

CUCUMARIOSIDE C - A NEW TRITERPENE GLYCOSIDE
FROM THE SEA CUCUMBER OF *Cucumaria fraudatrix*

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Triterpene glycosides were first found and studied in some species of marine invertebrates of the class Holothuroidea (sea cucumbers) [1-3] and Asteroidea (sea stars) [4-5]. Sea stars (*Lisostrosema* sp., *Distolasterias nippon*, *Asterias amurensis*) and the sea cucumbers (*Cucumaria* fr.) were collected in the Gulf of Troits, Sea of Japan. Methanolic extracts from them were saponified with alkali, and the unsaponifiable fractions were analyzed by thin-layer chromatography on silica gel in the chloroform-methanol-water (60:30:6) system.

Sugar-containing compounds give a coloration with orcin and with anthrone [8] but are not colored by ninhydrin and the molybdate reagent for phospholipids [9]. Partition chromatography on neutral alumina containing 25% (by weight) of water and on anhydrous silica gel (200-230 mesh) with 75% (by weight) of water separated the glycosides of the unsaponifiable fractions of the stars *Asterias amurensis* and *Lisostrosema* sp. and the sea cucumber *Cucumaria fraudatrix*.

The hydrolysis of these glycosides with Kiliani's mixture of with 12% HCl for 2 h at 90°C yielded identical mixtures of aglycones giving a red-violet color with SbCl_3 . From the sea cucumber *Cucumaria fraudatrix* we isolated in the individual state a glycoside which we have called cucumarioside C with mp 197-199°C; $[\alpha]_D^{25} -44.7^\circ$ (methanol). IR spectrum, cm^{-1} : 3500 (OH), 1760 (probably the carbonyl of an ester grouping). Found %: C 57.37, 57.59; H 7.82, 7.82. When cucumarioside C was hydrolyzed with 12% HCl, a mixture of products of the modification of the native aglycone and three monosaccharides - glucose, xylose, and rhamnose - were obtained. The monosaccharides were identified by paper chromatography. One of the products of the hydrolysis of cucumarioside C - the genin A_3 - was isolated and characterized; it formed white needles with mp 192°C, $[\alpha]_D^{25} +12^\circ$ (c 0.1; CHCl_3). IR spectrum, cm^{-1} : 3600 (OH), 1760.

Found %: C 74.33, 74.25; H 9.20; 9.12. Mol. wt. 484 (mass spectrometry). $\text{C}_{30}\text{H}_{44}\text{O}_5$. Calculated %: C 74.38; H 9.09. The substance is a triterpenoid, and the study of its structure is continuing.

In a study of the biological action of cucumarioside C it was found that in concentrations close to the active concentrations of puromycin, it suppresses the synthesis of protein in a culture of the cells of mouse bone marrow. At the same time, the glycoside is inert to the bacterium *Pasteurella pseudotuberculosis* and to yeast cells.

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