Carbohydrate Structures of Haptoglobin in Sera of Healthy People and a Patient with Congenital Disorder of Glycosylation

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Haptoglobin is one of acute phase glycoproteins often used as markers in glycopathology studies. In this work the oligosaccharide structures of haptoglobin from 'healthy' subjects have been studied in detail, taking into consideration the possible dependence of glycosylation on the phenotype. About 75% of charged haptoglobin glycans were of biantennary complex structure, and some of them lacked one terminal sialic acid molecule. Triantennary structures made up almost 25% of the charged glycans pool, and highly branched tetrasialylated oligosaccharides did not exceed 1%. The main difference between haptoglobin derived from the sample of pooled 44 sera and from the 2–2 phenotype individual concerned the relative content of trisialylated oligosaccharide with one 2–3 linked sialic acid residue. The oligosaccharide profile of haptoglobin derived from serum of a patient suffering from congenital disorder of glycosylation was compared to 'healthy' controls. It was shown, that four main glycans are identical in patient and 'normal' haptoglobins. Some alterations were found in the relative content of mono-, bi-, and trisialylated glycans as well as in the appearance of some tracely abundant oligosaccharides in haptoglobin of the patient with congenital disorder of glycosylation.