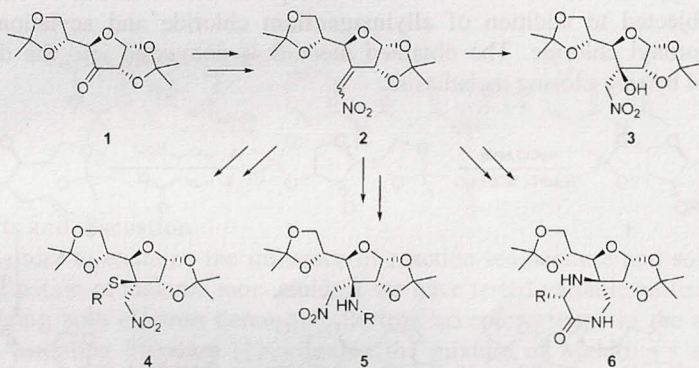


CONSTRUCTION OF NOVEL SUGAR DERIVATIVES VIA MICHAEL ADDITION REACTIONS

J. Lugiņina, V. Rjabovs, S. Belyakov, M. Turks*

Faculty of Material Science and Applied Chemistry, Riga Technical University, Riga, Latvia; *maris_turks@ktf.rtu.lv

Modification of C(3) position in glucose leads to discovery of new previously unknown conjugates. Here we report a novel approach for synthesis of carbohydrate derivatives which is based on Michael addition reaction. We have identified glucose-derived nitroalkene **2** as a suitable structural motif which is capable to accept a molecule possessing nucleophilic center. Similarly to diacetone- α -D-glucose derived ketone **1**, key-product **2** reacts with nucleophiles selectively from its *si*-face [1].



Michael addition of water to corresponding acceptor **2** allows the formation of otherwise minor product of Henry adduct **3**. Nucleophilic addition of amino group containing compounds leads to chiral diamine precursors (e.g. **5**), and addition of thiol group containing compounds gives **4**. Various *O*-, *S*-, *N*- adducts are possible, including those with R=carbohydrate. In this way complex disaccharides are obtained. At the same time, additions of natural amino acid esters give products that can be converted into spirocyclic sugar-piperazinones **6**.

REFERENCES

1. Lugiņina, J.; Rjabovs, V.; Belyakov, S.; Turks, M. *Carbohydr. Res.* 2012, 350, 86.