

P007*Antifungal effect of silver nanoparticles on Rickia wasmannii infected ants*László Tálás, Bence Tánczos, **András Tartally**, Gábor Nagy

The aim of our research was to examine the possible antifungal effects of silver nanoparticles against *Rickia wasmannii* (Laboulbeniales, Ascomycetes) infection on *Myrmica scabrinordis*. Laboulbeniales is a widely spread and diverse fungi class, with more than 2000 (sub)species, there are some agriculturally important insects amongst the possible infected host. According to our recent research this fungus negatively affects the survivability and overall fitness of infected host ants. Heavily infected *M. scabrinordis* workers were separated from each other in special containers to avoid the possible cross-contamination and the experiments were carried out under the same environmental conditions. The measurements of silver nanoparticles effects and image acquisition were made in the same time of the day for 7 days. During the experiments infected ants were treated with different concentrations of silver nanoparticle solution in aerosol form. In our pretrial we found that the 20 ppm concentration of the silver nanoparticles is ineffective against the fungus, because it has created a gelatinous coating around the ant, and also caused a bluish coloration in the cuticle (argiria). In conclusion we decreased the concentration of the silver nanoparticles, and used multiple treating solutions in 0.1 ppm; 0.5 ppm; 1 ppm; 5 ppm; 10 ppm; 20 ppm concentrations. Our results show that high concentrations (10-20 ppm) cause argiria and death of the ant. The lowest concentrations (0.1-1 ppm) have no visible effect on the ants or fungi. The ideal concentrations (1-5 ppm) caused quantitative changes in the infection rate, as lowered the number of fungus hyphae in the infected regions against control. In the future we would like to develop a protocol to clean the Laboulbeniales caused fungal infection from the agriculturally important insects. Furthermore we are planning the examination of cleaned ant behavioral properties and reinfection by releasing it back into an infected colony.