

Purification and Characterization of Neutral Glycosphingolipids in Human Vascular Endothelial Cells under Inflammatory Condition.

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In several vascular inflammatory reactions, inflammatory mediators lead to the activation of vascular endothelial cells (EC). To date, a number of functional molecules induced on the surface of activated-EC have been identified. In this study, we found Globotetraosylceramide (Gb4), a glycosphingolipid expressed in EC, as a novel inducible molecule on EC activated by TNF- α . After TNF- α stimulation for 24 hours, the expression level of Gb4 in activated-EC became approximately three times higher than that of non-treated EC. MALDI-TOFMS analysis revealed that the enhanced Gb4 predominantly contains C24:0 or C24:1 fatty acids in the ceramide moiety. Isolated caveolae/lipid raft-enriched detergent insoluble membrane domains in activated-EC predominantly contain this molecular species of Gb4 (C24-Gb4). Real time RT-PCR analysis revealed that the increased expression of C24-Gb4 was regulated by transcriptional control of key genes for C24-Gb4 synthesis. These observations suggest that Gb4, especially those containing a very long chain fatty acid, play an important role in the inflammatory response of EC.