

Analysis of N-glycans with structurally conserved sialic acid residues in biological fluids “via direttissima”

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In this contribution we want to highlight our newly established method allowing characterization of N-glycans from different biological sources. The method includes sample preparation, derivatization, purification steps, analysis with MALDI-MS, as well as an automated data processing and peak assignment with glycoworkbench. Special attention was paid to derivatize sialic acid using very mild reaction conditions. The stabilization of sialic acid by DMTMM-mediated methylamidation enables a complete conservation of the glycan structures, in contrast to other methods where the labile sialic acids are partially lost [1]. With the neutralization of the negative charge an improved signal in mass spectrometry analysis is obtained. With this N-glycan analysis method, we evaluated the N-glycome of different biological sample such as sera, saliva, milk, food and intestinal lavages. Each of the analyzed samples delivers a characteristic glycosignature. One of the most fascinating result was the comparison of human milk N-Glycan profile with different milk of other species (cow, goat, sheep, infant formula). This analysis confirm each mammalian species produces its own special blend best suited for its babies.

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