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# General situation of chalkbrood disease in honeybees in Turkey

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## Summary

Chalkbrood, a fungal disease of honeybees, is a new problem for beekeepers in Turkey. This disease was first recorded on the infected comb samples at the Bee diseases Laboratory of Integrated Beekeeping Project, Development Foundation of Turkey (DFT) in Ankara, in 1988. Since its discovery, it has been found in at least 9 provinces during two months.

Chalkbrood is caused by ***Ascosphaera major*** (Prökschl and Zobl) Skou and usually sealed larvae become mummified.

Nowadays, the most of the colonies were infested by ***A.major*** spores at all the geographical regions of Turkey.

## Introduction

Chalkbrood is a serious fungal disease of honeybees in many countries (Dadant, 1979) and affects worker, drone and queen larvae (Shimanuki, 1981). Effected larvae dye, turn white colour and become mummified inside the cell (Morse, 1980).

Seal (1957) stated that a colony which is badly ventilated and only partly occupied during winter provided an excellent resting place for spores of ***Ascosphaera apis*** (Prökschl and Zobl) Skou. Chalkbrood occurs particularly during rainy summers in apiaries that are located in moist cool places (Dallmann, 1966). Fungus infections of bees appear in colonies with excessive hive moisture (Gochnauer, 1963). Some-times larvae may be fed ***A.apis*** spores and not develop the disease. It explains that one or more suitable conditions must have occured at the same time for disease development (Heath, 1982).

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According to Skou (1972), ***A.apis*** is a synonym of ***A.major.***

Description of the disease, hosts, geographical distribution and transmission were given in many texts (Anonymous, 1980; Brady, 1979; Hitchoock and Christensen, 1972; Heath, 1982).

At the workshop, which was organised by FAO in Pulawy, Poland, Dr. Nicola Bradbear claimed that an infestation of chalkbrood is possible in the near future in Turkey (Bradbear, 1987). Next year the disease was first observed on the infected comb samples sent from Kahramanmaraş, at the Bee diseases Laboratory of Integrated Beekeeping Project, the Development Foundation of Turkey (DFT) in Ankara, in 1988.

## Materials and Methods

After the macroscopical description, in July and August 1988, surveys were made in many apiaries and important honey producing regions of Turkey.

The mummified larvae samples were brought to the laboratory, examined microscopically and spore cysts, balls and ascospores measured.

## Results and Discussion

Chalkbrood disease was found to be very widespread in many apiaries in Aydın, Muğla, İzmir, Ankara, Çankırı, Kastamonu, Kırşehir, Sivas ve Bitlis provinces during the summer surveys in 1988 (Tutkun, 1988).

The disease was easily detected by examining the combs, entrance and bottom boards of the hives by the presence of the mummies. At the beginning, the mummies were white owing to the mycelium of the fungus when they formed in unsealed and sealed cells. Later on, they dried and shrank in the cell and became dark grey or almost black when the spore cysts were formed.

The preliminary examination of the 39 mummified samples from various places revealed that the pathogenic agent is ***A.major.*** Measurements of the spore cysts, spore balls and ascospores were in accordance with the data given in references (Skou, 1972; Skou and King, 1984). The cultural aspects of the fungus was also identical with the ones cited by the other authors (Fig. 1).

According to the results of measurement it was found that the sizes of the spore cyst, spore balls and ascospores were in accordance with findings of Skou (1972). Majority of ascospores of the 39 samples were measured as greater than 3 µm. The percentages of the ascospores 3 µm always exceeded 70.

The widespread occurence of the disease may be related with the optimum climatical conditions in the spring of 1988, which was humid and cool. Experiments have shown that brood is most susceptible when chilled immediately after it has been capped (Bailey, 1967; 1981).

In fact, the principle source of this infestation is the contaminated beeswax which has imported from 16 countries about 580 tons between 1986 and 1988 years. Besides, spreading of the disease might be expected since it can be transmitted by adult bees, contaminated combs and handling the hives.

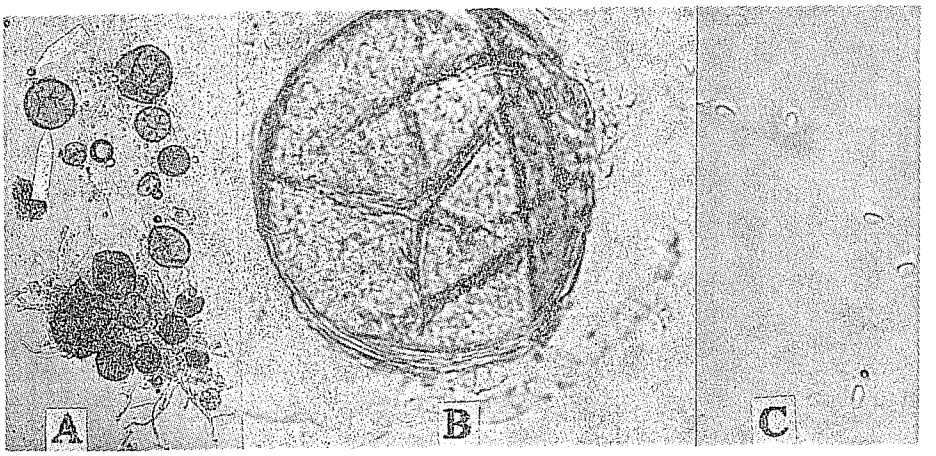


Fig 1. Microscopical features of ***Ascosphaera apis***: (A) a general aspect of spore cysts and spore balls (160 X), (B) an enlarged spore cyst and a spore ball (900 X), (C) individual ascospores (1200 X)

Migratory beekeeping should be controlled in order to prevent the intensity of the disease by the Ministry of Agriculture and Rural Affairs.

We observed that the disease was not a problem in strong colonies but new infested weak colonies were not much resistance to the chalkbrood.

## Özet

**Türkiye'de Balarılarında Kireç hastalığı (*Ascosphaera major* Maassen ex Claussen)'nın Genel Durumu**

Asya, Avrupa ve Amerika'da Balarısı (***Apis mellifera*** L.) larvalarında yaygın olarak bulunan Kireç hastalığı (***Ascosphaera major*** (Prökschl and Zobl) Skou Türkiye'de ilk defa 1988 yılı Mayıs ayında, Türkiye Kalkınma Vakfı Entegre Arıcılık Projesi Arı Hastalıkları Laboratuvarına Kahramanmaraş'tan gönderilen bulaşık petek örneklerinden izole edilmiştir.

Fırsatçı bir fungus olan hastalık amili, arı larvalarında ölüme yol açmakta ve koloniyi hızla zayıflatmaktadır (Tutkun ve İnci, 1992).

Kireç hastalığının tehlikeli bir şekilde hızla yayılması üzerine Tarım Köyişleri Bakanlığı'na ülkemiz için yeni olan bu hastalık hakkında ihbarda bulunulmuş, ayrıca hastalığın tanınması ve korunma yöntemlerini içeren bir rapor sunulmuştur.

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