

NUTANOSIDE - A TRITERPENE GLYCOSIDE
FROM *Silene nutans*

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We have studied a triterpene glycoside obtained from the roots of *Silene nutans* L. There is no information at all on the isolation of individual glycosides from this species of plant.

After the purification of an aqueous-methanolic extract on silica gel and Sephadex G-25, the main glycoside was obtained; it had mp 233-235°C, $[\alpha]_D +11^\circ$ (aqueous pyridine), and we have called it nutanoside. The aglycone of nutanoside is gypsogenin; its carbohydrate moiety includes glucose and galactose (2 moles each), arabinose, xylose, fucose, rhamnose, and glucuronic acid (1 mole each). The quantitative determination of the sugars was performed by the densitometry of paper chromatograms [1].

The alkaline cleavage of nutanoside gave an oligosaccharide with mp 165-168°C, $[\alpha]_D -13^\circ$ (aqueous pyridine) and an acidic glycoside with mp 217-220°C $[\alpha]_D +34^\circ$ (aqueous pyridine). When the oligosaccharide was subjected to acid hydrolysis, two molecules of glucose, and galactose, fucose, and rhamnose were identified, and when the acidic glycoside was saponified we found glucuronic acid, galactose, arabinose, and xylose. The Smith oxidation of the saponin gave a glycoside with mp 220-225°C, $[\alpha]_D +10^\circ$ (aqueous pyridine), which, after hydrolysis with Kiliani's mixture, gave only glucuronic acid and rhamnose. This probably indicates that the rhamnose is attached directly to the carboxyl of the aglycone. The results of the methylation of nutanoside and that of the acid glycoside and the oligosaccharide permit the assumption that the carbohydrate chains are highly branched, since hydrolysis of the permethylates gave completely methylated glucose (2 moles), arabinose, and xylose.

Thus, in its composition and the structure of the carbohydrate chains, nutanoside differs from all the glycosides isolated previously from plants of the family Caryophyllaceae, even though it has the same aglycone and the same set of sugars.

LITERATURE CITED

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