



University of Zabol

Graduate school

Faculty of Agriculture

Department of Animal Science

The Thesis Submitted for the Degree of M.Sc (in the field of Animal  
Science )

**Title**

Effect of sweet paste containing AVP-4 supplement on the spawning  
rate of the queen, population size and biochemical carcass  
characteristics in honey bee colonies (*Apis mellifera*)

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## **Abstract:**

The aim of this research is to investigate the effect of sweet paste containing AVP-4 on queen egg laying rate, carcass weight, population size, brood rearing, protein and body fat in European honey bees. In this experiment, 20 colonies with the same age and homogenized queen were used to perform the work. The hives used were of the Langstroth type and the colonies were homogenized in terms of the population of newborns, the population of adult bees, and the amount of food reserves (pollen and honey). The field experiment was carried out in the form of a completely randomized design in four treatments, including the first control treatment of sweet dough without supplements, the second treatment of sweet dough containing 2.5% of supplements, the third treatment of sweet dough containing 5% of supplements, and the fourth treatment of sweet dough containing 7.5% of supplements in five replications. The amount of eggs, larvae and pupae was measured every 15 days and the colony population was measured in a frame. It was used to determine crude protein and body fat based on AOAC methods. The obtained results showed that there was no significant difference between the treatments in the entire experimental period by comparing the mean egg laying of the queen, brood rearing, population size and crude protein in the entire experimental period ( $P>0.05$ ). Comparison of the average amount of fat (ether extract) had a significant difference among the treatments ( $P<0.05$ ). The use of AVP-4 supplement in feeding honey bees had no significant difference between the treatments on queen egg laying, brood rearing, colony population and percentage of raw carcass protein compared to the control. Therefore, in order to confirm the results, additional tests should be done at different times and more traits should be measured in the bee colony.

**Key words:** Amino acid, Vitamin and mineral supplement, Honey bee, Sweet paste