Abstract

Neutral ceramidase (NCDase) plays an important role in cell regulation, and has been observed in most of the organism across different groups. In this study the molecular evolution of NCDase in different organisms was studied. The phylogenetic tree relationships among the organisms were explored by comparing the sequences of their NCDase. Multiple sequence alignment of NCDase protein sequence of different source organisms revealed sequence level homology and highly conserved regions level. A conserved hexapeptide sequence GDVSPN within a large conserved domain was observed frequently in the sequences studies, further study of the sequences indicated the presence of Ser/Thr rich mucin like domains in the sequences of vertebrate NCDase enzymes, but was totally absent in invertebrates and bacteria, confirming the specific domain was acquired separately in mammals during the course of evolution. Comparisons of similarity values and inspection of phylogenetic tree was used to better trace the evolutionary history of Neutral ceramidase and resolve relationships between the organisms.
- Tani, M., Okino, N., Mitsutake, S., Tanigawa, T., Izu, H., & Ito, M. (2000). Purification and Characterization of a Neutral Ceramidase from Mouse Liver a single protein catalyzes the reversible reaction in which ceramide is both hydrolyzed and synthesized. journal of biological chemistry, 275(5), 3462-3468
Index Terms

Computer Science  Information Sciences

Keywords

Molecular evolution  Protein Evolution  Cladogram  Phylogenetics