COMPOUNDS.**—The dried, ripe fruit of *S. dasyphyllum* was successively extracted with petroleum ether, EtOAc, MeOH, and *n*-BuOH. Chemical analysis was monitored by an anticonvulsant bioassay described in detail elsewhere (2, 3). The petroleum ether extract showed no anticonvulsant effects but afforded diosgenin and sitosterol. The EtOAc extract showed anticonvulsant effects in mice (65% protection) and afforded ferulic and *p*-coumaric acids, umbelliferone, scoparone, aesculetin, and scopoletin as the major active components. Scopoletin and the more polar coumarins—aesculetin, aesculin, and scopolin—were also isolated from the MeOH and *n*-BuOH extracts, suggesting that scopoletin was present both free and combined in this fruit.

In separate experiments, powdered fruit parts (500 g) were processed (6) to afford solasonine, solamargine, solanine, tomatidenol, and solasodine. All chemicals were identified by spectral (nmr, uv, ms, ir) and hydrolytic data, color reactions, and authentic sample comparison in many pc and tlc solvent systems (7, 8).

Free scopoletin was estimated by uv spectroscopy to be 49.2-59.1 mg/kg in the dried ripe fruit and 110.7-130.5 mg/kg in the dried unripe fruit. Total scopoletin was estimated after acid hydrolysis. The ripe fruit gave 343.8-350.7 mg/kg, while the unripe fruit gave 339.0-352.6 mg/kg of scopoletin. Although scopoletin and scoparone showed anticonvulsant effects in mice (2, 9), solasonine and solamargine showed no anticonvulsant effects under this screening program.

The presence of *Solanum* alkaloids and the coumarins is to be expected in *S. dasyphyllum*, another member of the Solanaceae. This is, however, a first report of the anticonvulsant action of the fruit and the identification of the above chemicals in this plant.

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