

ANTIFUNGAL AND OTHER COMPOUNDS ISOLATED FROM THE ROOTS OF NEW ZEALAND FLAX PLANTS (THE GENUS *PHORMIUM*)

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New Zealand flax, the genus *Phormium* (Agavaceae), occurs widely throughout the country and has been used by the Maori for curing various ills, but no compounds of antifungal value have so far been isolated in reported investigations of the seeds and rhizomes. The roots have not previously been investigated. Cucurbitacins, antibacterial (1) and anticancer (2), were isolated from the leaves.

EXPERIMENTAL

Phormium tenax J.R. & G. Forst. was collected from damp pasture near DSIR and *Phormium cookianum* Le Jolis from the grounds of DSIR, both in early December (summer). Herbarium samples were deposited with Botany Division, DSIR, Christchurch, New Zealand, and authenticated by Dr. E. Edgar.

Hexane extracts of the air-dried, powdered roots of the two species were investigated by column chromatography on Si gel. Elution with hexane-Et₂O (90:10) yielded three main fractions which were each rechromatographed. From the first fraction a yellow solid, chrysophanol, musizin (0.05%), and srypandrone were obtained successively. These were purified by repeated crystallization and characterized by comparison (tlc, uv, and mmp) with authentic samples. From the second fraction, in *P. tenax* only, hexacosanol was isolated, recrystallized, and characterized by comparison (tlc, ir, and mmp) with an authentic sample. β -Sitosterol was isolated from the third fraction.

Experimental details, including a full assignment of the ¹H-nmr spectrum of musizin (provided by Dr. H. Wong, Chemistry Division, DSIR, Petone, New Zealand) in DMSO-*d*₆, are available on request to the senior author.

Musizin, which has useful antifungal activity (3), has not previously been reported in species of the Agavaceae family. It is easily recognizable on tlc by its green coloration in iodine vapor. Strypandrone has been isolated from plants containing musizin and shown to be an in vivo oxidation product of musizin (4).

LITERATURE CITED

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TRITERPENOIDS AND OTHER COMPONENTS OF *POA HUECU*

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In continuation of our work on *Poa huecu* Par. (Gramineae) (1,2), a perennial Argentinian plant toxic to livestock, we report here the identification of the components of both the petroleum ether and methanolic extracts. Antimicrobial tests showed that the cinnamic acid derivatives were responsible for the activity against *Mycobacterium phlei*. The occurrence of triterpenic ketones seems to be a chemotaxonomical feature of *P. huecu*. This species also shows to be deficient in alkaloids. Gramine, although widespread in Gramineae (3), was not here detected.

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