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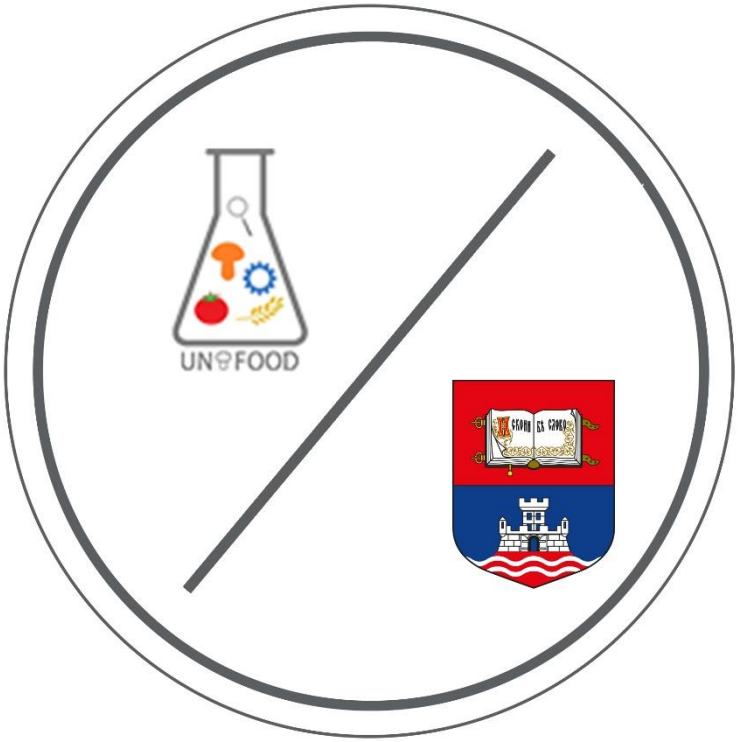

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EXPRESSION OF AMYLASES IN ADULT HONEY BEES FED WITH DIFFERENT PATTIES

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Fed of honey bee (*Apis mellifera*) is challenging for beekeepers and formulation of supplemental food is improved continuously. When natural food sources are scarce or not available, supplemental foods are widely used to support and build up honey bee colonies. Influence of commercial patty and patty enriched with 12.5% pollen on amylase expression in honey bee adults is presented. This is part of a wider study aimed to compare the activity of digestive enzymes when using different patties. We assume that data collected in this way can be used for the development of better food supplements for honey bees.

Honey bees were kept in an incubator for 21 days, at a temperature of 35°C and at 80% humidity. In each cage, there were one hundred bees and a piece of honeycomb. Midgut and hindgut samples were taken after 7, 14 and 21 days and midgut without hindgut was taken after 21 days. Samples were homogenized and used for amylase zymogram, IEF and enzyme assays.

There was no mortality during the experiment. A high protein concentration was detected in the midgut in both groups of bees. Amylase activity was significantly higher in bees fed pollen enriched patties, which is shown by enzyme assay and by zymograms. There are different amylase isoforms present in bees fed by pollen enriched patties in comparison to bees fed by commercial patties, but the major isoforms were the same.

The observed decrease in the amylase activity over time is probably due to dilution caused by the accumulation of water and undigested substances in the hindgut. Reduced amylase activity in the intestines of bees fed by commercial patties is due to a lack of starch or some other inducers present in pollen.

Because pollen is honey bee natural food, we conclude that food supplements that induce similar enzyme expression as pollen can be superior in comparison to supplements that induce very different enzyme expression.

Keywords: amylase, honey bee, nutrition.

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