β-SITOSTEROL β-D-GLUCOPYRANOSIDE FROM PHASEOLUS VULGARIS

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We have previously reported the detection in Phaseolus vulgaris (kidney bean) of five substances which have a glycoside nature [1]. The fractions obtained in the isolation of phaseoloside E [1] and containing mainly glycoside A were, after drying, chromatographed on alumina and eluted, first with ethyl acetate, then with ethyl acetate–methanol (4 : 1), and finally with ethyl acetate–methanol–water (10 : 2 : 5). After evaporation, phaseoloside A was crystallized from methanol. A substance with mp 300–302° C, $[\alpha]_D^{20}$ –43° (c 0.7, pyridine) was isolated.

On hydrolysis with 4% H_2SO_4 (100° C, 5 hr), the aglycone of the glycoside was identified by its melting point, specific rotation, and chromatographic mobility as β-sitosterol [2], and glucose was found among the sugars. The fact that the monosaccharide had the pyranose form was confirmed by the methylation of phaseoloside A by Hakomori's method [3], as a result of which, after methanolysis, 2, 3, 4, 6-tetra-O-methyl-D-glucose was detected.

On comparing our results with those of Bodea [4], we came to the conclusion that the isolated compound is β-sitosterol glucoside. Only a few other examples of the presence of triterpene and steroid glycosides in one and the same plant are known in the literature.

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