Oral – Session 5

Interaction between earthworms and soil fungi: volatiles attraction

Zirbes Lara[1], Thonart Philippe[2], Wathelet Jean-Paul[3], Haubruge Eric[1]

[1]Functional and Evolutionary Entomology, Gembloux Agro-Bio Tech, University of Liege, Gembloux, Belgium
[2]Laboratory of Bioindustries, Gembloux Agro-Bio Tech, University of Liege, Gembloux, Belgium
[3]Laboratory of General and Organic Chemistry, Gembloux Agro-Bio Tech, University of Liege, Gembloux, Belgium

Earthworms and microorganisms are two major representatives in soil. Several interactions are known between these both actors of soil. But principally, microorganisms are an unavoidable constituent of earthworms' diet, in particular soil fungi are assumed to be a major food source for earthworms. Some fungi are presents in guts and casts of earthworms whereas some others are completely digested. For example, *Eisenia fetida* totally digests the fungi *Geotrichum candidum* and not *Aspergillus fumigates*. *Geotrichum candidum* is found in various habitats such as the soil and is a saprophyte in gut of humans and other animals as earthworms. *Eisenia fetida* is an important ecological earthworm species that is commonly used in industrial vermiculture and vermicomposting and is the model species for all scientist ecotoxicological researches. Chemical ecology and close association with soil fungi of this earthworm are poorly study. Therefore this information is essential to understand *E. fetida* life and to enhance our biological knowledge. As a first step to achieve such understanding, we focus our study on the behaviour of *E. fetida* in presence of filtrate of *G. candidum* culture in 4-arm olfactometer. We show for the first time, that *E. fetida* is attracted by filtrate of *G. candidum* culture. Volatile molecules emitted by this filtrate are analysed and identified by SPME-GCMS. Each identified molecule is tested in 4-arm olfactometer in order to find which are responsible for *E. fetida* attraction. We find that this attraction is due to ethyl pentanoate and ethyl hexanoate.