

Structure Determination of Glucosylceramides (Cerebrosides) From the Fungus  
*Cladosporium resinae* and Antimicrobial Action Against *Bacillus* Species

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Cerebrosides are glycosphingolipids, consisting of a ceramide and a single sugar residue (glucose or galactose) at C-1. The hydrophobic ceramide portion involves a sphingoid base and an amide-linked fatty acyl chain. These amphiphatic molecules have been reported to exhibit antitumor/cytotoxic, immunomodulatory, antifungal, antimicrobial and antifouling activities. Fungal cerebrosides were characterized as antigenic molecules directly or indirectly involved in cell growth or differentiation [3]. In this report we describe the isolation, structure elucidation, and biological evaluation of *C.resinae* cerebrosides. Glycosphingolipids were extracted from the fungus, purified by several chromatographic steps and purified CMH fractions submitted to structural determinations. The major CMH species displayed the same structure previously demonstrated by our group for several fungal species, a N-2'-hydroxyhexadecanoyl-1-beta-D-glucopyranosyl-9-methyl-4,8-sphingadienine. The molecular formula C<sub>41</sub>H<sub>77</sub>NO<sub>9</sub>Na was obtained from a high-resolution mass measurement of the [M+Na] ion peak in the HRESI-MS. A Mab against GlcCer was used in immunofluorescence analysis, demonstrating that the cell surface of growing cells is its major cellular target. The antimicrobial activity of cerebroside against bacteria and fungi was evaluated using the agar dilution method. The assay results indicated that glucosylceramide from *C.resinae* inhibited growth of *Bacillus pumilus*. However it was not inhibitory to *Candida albicans*.

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