Abnormal Specimen of the Bee Mite, Varroa jacobsoni, with some Possibly Original Features (Acarina: Varroidae)*

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In examining 1000 adult ♀♀ of Varroa jacobsoni Oudemans 1904, a specimen was found with a different body shape and with clerotinized hooks on the inside of the genitoventral shield. Its size resembles the shape of less adapted ectoparasites, and the hooks indicate a different mode of copulation, which is believed to be more primitive, the tocospermy. This kind of insemination by a spermatophore is believed to be more evolved than podospermy which is injection of sperm into openings near coxae III + IV of the ♀. Therefore one may conclude that this abnormal specimen is a mutant which reflects some features of an ancient type in the genus Varroa.

Key words: Varroa jacobsoni — abnormal specimen — mutant — spermatophore.


1 Introduction

The shape of Varroa jacobsoni Oudemans 1904 is an unusual one for mites (Acarina). Only some parasites of reptiles, e.g. Geckobia Megnin 1892 (Thrombidiidae) and of Myriapoda, like Discosomus pectinatus Trägardh 1912 (Antennophoridae) [Trägardh 1912], are broader than long. This is a special adaptation to fit under scales of Reptilia, segments of Myriapoda, or abdominal segments of Apis spp. (Hymenoptera: Apidae). In the long coevolution of host and parasite, V. jacobsoni obviously has evolved this shape to increase its protection under the segments of the bees.

In mesostigmatic mites, 2 different types of insemination are described. (a) podospermy, when sperm cells are injected into coxal pores (solenostomes) of the ♀ by modified chelicerae of the ♂, (b) tocospermy, when the insemination is by means of a spermatophore, which is transferred into the genital opening of the ♀ [Athias-Henriot 1969]. In Varroa jacobsoni podospermy can be observed. The ♂ injects the sperm cells into the ♀ solenostomes on coxa-III. The process of sperm migration and maturation is described in detail by Alberti & Hanel [1986].

The discussion whether tocospermy or podospermy was first in the evolution of mesostigmata is taken up by analysing features of a ♀ abnormal specimen and possible mutant [AN-SM]1 of Varroa with properties of both types of insemination.

1 abnormal specimen and possible mutant; in further text: AN-SM

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