

LEGUMINOSAE

EXAMINATION OF A PHYTOSTEROLIN AND A STEROL
FROM *CASSIA* PLANTS

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(Received 21 February 1969, in revised form 25 September 1970)

A NUMBER of workers have chemically investigated the seeds¹⁻⁴ and roots⁵ of *Cassia occidentalis* but the literature on *C. nodosa* reveals only its insecticidal property⁶ and a fixed oil from the seeds.⁷ In the present communication we record the isolation and characterization of a mixture of campesterol and β -sitosterol, both in the free state and as the α -glucosides.

The petroleum (60–80°) and alcoholic extractives of the dried *C. nodosa* flowers after necessary purification and column chromatography over alumina yielded a phytosterol, m.p. 148–149°, $[\alpha]_D^{28} - 43.0^\circ$ (CHCl_3), $\nu_{\text{max}}^{\text{KBr}}$ 3380 cm^{-1} (OH). It formed a monoacetate, m.p. 141–143°, $[\alpha]_D^{28} - 48.8^\circ$ (CHCl_3); a monobenzoate, m.p. 152–153°, $[\alpha]_D^{25} - 22.3^\circ$ (CHCl_3); a digitonide, m.p. 223–225° and a dibromoacetate, m.p. 139–140°. It was identified as “ γ -sitosterol” by mixed m.p. and i.r. comparison with an authentic sample. “ γ -Sitosterol” is known to be a mixture of campesterol and β -sitosterol and our material was identical in m.p. to a 1:1 to 7:5 mixture.

The alcoholic extract of the defatted *C. nodosa* flowers and the chloroform and alcoholic extracts of the defatted seeds of *C. occidentalis* yielded a phytosterolin, m.p. 286–288°, $[\alpha]_D^{30} + 136^\circ$ ($\text{C}_5\text{H}_5\text{N}$); gave a tetraacetyl derivative, m.p. 154–155°, $[\alpha]_D^{30} + 120^\circ$ (CHCl_3) and a tetramethyl derivative, m.p. 95–97°, R_f 0.92 on chromatoplate in chloroform–methanol (27:4), $[\alpha]_D^{30} + 127^\circ$ (CHCl_3). The phytosterolin and its methyl derivative on hydrolysis yielded glucose (osazone, m.p. 203–204°) and 2,3,4,6-tetra-*O*-methyl-D-glucose respectively. The aglycone, m.p. 147–148°, $[\alpha]_D^{30} - 41.4^\circ$ (CHCl_3), acetyl derivative, m.p. 142–143°, was identified as an equal mixture of campesterol and β -sitosterol. Periodate oxidation studies and the optical rotations indicated the presence of only one molecule of sugar attached by an alpha linkage. Thus the phytosterolin is an approximately equal mixture of α -glucosides of campesterol and β -sitosterol.

Acknowledgement—The authors (S.A.I.R. and J.L.) thank the C.S.I.R., New Delhi, India for financial assistance.

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