Level: bachelor

Course title: Monosaccharides and Bioactive Derivatives (IB-502)

Status: elective

ECTS: 6

Requirements: none

Learning objectives

Obtaining bioactive sugar molecules using methods of organic chemistry and chemo-enzymatic way. Introduce students to the biological mechanism of action of selected natural and synthetic derivatives of monosaccharides and oligosaccharides.

Learning outcomes

Master knowledge about types of modified carbohydrates. Synthesis and mechanism of action of the selected modified sugar and nucleoside analogues of biomedical interest. Mastering the nomenclature of natural monosaccharides and modified sugars.

Syllabus

Theoretical instruction

Ways of showing the structure of monosaccharides. Chemical and chemo-enzymatic synthesis of homonucleoside, *C*-glycosides, *C*-nucleosides, aza sugars, carbon sugars, thio sugars and sugar mimics. The mechanism of action of selected biologically active derivatives of monosaccharides (glycosidases and glycosyltransferases inhibitors, antiviral agent, etc.). Nucleoside analogues with a modified base as drugs. Chemical glycobiology. Glycocode. Glycoproteins. Lectins. Carbohydrates in inflammation. Proteoglycan and selected their mimetic. Nomenclature of monosaccharides and derivatives of monosaccharides.

Practical instruction

In accordance with theoretical instructions.

Weekly teaching load				Other:
Lectures: 2	Exercises: 3	Other forms of teaching: 1	Student research:	