

Defence of a Doctoral Thesis

Structure elucidation of semiochemicals related to: Polygraphus poligraphus, Polygraphus punctifrons, Trioza apicalis, Whitt- leia retiella, Neodiprion edulicolus, Neodiprion scutellatus, Neodiprion knereri and Neodiprion virginianus

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Doctoral Thesis in Chemistry
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Abstract

Pest insects can have adverse and damaging impacts on agricultural production, the natural environment, and our lifestyles. They may cause problems by damaging forest and food production. To cope with these problems, many industries use pesticides. However, pesticides are detrimental for the environment and produce considerable damage to ecosystems. Pesticides can be harmful to non-target species; they pollute air, water and soil; and can also have considerable effects on natural biological equilibria. A more environmentally friendly form of pest management is thus called for, and one such alternative to pesticides is the use of semiochemicals, chemical substances that insects use for communication. Semiochemicals can be used to interfere with this communication by, for example, attracting the pests to traps to either kill or estimate the population size of the pest. By using species-specific communication, one can direct the effort towards only the insect one wants to influence. The method is very effective, which means that it can also be used for conservation purposes to investigate the occurrence of very rare and red-listed insect species.

The focus of this thesis is on purification methods, the separation of stereoisomers, analysis and identification, structure elucidation, the synthesis of identified compounds, and the evaluation of identified compounds in field trials.

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Date	March 12 th 2019 10:15
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