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CUCUMARIOSIDE G_3 – A MINOR TRITERPENE GLYCOSIDE FROM THE HOLOTHURIAN Eupentacta fraudatrix

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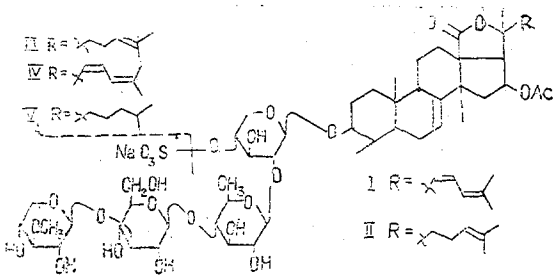
From the total triterpene glycosides of the holothurian, Eupentacta fraudatrix, by chromatography on silica gel (chloroform–methanol–water (65:25:4)) and with the aid of HPLC (Zorbax-ODS, 4.8 × 250 mm, 1 ml/min, water –methanol (65:35)), we have isolated a minor glycosidic component – cucumarioside G_3 (I), mp 208-211°C, $[\alpha]_D^{20}$ –85° (c 0.1, pyridine).



It followed from a comparison of the ^{13}C NMR spectra of cucumariosides G_1 (II) [1] and G_3 (I) and of their desulfated derivatives (III) and (IV), respectively, that these substances had identical carbohydrate chains and differed only by the structures of the aglycons. On the other hand, the signals in the ^{13}C and ^1H NMR spectra of the aglycon moiety of cucumarioside G_3 coincided completely with the corresponding signals in the spectra of cucumarioside C_1 [2] isolated from the same total glycosides earlier and having 16β-acetoxyholosta-7,22Z,24-trien-3β-ol as its aglycon. On the basis of these facts it was concluded that the structure of cucumarioside G_3 corresponded to formula (I).

To confirm this conclusion, desulfated cucumarioside G_3 (IV), mp 250°C (decomp.), $[\alpha]_D^{20}$ –13° (c 0.1, pyridine) was subjected to catalytic hydrogenation, giving the tetrahydro derivative (V), identical in its physicochemical and spectral characteristics, and also in the results of monosaccharide analysis (GLC–MS in the form of aldononitrile peracetates), with the hydrogenated desulfated derivative of cucumariosdie C_1 [2].

Cucumarioside G_3 is the first glycoside containing both a dienic system in the side-chain of the aglycon and also an even number of monosaccharide units [2, 3].

Thus, cucumarioside G_3 is 16β-acetoxy-3β-[O-(3-O-methyl-β-D-xylopyranosyl-(1→3)-O-β-D-glucopyranosyl-(1→4)-O-β-D-quinovopyranosyl (1→2)-(4-O-(sodium sulfator)-β-D-xylopyranosyloxy]holosta-7-22Z,24-triene.

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AMINO ACID COMPOSITION OF COTTONSEED FLOUR

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In VNIKhTI (Tashkent) a technology has been developed for obtaining cottonseed flour from cottonseed meal, and a pilot plant has been set up for its production. At the present time, investigations are proceeding on the use of cottonseed flour as a source of nitrogen in place of soybean flour, which is the main component of the nutrient media for the biosynthesis of antibiotics.

Cotton seed flour is a water-insoluble yellow-brown powder. Its crude protein content is 46.0-48.0% by weight (including 70.4% of soluble components on the weight of the crude protein), the moisture and volatile matter make up 7.0%, carbohydrates 11.7%, fats 1.7%, cellulose 10.2%, ash 7.4%, and phosphorus 0.8%. The amount of total nitrogen was determined by the Kjeldahl method; it came to 7.3-7.6%. The factor for recalculating nitrogen to crude protein is 6.25.

We have studied the amino acid composition of cottonseed flour, which is of definite interest in the field of microbiology. In VNIIA [All-Union Scientific-Research Institute of Antibiotics], Moscow, when it was used as the source of plant nitrogen in the nutrient medium for the synthesis of antibiotics (penicillin and erythromycin), the yields of the latter were higher then when soybean flour was used.

Preparatory work to determine the amino acid composition was performed in accordance with a description given in the literature [3], using an AAA-881 amino acid analyzer. The

*Deceased.

TABLE 1. Amounts of Amino Acids (calculated to 100% crude protein) in Cottonseed Flour and the Wastes from it

Amino acids	Amount, %	
	Cottonseed flour	Production waste
Aspartic acid	16,0	12,5
Threonine	4,2	3,9
Serine	5,9	5,5
Glutamic acid	4,2	3,3
Proline	7,1	6,1
Glycine	5,5	4,7
Alanine	4,9	4,5
Valine	7,9	6,8
Methionine + isoleucine	4,9	4,2
Leucine	8,5	7,2
Tyrosine	8,3	7,3
Phenylalanine	11,5	9,4
Histidine	1,4	6,7
Lysine	4,5	5,9
Arginine	4,7	9,5

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