

Global analysis of glycoproteins identifies markers of endotoxin tolerant monocytes and GPR84 as a modulator of TNF α expression.

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Abstract

Exposure of human monocytes to lipopolysaccharide (LPS) induces a temporary insensitivity to subsequent LPS challenges, a cellular state called endotoxin tolerance. In this study, we investigated the LPS-induced global glycoprotein expression changes of tolerant human monocytes and THP-1 cells to identify markers and glycoprotein targets capable to modulate the immunosuppressive state. Using hydrazide chemistry and LC-MS/MS analysis, we analyzed glycoprotein expression changes during a 48 h LPS time course. The cellular snapshots at different time points identified 1491 glycoproteins expressed by monocytes and THP-1 cells. Label-free quantitative analysis revealed transient or long-lasting LPS-induced expression changes of secreted or membrane-anchored glycoproteins derived from intracellular membrane coated

organelles or from the plasma membrane. Monocytes and THP-1 cells demonstrated marked differences in glycoproteins differentially expressed in the tolerant state. Among the shared differentially expressed glycoproteins G protein-coupled receptor 84 (GPR84) was identified as being capable of modulating pro-inflammatory TNF α mRNA expression in the tolerant cell state when activated with its ligand Decanoic acid.

Involved units

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