

## NEW DEVELOPMENTS IN THE CHEMISTRY AND ENZYMOLOGY OF OLIGOSACCHARIDES ACTING AS PREBIOTICS

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Nowadays, there is an increasing interest in positively influencing the intestinal microflora through the diet. Carbohydrate fermentation of non-digestible-oligosaccharides is claimed to affect the gut ecosystem, which significantly contributes to the well being of humans. Different oligosaccharides are claimed to have different rates and degrees of fermentation by the total micro-flora present and the utilization of specific oligosaccharides may strongly depend on the individual species of bacteria present.

The isolation and characterization of differently substituted xylooligosaccharides will be discussed. The *in vitro* fermentation of these xylose oligomers differing in type of substitution (arabinose-, glucuronic acid- and acetyl-substitution) will be described with respect to the rate of fermentation, the remaining oligomeric structures and short chain fatty acid produced. The same xylooligosaccharides showed to have an anti-ulcer biological activity in rats provoked by an ulcer-inducing agent.

A second item will include the production of oligosaccharides from small sugars using the transglycosylation activity of some glycosidases. An off-line HPLC-MS approach will be described enabling us to recognize the composition and size of oligomers present in complex mixtures. The increase in yield of oligosaccharides produced by alfa-galactosidase from *Bifidobacterium adolescentis* DSM 20083 by site-directed mutagenesis will be mentioned briefly.