Abstract:

Maggot therapy is a simple and highly successful treatment used for centuries for the clearing of necrotic and infected wounds. Recently, the application of maggot treatment became increasingly important for the treatment of non-healing wounds, which are infected by multi-drug resistant pathogens, especially methicillin-resistent *Staphylococcus aureus*. The aim of this thesis was to identify and characterise antibacterial substances produced by maggots of the greenbottle fly *Lucilia sericata*.

To approach this problem we analysed both the secretions of salivary glands as well as the content of the excretion/secretion product of *Lucilia sericata* maggots. In the peptidome of the salivary glands we identified a peptide fragment generated from the ß-subunit of the protein inhibin. This protein is related to the short protein activin, derived from the ß-subunit of Inhibin, which plays an important role in wound healing.

The complete excretion/secretion product of *Lucilia sericata* maggots was screened for therapeutically active propeptides and peptides by performing a classical, gel-based proteomic study.

In the small protein fraction we identified a dermaseptin-like protein. This protein showed powerful effects against gram negative and gram positive bacteria.

The peptide fraction of the ES-product expressed a potent anti-bacterial activity against *Staphylococcus aureus in vitro*. Biochemical purification by two-dimensional chromatography over reversed-phase and hydrophilic columns resulted in the isolation of fraction with activity against *Staphylococcus aureus*. By mass spectrometry a single dominant at m/z 1060 Da was identified in active fractions. By LS-ESI/MS/MS of active fractions a nonapeptide was partially sequenced: **S-Y-A(N,F,V)A-Y-D**. A final assignment of biological activity and peptide structure remains to be achieved by further structural analysis.