**Abstract**

Fungus *Gloeophyllum trabeum* (Agaricomytes: Gloeophyllates) is a brown rot wood-decay fungus which produces a vast spectrum of volatile secondary metabolites. Scientific publications state, that one of the metabolites produced by *G. trabeum*, can be the substance (3*Z*,6*Z*,8*E*)-dodecatrien-1-ol. This chemical substance is also the main component of trail-following pheromone of *Rhinotermitidae* termite family.

In this diploma thesis, I was trying to verify whether various species of *G. trabeum* are in fact capable of producing the substance (3*Z*,6*Z*,8*E*)-dodecatrien-1-ol. I was also focusing on the effects of saccharides, present in nutrient solutions, on quantitative and qualitative change in composition of volatile secondary metabolites produced by *G. trabeum.* The saccharides I used for my research were - *maltose, fructose, sucrose, xylose, and mannose.* The analysis was made by using comprehensive two-dimensional gas chromatography separation technique with time-of-flight mass spectrometric detection (GC×GC-TOFMS).

During my research I discovered that one of obtained species of *G. trabeum* can produce substance (3*Z*,6*Z*,8*E*)-dodecatrien-1-ol, but only under specific conditions. It is produced when cultivating on Petri dishes on agar - cellulose growth media. The measurement was further validated by derivatization reaction of dodecatrienol with the silylating agent N, O-bis(trimethylsilyl) acetamide (BSA). In *G. trabeum* samples cultivated in liquid media, the presence of dodecatrienol was not found.

The outcome of my research was a measurement of broad spectrum of volatile organic compounds produced by fungus *G. trabeum*, cultivated in liquid media. I mesaured 71 substances in total which I divided into 6 groups according to their chemical identities. Differencies in the composition of individual samples were evaluated by principal component analysis method (PCA). This method identified the substances which showed increased production due to presence of specific saccharide in the growth medium.

Keywords: *Gloephyllum trabeum*, trail pheromone, (3*Z*,6*Z*,8*E*)-dodecatrien-1-ol, termites, comprehensive two-dimensional gas chromatography, mass spectrometry, (GC×GC-TOFMS), principal component analysis (PCA)