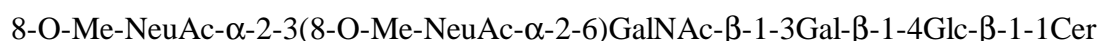
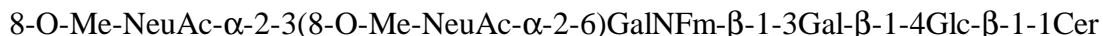


## Unusual Gangliosides from the Starfish *Evasterias Echinostoma*. Presence of an Unique Ganglioside Containing Two 8-O-Methyl-N-Acetyl-Neuraminic Acid Residues and N-Formyl-Galactosamine

Galina P. Smirnova

Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Leninsky Prospect 47, Moscow 117913, Russia,  
Fax 7(095)135-53-28, E-mail: smirnova@ioc.ac.ru

Gangliosides, glycosphingolipids containing one or more residues of sialic acids, are characteristic components of the cell plasma membranes of vertebrates and play an important role in many physiological functions of cells. Echinodermata was shown to be the only phylum of marine invertebrates, the representatives of which, like vertebrates, contain sialoglycolipids<sup>1</sup>. Therefore, comparative investigation of ganglioside structures of vertebrates and invertebrates is of great biological and evolutionary interest. In the present work disialogangliosides containing unusual oligosaccharide chains were isolated from the starfish *Evasterias echinosoma*. Their structures were elucidated by chemical and physico-chemical methods. Two major gangliosides were found to contain the branched pentasaccharide chain with two 8-O-methyl-N-acetylneuraminic acid residues linked to one N-acylgalactosamine residue at the positions 3 and 6. These gangliosides differ in N-acyl substituent of galactosamine residue (formyl or acetyl, respectively):



This kind of ganglioside structures has not been found in vertebrates, and N-formyl-aminosugar is detected in gangliosides for the first time.

The minor gangliosides contain a linear pentasaccharide chain with the terminal 8-O-methyl-N-acetylneuraminic acid residue bound to the subterminal N-acetylneuraminic acid residue by 2-4 or 2-9 linkages. This kind of linkages between sialic acid residues was not found in gangliosides of vertebrates, but was detected previously in gangliosides from starfish<sup>2</sup> and sea urchins<sup>3,4</sup>. The lipid moieties of *E. echinosoma* gangliosides were shown to contain normal fatty acids and sphingosines.

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