Caveolae-mediated effects of TNF-α on human skeletal muscle cells

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Caveolae-mediated effects of TNF-α on human skeletal muscle cells.

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Abstract

Chronic diseases are characterized by the production of pro-inflammatory cytokines such than TNF-α and are frequently correlated with muscle wasting conditions. Among the pleiotropic effects of TNF-α within the cell, its binding to TNFR1 receptor has been shown to activate sphingomyelinases leading to the production of ceramides. Sphingomyelinases and TNF receptor have been localized within caveolae which are specialized RAFT enriched in cholesterol and sphingolipids. Because of their inverted omega shape, maintained by the oligomerization of specialized proteins, caveolins and cavins, caveolae serve as membrane reservoir therefore providing mechanical protection to plasma membranes. Although sphingolipids metabolites, caveolins and TNF-α/TNFR1 have been shown to independently