

Isolation of milk whey oligosaccharides and their anti-adhesion activity against *Neisseria meningitidis*

Neisseria meningitidis is a human specific pathogen causing meningitis and sepsis. Meningococcal diseases are always very serious and can be fatal few hours after first symptoms are observed. Infants in the age of 6 to 12 months are in the highest risk to obtain meningococcal disease. Human and bovine milk oligosaccharides have been found to have inhibitory activity against several pathogens including *Neisseria meningitidis*.

Anti-adhesive activity of acidic bovine milk whey oligosaccharides against *Neisseria meningitidis* was investigated in this study. Gel chromatography was used for fractionation of the crude oligosaccharides isolated from bovine milk whey. The separated fractions were analyzed as regards acidic and neutral parts by measuring total hexoses and sialic acids content. The inhibitory activity of the specific acidic whey oligosaccharide fractions against the attachment of meningococcal pili was studied by using a solid-phase inhibition assay *in vitro*.

Fractions of acidic whey oligosaccharides were found to inhibit adhesion of *Neisseria meningitidis* type IV pili proteins to bovine thyroglobulin that was used as a reference glycoprotein. Milk whey acidic oligosaccharides that have anti-adhesive activity may act as a soluble receptor analogue resembling the carbohydrate structure of host cell receptor. Thus the active oligosaccharides may perhaps have the anti-adhesion activity against binding *N. meningitidis* bacteria to host cell surfaces.