

Isolation, structure elucidation and studies on synthesis of secondary metabolites from fungi and plants

This work describes the isolation, structure elucidation and studies on the synthesis of secondary metabolites from fungi and plants.

Isocoumarines **4567-1** – **4567-4**, a furane derivative **4567-5**, and a 4-phenylbutan-2-one derivative were isolated from the crude extract of the fungus strain 4567. Four of these metabolites have not been described yet in the literature. Strobilurin D (**3304-1**) was extracted from the fungus strain 3304. The chromatographic separation of the crude extract of the strain 4689 yielded the known secondary metabolite lateropyrone (**4689-1**). Four natural products **5451-1** – **5451-4** belonging to the class of the tricotecenes were isolated from the fungus strain 5451. The natural product **5451-4** is a verrol derivative, which is oxygenated at C-8. This is not known in literature yet. The extract of the lichen yielded (+)-*R*-usnic acid. The natural product **P-2** is a chalcone.

The absolute configuration of different natural products could be elucidated by comparison of their calculated CD-spectra and the measured ones. Using this method the absolute configuration of the preussomerine G-L, the xyloketals A and D as well as the palmarumycines C₉, C₁₀, and C₁₂ were determined.

In the third part of this work the first steps of the synthesis of stemphyperylene (**29**) were described and 4-hydroxy-2-oxo-6-propenyl-2*H*-pyran-3-carboxylic acid methyl ester (**41**) was tried to synthesize.

Starting material for the synthesis of stemphyperylene (**29**) was anthraflavic acid, which was reduced to anthracene-2,6-diol. After protecting the hydroxy groups, the positions 1 and 5 were acylated by Friedel-Crafts-Acylation. The anthracene derivative (**34**) was reacted with vinylene carbonate (**38**). Saponification of carbonate **35** led to the diol **36**, which was cleaved by oxidation with sodium periodate. The resulting dialdehyde **37** was tried to be converted into the protected stemphyperylene, but the reactions did not succeed.