

DESCRIPTION FOR THE GENERAL PUBLIC

Entomopathogenic fungi living in soils are parasites arthropods (insects and spiders). In natural environment they control arthropods populations. These microorganisms are versatile, some of them are able to attack many pest species others only one species. These fungi are applied as biopesticides in pest control in organic farming. Every year, as a result of human activity, considerable amounts of pesticides (including insecticides) are introduced to the environment violating the ecological balance and having a negative impact on the microorganisms living in the soil. Literature data concerning the pollution of the environment by pesticides are alarming. The growing supply of these compounds considerably increases the level of contamination. For example, in Poland in the last twelve years, the sales of insecticides have increased over 67%.

The aim of this project is to investigate the effects of insecticides on the infectious ability of entomopathogenic fungi as well as to determine whether these microorganisms can participate in the removal of insecticides from the environment. It should also be noted that the studies concerning the combined effects of chemical insecticides (at doses lower than those commonly used) and entomopathogenic fungi on arthropods are novel.

In this project, we will focus on the negative impact of these compounds on the infectious agents produced by fungi. These agents include both proteins that facilitate the penetration of the germinating spores into the body of the insect, and secondary metabolites, which weaken the immune system of insects and their motor skills. All of these molecules are essential for the infection processes. These studies will be conducted with the use of advanced and modern techniques of mass spectrometry that were unavailable a few years ago.

In this project it is also planned to identify opportunities for effective elimination of arthropods by a combined use of the tested fungi and insecticides at doses lower than those commonly used. It is estimated that such a combined effect of both agents may indirectly decrease the use of pesticides, and thus reduce the pollution of the environment.

The implementation of this project will enhance the current knowledge, and fill a gap in the scientific literature. The results will be of great importance for farmers, ecologists and the scientific community.