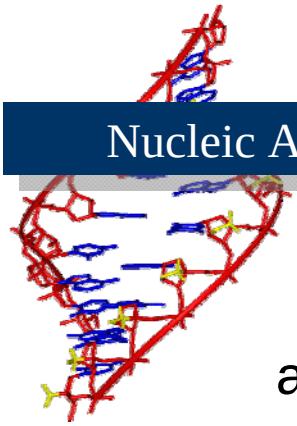

University of Southern Denmark

Nucleic Acid Center **Seminar** no. 66

Monday 13 May 2013
at 13:00 in the FKF Meeting-room

Prof. Krzysztof Walczak

Department of Organic Chemistry, Biochemistry and Biotechnology
The Silesian University of Technology, Gliwice, Poland

"Mucochloric acid a promising leading structure for bioactive compounds"

Abstract:

Mucochloric acid (MCA, 3,4-Dichloro-5-hydroxy-2(5H)-furanone) is a small molecule, easily prepared from furfural. It is a highly functionalized compound containing 2-furanone ring where carbonyl group is conjugated with double bond, two suitable for substitution chlorine atoms and one hydroxyl group. Highly functionalisation of MCA is responsible for its reactivity toward several nucleophiles with nucleophilic atom of oxygen, nitrogen or sulphur. The topic of lecture is presentation of MCA's synthesis and reactivity towards different nucleophiles, especially the reactions with functionalized amines will be presented. The MCA's derivatives were obtained conveniently by the substitution of a good leaving group using the appropriate amino alcohols, diamines or substituted anilines as nucleophiles. The presence of additional functional group in the target molecules opens a direct access towards further modifications, mainly by their conjugation with monosaccharides and other compounds of biological importance. The influence of reaction conditions, e.g. solvent, present groups and the type of nucleophile on the regioselectivity and the possible mechanisms of investigated reactions will be discussed. Finally, the results of bioactivity assays will be reported. A broad antibiotic activity against resistant Staphylococcus aureus and other bacteria strains has been observed in the some cases. The MCA's derivatives, depending on the introduced to parent molecule substituents exhibit cytotoxicity against different model of the cancer cell lines. In several cases, improvements of the leading structure brought to derivatives showing cytotoxicity in nanomolar range. The arylamino derivatives induce damage of nucleus in model lines of cancer cells.