



ANTIOXIDANT PROPERTIES OF DIFFERENT KINDS OF FODDER FOR FEEDING BEES

Mykhailo Kryvyi¹, Olena Dikhtiar¹, Ján Brindza², Mykola Zavadskyi¹

¹Zhytomyr National Agroecological University, Zhytomyr, Ukraine; E-mail.: o.dikhtiar@i.ua

²Institute of Biological Conservation and Biosafety, Slovak University of Agriculture in Nitra, Slovak Republic

An essential condition for ensuring the intensive development of bee families and increasing their strength is the provision of insects with a sufficient amount of high-quality fodders. In the winter-spring period, bee families often lack their own forage supplies, a large number of cells completely crystallized, especially on the honey flow of cruciferous and oil plants. Inadequate amount of feed-in bikes requires the use of feeding bees with high quality and biologically complete feed.

Antioxidant properties were determined to study the biological value of sugar-honey dough and honey syrup prepared on the basis of the centrifuge and capped sunflower honey.

The composition of sugar-honey dough was as follows: 81 % – sugar powder; 16 % – honey; 3 % – water. 80 % honey and 20 % of water were used to prepare honey syrup. Sunflower honey for research was obtained in the conditions of the Zhytomyr region of Ukraine.

The determination of the total antioxidant activity of the products was carried out using a photometric method with a high sensitivity to antiradicals at the laboratory of the Institute of Biodiversity Conservation and Biosafety at the Slovak University of Agriculture in Nitra. The results were processed and analyzed using Microsoft Office Excel 2010.

The obtained results of the research have shown that higher antioxidant properties are characteristic for feeding products made on the basis of capped honey. It was noted that the higher potential of the antioxidant activity of sugar-honey dough and honey syrup made of both centrifuges and capped honey was in water solutions. It was found that the antioxidant activity of sugar-honey dough was higher in the product made of capped sunflower honey. At the same time, its potential in water solution was 5.62 units, that by 2.45 units higher than in methanol solution. The use of capped honey for making a honey syrup has allowed obtaining the highest overall antioxidant activity of this fodder. The potential of the antioxidant activity of honey syrup with capped honey in a water solution was 9.54 units, which is by 2.93 units higher, compared with methanol solution.

Consequently, sugar-honey dough and honey syrup made of the centrifuge and capped sunflower honey show their antioxidant properties in both water and methanol solutions. However, we have noted that fodder products made of capped honey have a bigger biological value than of centrifuge honey. We can assume that this is due to a better biological activity of capped honey, compared with centrifugal one. Because capped honey contains a large number of organic acids, mineral compounds, vitamins, etc.

Keywords: antioxidant activity, sugar-honey dough, honey syrup, bee families.

Acknowledgement

Mykhailo Kryvyi and Olena Dikhtiar express their gratitude to Assoc. prof. Ján Brindza and the management of Slovak University of Agriculture in Nitra for their cooperation and academic internships, during which the results and knowledge presented in this article were obtained.