

## INFLUENCE OF GERMANIUM CITRATE ON LIPID CONTENT IN MELLIFEROUS BEES' ORGANISM

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According to the literature it is known that feeding bees sugar syrup only that almost does not contain minerals leads to accelerated aging of bees and lack of protein in their body. This affects the development of the pharyngeal glands responsible for invert sugars and production of royal jelly as well as the functional state of body fat, which accumulate reserve nutrients the body bees. Therefore the scientific and practical use in search of critical periods of supply of essential micronutrients bees that significantly affect the livelihoods of their body, or the role of these insects are not clear. One of the unexplored elements for feeding honeybees is germanium. He promotes excretion of toxins and eliminates the negative impact of environmental factors, has a broad spectrum of biological actions confirmed by different authors and the results we obtained anti-aging and cell death. This element plays an important role in the formation of body resistance and capable prophylaxis wide range of diseases. Where as the physiological role of germanium as biotic element in the body of bees is not studied enough, it was important to clarify the distribution of lipids and their classes, as important components of pollen in different tissues and anatomical parts of the body of a honey bee feeding on nanoakvatcitate germanium.

Data is presented on total proteins content and correlation of their separate classes in the melliferous bees' tissues at feeding them syrup with germanium citrate. Probable differences between fraction division of lipids classes in the tissues of the head, chest and belly of honeybees.

Researches were conducted in summer in three groups of melliferous bees three hives each. 1<sup>st</sup> control group was fed 500 ml of pure sugar syrup per week; 2<sup>nd</sup> group in addition to 500 ml of pure sugar syrup obtained 0,2 mg Germanium in citrate form; 3<sup>rd</sup> group obtained 0,3 mg of Germanium on 500 ml of sugar syrup. Total lipids extraction in the melliferous bees' tissues samples was conducted according to Folch method and their quantity was determined by gravimetric method.

Probably higher total proteins in bees' tissues of the 3<sup>rd</sup> group ( $p < 0,001$ ) was observed after feeding melliferous bees sugar syrup and Germanium citrate. Moreover expressed differences in correlation of the separate classes of lipids in experimental groups' bees' tissues was established. Including – probably higher relative content of non-etherified fatty acids on the background of phospholipids etherified cholesterol ( $p < 0,01$ ) level decrease in the 3<sup>rd</sup> group bees. The established changes in total lipids and their fractions content in the bees' organism at feeding them Germanium citrates indicate the influence of these compounds on the lipids metabolism in the bees' tissues. The feeding of Germanium citrate in separate tissues of organism of bees influenced on the increase of content general lipids, and also correlation of separate classes of lipids in the tissues of the head honeybees

comparatively with control that can be instrumental in the increase of their power status. Found significantly lower levels of phospholipids and cholesterol esters ( $p < 0,01$ ) against the backdrop of significantly higher levels of NEFA, triacylglycerols (III group) in the tissues of the abdomen of bees.

Obtained results witness about positive changes in the content of separate lipid fraction including processes of metabolic accumulation of energetic and plastic components of the food chain metabolism in bees' organism. This proves the necessity of using Germanium citrate additions for correction of melliferous bees mineral nutrition.

**Keywords:** BEES, TISSUES, PHOSPHOLIPIDS, TRIACYLGLYCEROLS, GERMANIUM CITRATES, LIPIDS