SURVEY AND IDENTIFICATION OF MICROORGANISMS IN SOME HONEYBEE PRODUCTS

By

RAWDAA RAMDAN ABO EL-ALLA KHALIL

B.Sc. Agric., (Plant Protection), Fac. of Agric., Ain Shams Univ., 1990

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ABSTRACT

Rawdaa Ramdan Abo El-Alla Khalil. Survey and Identification of Microorganisms in some honeybee products. Unpublished M.Sc. in Economic Entomology (Apiculture), Plant Protection Department, Faculty Agriculture, Ain Shams University (Economic Entomology)

The present work was carried out in honey bee colonies in the apiary of Faculty of Agriculture, Ain Shams University and Bacterial Plant Diseases laboratory, Plant Diseases Department, Faculty of Agriculture, Ain Shams University to study the effect of food types (sugar syrup fortified with Garlic (*Allium sativum*), Lemon (*Citrus limon*), Garlic plus Lemon) or pollen grains and plain sugar syrup (1:1)) on contamination of honey with bacteria, fungi and yeasts and to determine and characterize microbial populations in Egyptian honeys, bee pollen, bee propolis, royal jelly and bee wax obtained from different sources and to detect the presence of total colifroms, *Samoenella* sp, *Shigella* sp, *E. coli* and *Paenibacillus larvae larvae* in the bee honey samples examined. Also, study the effect of storage period of honey on their microbial contains. This study also, aims to monitor the number of total viable bacterial counts and total molds and yeasts which are good indicator for the sanitary conditions of honey samples and other bee products. The data summarized that, application of sugar syrup plus extracts of garlic, lemon, garlic plus lemon or bee pollen led to decrease population of bacteria, fungi and yeasts compared with control treatment (plain sugar syrup 1:1). *Clastridium botulism* bacterium was the most frequency in all honey produced when compared with other bacteria types. The fungus *A. apis* was the most frequency compared with *A. niger*, *Cladosporium* sp. and *Penicillium* sp., respectively. Meanwhile, the yeast *Lipomyces* sp. was the most frequency compared with *Debaromyces* sp. and *Saccharomyces* sp. It also concluded that, fungi were the least

population in all the honey types. Population of bacteria was significantly lower in honey samples collected from Dakhlia and Kalubia governorates, followed by Monifia, meanwhile, Beheira and Fayoum governorates significantly had the highest population of bacteria. For fungi, honey samples collected from Kalubia and Fayoum governorate had no population of fungi, followed by Dakhlia, meanwhile, Monifia and Beheira governorate significantly had the highest population of fungi. The population of yeasts was significantly low in honey samples collected from Fayoum (0.78 colonies /sample), followed by Kalubia and Dakhlia (0.89 and 1.11 colonies /sample)**.** It also indicated that, Royal jelly and bee propolis had the lowest population of microorganisms (bacteria, fungi and yeasts), followed by bee wax and bee pollen, respectively. The data also summarized that fungi had the least population in bee pollen, bee propolis, royal jelly and bees wax. No bacteria, fungi and yeasts were detected in extracted honey at zero time; in honey taken from capped combs, it was detected after 6 months, meanwhile in naturally produced wax, the bacteria were detected after 9 months. The data also summarized that the population of bacteria, fungi and yeasts was significantly less in naturally produced wax samples than extracted honey and honey was taken from capped honey combs.

Key words: Honey, Bee pollen, Bee propolis, Royal jelly, Bees wax, Microorganisms, bacteria, Fungi and yeasts.

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