［様式－学 5］

主 論 文 要 旨

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論文題名 **Complex sphingolipids of the brine shrimp *Artemia franciscana***

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主論文要旨

Sphingolipids are expressed on the outer side of the lipid bilayer in animal cells, which plays a foundational role in intercellular signaling. My research aims to clarify the phylogenetic relationship of lower animals by the chemical structure characterization of sphingolipids. Here, I report the identification and characterization of phosphosphingolipid and glycosphingolipids from cysts of *Artemia franciscana*. As a result, a sphingomyelin was identified as a phosphosphingolipid. On comparative analysis, the ceramide component of *Artemia* sphingomyelin appears to be unique in invertebrates and vertebrates. As the glycosphingolipids of this species, 14 structures with up to 10 sugar residues were characterized. Arthro-series glycosphingolipids were detected in a low amount. Notably, non-arthro-series ceramide trisaccharide (Fucα3Manβ4GlcβCer) and tetrasaccharide (GlcNAcα2Fucα3Manβ4GlcβCer) were dominant components. Furthermore, more complicated glycosphingolipids were composed of trunk arthro-series carbohydrates with the branching non-arthro-series disaccharide. Ceramide tetrasaccharide of non-arthro-series was detected in the related species by TLC immunostaining. My research indicates that it is possible to understand molecular functions of the sphingolipid complex and phylogenetic relationship of lower animals.