Cell Surface Sialylation Status of Monocytes and Macrophages

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Cell Surface Sialylation Status of Monocytes and Macrophages

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Abstract

Sialic acids (SAs), a family of 9-carbon containing acidic monosaccharides, often terminate the glycan structures of cell surface glycoconjugates such as glycoproteins and glycolipids. The levels and linkages of sialic acids named as sialylation status vary as cell environment changes related to both physiological and pathological processes. Changes in sialylation of cell surface modulate cellular activity. SAs are highly involved in the immune system, however, the sialylation status related to individual immune cells and their activation state and functions are still unknown. In this study, we used a newly developed LC-MS/MS method to examine the cellular SA content during THP-1 monocytes differentiation into macrophages. The expression level of SAs on the cell surface is affected by its biosynthetic pathway. In particular, the synthetic enzyme, sialyltransferase, functions for adding SAs to the termini of N-linked or O-linked glycans on the cell surfaces. In this study, the change of SA was further confirmed by western blot on the sialyltransferases level. This work will abound in the approaches of SAs study, and also contribute to a better understanding of the physiological and pathological roles of SAs in the immune system.