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Personal evaluation of RNDr. Ing. Emad Ibrahim by his supervisor

I personally know Emad Ibrahim since February 2015, when he started to work in my laboratory. He comes from Egypt, but studied also in Prague, where he has obtained the Master of Science degree in the Czech University of Life Sciences. During the master study Emad has been working with insects, but his practice in insect laboratory work was very limited. His stay here was supported by a doctorate scholarship from the Egyptian government, and his work by my grants No. 14-07172S and 17-03253S provided by the Czech Science Foundation.

A topic of his research in my lab was focused on a role of adipokinetic hormones (AKHs) in stress situations elicited by the entomopathogenic nematode *Steinernema carocapsae*. Before that we had practically no experiences with this pathogen in our lab, thus, we have sent Emad to the lab of Dr. Pavel Hyršl (Masaryk University, Brno) for a short stay to get the basic skills. Thereafter, Emad was responsible for the “nematodal” part of our research.

During the PhD study Emad managed basic and some special methods of insect biochemistry and physiology. They involve insect maintaining and dissection, work with entomopathogenic nematodes, hormonal application, evaluation of oxidative stress markers, some PCR methods, measuring of hormonal and metabolite levels in insect body by spectrophotometric, chromatographic, immunological methods and incubation of insect organs under in vitro conditions. Emad has also passed through a training course “*Drosophila melanogaster* models for neurodegenerative diseases” in Trieste, Italy, where he obtained excellent practice in dissection of *Drosophila* organs and tissues.

His work on his topic resulted in 2 papers, both published in the Journal of Insect Physiology. Emad has proved using normal and gene manipulated insect models (*Pyrrhocoris apterus* and *Drosophila melanogaster*) that the toxicity of *Steinernema* can be enhanced by co-application with AKH. This interesting, and on the first glance rather illogical results, was described by our group for several insecticides in the past. Emad supported this main finding by many biochemical and metabolic data. He was also involved

into several other projects, of which the most important was a study of defence role of insect vitellogenin against *Steinernema* and its symbiotic bacterium *Xenorhabdus*. We have proved within this project a strong antibacterial effect of vitellogenin against the mentioned bacterium that have also entomotoxic effect as well as the nematode alone. The corresponding manuscript summarising these results has been submitted into the Journal of Experimental Biology.

Thus, Emad Ibrahim has met all the requirements stated in the Study rules of our University, so, I recommend the thesis for defence.

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Dalibor Kodrik
Supervisor