ABSTRACT

Kaman, P.: Influence of plant biological protection on production of secondary metabolites of *Papaver somniferum* III. Diploma thesis. Charles University, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany, Hradec Králové, 2018, 77 pp.

Diploma thesis was aimed to verify the impact of biological protection on the production of alkaloids of the opium poppy (*Papaver somniferum*, L.). Polyversum biofungicide was selected for this purpose, the active ingredient of which is oomycete *Pythium oligandrum*. The poppy tested were Orbis and Lazur high-morphine varieties. Extracts were prepared from the individual samples which were analyzed by HPLC. The following alkaloids were morphine, codeine, papaverine, noscapine and thebain. The average morphine content was around 0,5 %. The largest amount of 0,62 % was found in the poppyhead of untreated variant of the Orbis variety. Codeine for both varieties averaged 0,07 % in the poppyhead of untreated variant. Treated plants reached slightly lower values. The average papaverine content was around 0,01 % in the treated and also untreated variant, but only in poppyhead of the Lazur variety. Higher noscapine content was measured in the Lazur poppyheads, averaging 0,06 %. The content was only around 0,01 % for Orbis variety. The alkaloid content was always lower in the stem samples, than in the poppyhead samples. The presence of thebain was not proven in any sample. It also turned out that both varieties had the same or higher alkaloid content of untreated parcels. Therefore, biological protection in the form of oomycete *Pythium oligandrum* can not be recommended to increase the yield of alkaloids. The growth was not infected with fungal diseases during the experiment, so it was not possible to verify the effect of *Pythium oligandrum* and its protection of poppy against fungal pathogens.

Keywords: *Papaver somniferum* L., alkaloids, biological protection, *Pythium oligandrum,* HPLC.