

## BINDING OF CARBOHYDRATES TO RECEPTOR PROTEINS

Bernd Meyer

*Institute of Organic Chemistry, Department of Chemistry, University of Hamburg,  
Martin Luther King Pl. 6, 20146 Hamburg, Germany  
Bernd.Meyer@chemie.uni-hamburg.de*

The analysis of the binding properties of oligosaccharides to receptor proteins is usually a tedious and complicated task which involves the synthesis of a number of derivatives and individual assessment of their binding properties by microcalorimetry or surface plasmon resonance. Many carbohydrate protein interactions are weak in nature such that the assay of binding properties requires quite significant amounts of substance.

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We have developed a new technique that allows the measurement of binding properties, including  $K_D$ , on and off rates and binding epitopes by saturation transfer difference (STD) NMR spectroscopy. This method allows the quick assessment of binding or non binding properties as well as the in depth quantification of the molecular interaction.

A newly developed variant of this technique allows also the determination of binding properties of oligosaccharides to receptor proteins when the receptor is a membrane integral protein. This technique called STDD (saturation transfer double difference) NMR spectroscopy also allows the determination of binding properties of carbohydrates with membrane integrated receptors in living cells.

As an example the interaction of a glycopeptide with a seven helix transmembrane receptor, CCR5, is described. The receptor is a G-protein coupled receptor (GPCR) This interaction is crucial for the HIV to infect human macrophages.