

DETERMINATION OF ACARICIDE RESIDUES IN BEESWAX

SANDRA MEDICI¹, JUAN MARIOLI², GABRIEL SARLO³, ANNAMARIA PERNA^{4*},
EMILIO GAMBACORTA⁴, IMMACOLATA INTAGLIETTA⁴, AMALIA SIMONETTI⁴,
GUSTAVO VELIS³, MARTIN EGUARAS³

¹CONICET, Buenos Aires, 1426, Argentina

²Universidad Nacional de Rio Cuarto, Rio Cuarto, 5800, Argentina

³Universidad Nacional de Mar del Plata, Mar del Plata, 7600, Argentina

⁴Università degli Studi della Basilicata, Potenza, 85100, Italia

anna.perna@unibas.it

The beeswax can contain pollutants lipophilics. These may come from the environment and beekeeping practices. The main pollutants found in beeswax are chemicals from beekeeping practices, while those arising from the ecosystem seem to be less important.

Currently acaricides are necessary on a regular basis to control Varroa. Investigations carried out in Europe show that the concentration of acaricides in the beeswax increases as the number of applications of these products is increasing and decreases very slowly in the case of a reduced use of them. In the U.S. beekeepers have noted negative consequences such as the inability of bees to generate queens or a sharp increase in their turnover rate. Many studies have been carried out to determine sub-lethal effects of acaricides in colonies of *Apis mellifera*. In Argentina the recovery of beeswax and the production of beeswax printed for commercial use is high, so it is necessary to assess the presence of acaricides' residues. We have developed a technique to detect the presence of several acaricides such as Cumaphós, Fluvalinate and Flumethrin, according to the methodology described by Jiménez et al (2005). The results show that 87% of beeswax printed exhibit residues of Cumaphós and the 37.5% of Fluvalinate. All samples that presented residues of Fluvalinate showed also residues of Cumaphós. Cumaphós residues were detected in 62.5% of beeswax recovery, Fluvalinate residues in the 37.5% and only 25% of beeswax recovery presented both the acaricides. Flumethrin residues were not detected in any sample of beeswax.

The rational behind of Cumaphós variations in the samples is the continuous application of acaricides by the beekeepers, and the accumulation of their residues from year to year in beeswax. The Fluvalinate, a pyrethroid acaricide, is not longer used in beekeeping and its presence can be due to the heavy applications made in the past and to its high persistency in beeswax. The results highlight the presence of lipophilic acaricides in beeswax and the need to analyze the effects that these products can cause in the bees colonies.

[1] Jiménez, J.; Bernal, J; Nozal, M.; Martín, M. 2005. Residues of organic contaminants in beeswax. *Eur. Lipid. Sci. Technol.* 107: 896-902.

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