# THE RELATIONSHIP BETWEEN VARROA MITES ON THE INFECTION OF HONEYBEE COLONIES BY CHALKBROOD (*A. APIS)*

**By**

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ABSTRACT

**The study of the effects of *Varroa jacobosoni* as carries of chalkbrood disease indicated that varroa mites were efective Factors of *Ascosphaera apis* infection and the causative agent of chalkbrood disease of the honeybee brood the average numbers of female varroa mites have been increased in colonies infested with the more infested of chalkbrood to reach 3311.2 mites/ colony. However average number of mite in other healthy colonies found in the hive debris were 589.1 mites / colony during the periods from February to June (1996 & 1997). The examination of the mites indicated that the fungus of the chalkbrood was found on it body.**

**The study of the effect of chalkbrood on the areas of infested comb in ten honeybee colonies/ ($in^2$) Located at the Faculty apiaries was measured at 12 days intervals during periods of March – July (1996 – 1997) indicated that the total area of infested brood was 587 ($in^2$) . The mean area was 58.7 ($in^2$) and the mean of infested percentage was 27.9% per colony. However the total areas of healthy brood in infected colonies**

**Were 2098 ($in^2$), and mean of healthy brood was 209.8 ($in^2$) with the perentage of infection 27.9% . However the total areas of healthy brood (control) in healthy colonies were 6686 ($in^2$) and the mean was 668.6 (inch) during the two years of study (1996- 1997).**

## INTRODUCTION

**Chalkbrood in honeybees (*Apis mellifera)* may be easily recognized in cells uncapped by the workers , As first , dead larvae are covered by a fluffy white mould and swollen to the hexagonal shape of the cell. Later they dry and shrink into mummies . and may become grey/ black if spore cysts form. The only condition with which this might be confused is mouldy pollen, but the latter mostly occurs early in the spring. And the mouldy mass breaks up easily when probed, whereas a mummified larva infected with chalkbrood retains its identity when similarly treated[2] . The dead brood consists mostly of stretched larvae , the head projecting from the fungal mantle[11] . In severe infections, many cells containing mummies may remain capped. Mummies in course of being ejected may be found on the floor, or on the alighting board, of the hive[7]. heavily infected hives emit a yeasty odour , although attempts to use this for diagnosis do not appear promising[8]. Early accounts spoke of the drone larvae being preferntially attacked[4,5,10], but more recent reports make it clear that this may have more to do with their position on the comb than with any intrinsic difference in resistance[3,7,9], or with the fact that colonies under pressure neglect cleaning out drone cells . Worker larvae certainly can be attacked early and extensively in the development of the disease[1,12]. Betts[4] commented that she had not seen queen larvae with chalkbrood, but Cury[6] . and De Jong[7] . refer to**

infected queen larvae, and 7 out of 300 questionnaires returned by British beekeepers reported having seen queen larvae with the disease[6] . However, Woyke and Bobrzecki[14] report that 20% of queen larvae in "long queen cell disease" appear to have chalkbrood symptoms,

and this may perhaps introduce an element of confusion. In this study, the relationship between varroa and chalkbrood was examined

## MATERIALS AND METHODS

**Effect of varroa Mites on the infection of honeybee colonies by chalkbrood:-**

The effects of *Varroa jacobosoni* as carries of honeybee chalkbrood disease were studied. Ten colonies were examined for the presence of varroa mite and the presence of chalkbrood disease during february to June 1996-1997. Another 10 colonies that showed no symptoms of chalkbrood were examined for the presence of varroa mite during the same period of study. This experiment were carried out to study the association of varroa mite with chalkbrood disease.

## RESULTS AND DISCUSSION

**Effect of varroa Mites on the infection of honeybee colonies by chalkbrood :-**

The effects of *Varroa jacobosoni* as carries of honeybee chalkbrood disease are presented of chalkbrood disease of the honeybee in table (1). The earlier survey conducted in laboratory showed that the average numbers of female varroa mites have been increased in colonies infested with chalkbrood in the samples collected from colony debris infested with chalkbrood. The average numbers of mite in infested colonies were 3311.2 mites/ colony. However average number of mite in other healthy colonies found in the hive debris were 589.1mite / colony during the periods from February to June (1996 & 1997) These results indicated that the *Varroa jacobsoni* numbers increased infested colenies by chalkbrood The mites carries the chalkbrood diseas between the brood of honeybee colonies. These results are in agreement with Lue (1996) who indicated that varroa mites are effective factors of *Ascosphaera apis*, the causative agent of chalkbrood disease of the honeybee .

Table (1): Effect of *Varroa Jacobsoni* as carriers of Honeybee chalkbrood disease

| No . Of colonies Examined | Average No. Of Varroa females during February- June 196 & 1997 | |
|---|---|---|
| | Number of varroa mites in infestes colonies | Number of varroa mite in Healthy colonies |
| 1 | 2150 | 928 |
| 2 | 1265 | 522 |
| 3 | 3610 | 942 |
| 4 | 2217 | 714 |
| 5 | 4624 | 235 |
| 6 | 6150 | 496 |
| 7 | 2354 | 273 |
| 8 | 7162 | 329 |
| 9 | 2015 | 622 |
| 10 | 1565 | 830 |
| Total | 33112 | 5891 |
| Mean | 3311.2 | 589.1 |

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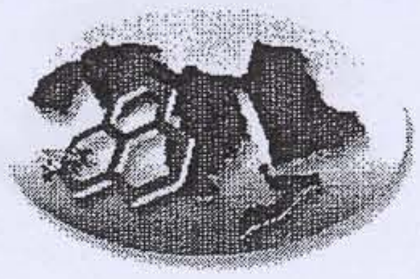

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## الملخص العربى

دراســة العلاقــة بــين الإصــابة باكاروس الفاروا كناقل جيد لمرض تحجر الحضنة الطباشيرى ٠ بينت هذه الدراسة تأثير أكاروس الفاروا كناقل جيد لمرض تحجر الحضنة الطباشيرى وزيادة شدة الإصابة فى طوائف نحل العسل كــان متوســط عــدد الإنــاث لاكاروس الفاروا تزيد فى الطوائف المصابة بتحجر الحضنة الطباشيرى ليصل إلى ٣٣١١,٢ أكــاروس لكــل طائفة مصابة بالمرض وقد وجد أن متوسط عدد اكاروس الفاروا فى الطوائف الغير مصابة بتحجر الحضنة الطباشيرى ٥٨٩,١ اكاروس /لكل طائفة أثناء الفترة من فبراير إلى يونيه عام ٩٦ وعام ٩٧