

# The Effect of *Varroa destructor* (Acari.: Varroidae) on morphological and nutritional characteristics of the worker honeybee, *Apis mellifera meda* (Hymenoptera.: Apidae)

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## Abstract

Honey bees play an important role in the survival and pollination of many plants. One of the most important of pests that attack honey bees is *Varroa destructor* mite. This mite is an ectoparasite of honeybees and feeds mainly on larvae and pupae. In this research, *Apis mellifera meda* workers were infected at the pupal stage to different mite densities and then the biological and morphological characteristics of the emerged adult bees were investigated. For this purpose, female mites were collected from infected hives and placed in each prepupal cell according to the desired mite density (0, 1, 2 or 3 mites). After adult bees emerged, nutritional traits were checked every 3 days for 12 days. Then these adult bees were dissected to measure the area of the hypopharyngeal acinus. The biological and morphological results showed that the increase mite density had no effect on the duration of the pupation period of bees, but it significantly decreased the weight, body length, area of the forewings, hind wings and hind tibia of bees. Adult bees that had three mites during their pupation had the highest mortality rate and for this reason, it was not possible to examine their nutritional characteristics. The nutritional characteristics results showed that increasing the mite density caused a decrease in the consumption of syrup and water by the adult bees, but the consumption of pollen did not change. The food consumption index of bees without mite and bees with two mites during the pupation period was higher than bees with one mite, but the growth rate and the area of the acini of the treatments did not show any difference. The results of this study are expected to provide a basis for biological control of this mite by providing further information on how it affects honeybees.

**Key words:** *Varroa* mite density, Consumption index, Growth rate, Morphological characteristics

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