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**KATEDRA CHEMII ORGANICZNEJ, BIOORGANICZNEJ  
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**ROZPRAWA DOKTORSKA**

*Badania nad otrzymywaniem i zastosowaniem  
cukrów nienasyconych w syntezie  
glikokoniugatów*

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*„Studies on the synthesis and use of unsaturated saccharides in the glycoconjugates synthesis”*

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Searching for new solutions useful in the synthesis of complex glycosides and glycoconjugates, we focused on the use of the 1,2-unsaturated sugars (glycals) in the synthesis of new, interesting and useful sugar chiroins. It has been shown that by selecting appropriate reaction conditions it is possible to control the regioselectivity of the Ferrier rearrangement reaction. We adapted the Ferrier rearrangement reaction in acidic conditions for the synthesis of 2,3:2',3'-diunsaturated disaccharides containing 1,1'- $\alpha,\alpha$ -*O*-glycosidic bond. We have shown that the allyl rearrangement reaction may be carried out also in the presence of strong bases to give the new disaccharides, in which the 2,3-unsaturated hexose is connected via 1,3-*O*-glycosidic bond to 1,2-unsaturated hexose. This new sugar chiroins may be selectively functionalized in addition reactions. It allows to construct a library of complex saccharide derivatives and biologically active compounds. The last stage of the study was to evaluate the biological activity of received genistein, uridine and protoescigenin glycoconjugates. The proposed strategy fits perfectly into the current use of chemical science in order to synthesize biologically important products by stereoselective functionalization of unsaturated bonds.