The Effect of Supplementary Feeding of Honeybees, *Apis mellifera* L. on Brood, Honey and Royal Jelly

Thesis
Submitted in partial fulfillment of the requirements for the degree of

*Master of Science*
in Agricultural Science
(Economic Entomology)

*By*

Ayman Ahmad Owayss Abd-Alhakam
B.Sc. Agric. (Plant Protection) ٨٨٩١
Fac. Agric. El-Fayoum, Cairo Univ.

Plant Protection Department

*Faculty of Agriculture, El-Fayoum*
Cairo University

٩٩٩٦
Supervisors Committee

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*Cairo University, Faculty of Agriculture at El-Fayoum, Plant Protection Department*

**Name of student:**

Ayman Ahmad Owayss Abd-Alhakam

**Supervised By:**

Prof. Dr. Makram Aziz Hanna
Employment: Professor of Zoology

Dr. Abd-Elhaleem Mishref Ismail
Employment: Assist. Prof. of Economic Entomology

Dr. Helmy Abdou Ghoniemy
Employment: Assist. Prof. of Economic Entomology

Plant Protection Department,
Faculty of Agriculture,
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Ayman Ahmad Owayss Abd-Alhakam
B.Sc. Agric. (Plant Protection) ١٤٤٨, Fac. Agric. El-Fayoum, Cairo Univ.

**Approved By:**

Prof. Dr. Mohamed Ismail Mohamed
**Employment** Professor of Economic Entomology and Apiculture, Faculty of Agriculture, Cairo Univ.

Prof. Dr. Makram Aziz Hanna
**Employment** Professor of Zoology, Faculty of Agriculture, Cairo Univ., Fayoum Branch.

Prof. Dr. Mahmoud Mohamed Mazeed
**Employment** Professor of Economic Entomology, and Apiculture, Plant Protec. Res. Institute, Ministry of Agriculture, Egypt.

Committee in charge Date of examination: ٢٢/٥/١٩٩٦
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**ABSTRACT**

Feeding honeybees, *Apis mellifera* L. on sunflower seed meal, agwa, and dry medical yeast as pollen supplements, compared to sugar syrup, resulted in a significant increase in worker brood areas and royal jelly quantity, but no significant increase in honey quantity was observed. The best time to apply these supplements is autumn and winter (from September to March). The highest quantity of royal jelly was collected in spring and the least in winter and this quantity decreased gradually by frequent graftings. Thus, the first three graftings are enough, each remains for three days.

Physical and chemical analysis showed variations in honey produced in such feeding (TSS, moisture, O.D., viscosity, EC, ash, acidity, amino acids, total sugars, protein, lipid and minerals) and in royal jelly, sugars, protein, lipid and minerals were in variable amounts.

Honeys and royal jell produced showed different antibacterial actions on tested bacteria; *Escherichia coli, Bacillus subtilis* and *Staphylococcus aureus*.

Cadmium was found (range: 32.0-24.0 ppm) in all honeys tested, but clover honey only contained 640.0 ppm of cobalt. Relative levels of lead from 35.4 ppm in cotton honey to 76.01 ppm in clover honey were found, but royal jelly tested was free from cobalt and contained small amounts of cadmium. Lead ranged from 71.4 to 0.01 ppm. The presence of these heavy metals is very much important in indicating environmental pollution and symbolizing hazardous problem in public health.

**Key Words:** Honeybees, pollen supplements, brood rearing, honey, royal jelly, physico-chemical analysis and antibacterial activity.