Investigation on Structure-Bioactivity Relationship and Determination of the Absolute Configuration of Natural Products

Within the scope of this thesis the synthesis of biologically active compounds was performed for a better understanding of the fundamentals of structure-bioactivity relationship.

Chapter 2. describes the synthesis of benzamide riboside derivatives with potential anitumor activity. The key step of these synthesises is a metalloorganic coupling-reaction that was carried out by reacting ribonolactones with organic lithium reagents. In this manner, the 3-deoxy derivative and three different aryl-glycosides could be prepared. Clinical trials show that benzamide riboside exhibits extreme toxicity against human leukaemia and colon carcinoma cells.

Chapter 3. The NAD analogue BAD was prepared chemically in order to subject it to enzyme-substrate investigations. X-ray crystallographic study of this complex with reductase will be performed to investigate the active site of the enzyme.

Chapter 4. deals with the structure activity relationship investigation of a fungicide, named coniothyriomycin. Through systematic changing of the substitution pattern of coniothyriomycin it was shown which part of the molecule is responsible for the activity.

Chapter 5. involves a very nice example that theoretically calculated chemical reactivity matches the experimental data of sensitizing capacity in a large and homogeneous group of potential allergens. LUMO coefficients of phenanthrenequinones were calculated semi-empirically and compared with sensitation test results performed on guinea pigs.

Chapter 6. comprises the determination of the absolute configuration of six natural compounds whose CD-spectra were calculated theoretically and compared with the experimental curve.