5.8 Results of a monitoring program of pesticide residues in Beebread in Spain. Using Toxic unit approach to identify scenarios of risk for management programs

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DOI 10.5073/jka.2018.462.061

Abstract

In this work we present the results of a monitoring program of apiaries conducted in spring 2014 in Spain The aim of the study was to identify the main pathogens and residues in beebread as chronic exposure source to managed honey bees.

Beebread and worker bee and samples from 71 and 51 apiaries, respectively were obtained. Beebread from the brood chamber combs were extracted aseptically from each honey bee colony as described previously1-3 Samples were stored at -80ºC until further use. All honey bee worker samples were analyzed for the main pathogens related to the weakening and death of bee colonies in Spain. PCR was performed for *Nosema apis*, *Nosema ceranae* Trypanosomatids, Neogregarines, Lake Sinai Virus complex (LSV complex), and Acute Bee Paralysis Virus-Kashmir Bee Virus-Israeli Acute Paralisis Virus complex (AKI complex) Specific primers and probes for the amplification of Black Queen Cell Virus (BQCV) and Deformed Wing Virus (DWV) were used.

A Screening analysis of chemical residues was conducted with a modified QuEChERS protocol and under ISO 17025 standard and guidance document SANCO/12571/2013

The most prevalent pathogens were *Nosema ceranae* (69%), *Varroa destructor* mite (49%), with a mean percentage of parasitization around 1.7%, and Trypanosomatids (40.7%). Neogregarines (6%), *Acarapis woodi* (7%) and *Nosema apis* (7%) were detected a lower prevalence. Of the six screening viruses, the more prevalent were BQCV (57%) and DWV (54%). LSV complex was detected in the 14% of the samples.

The pesticides most commonly found in the samples were miticides typically used for Varroa mite control: coumaphos (98.6%), chlorfenvinphos (72.86%); *tau*-fluvalinate (70%) and secondly, carbendazim (40%) chlorpyriphos (45.71%), acrinathrin (24.9%) and imidacloprid (22.6%) were also detected.

Based on these results, we discuss the suitability of different methodologies proposed in the literature to assess the effect of honey bees chronically exposed to multiple residue and nosogenic agents found in hive.

Acknowledgement

This work has been funded by INIA Project "Holistic evaluation of risk factors in honey bees and wild pollinators. The situation in Spain" RTA2013-00042-C10. The authors gratefully acknowledge to subprojects RTA2013-00042-C10-2 and RTA2013-00042-C10-6 for their support.

5.9 Residues of plant protection products in honey – pilot study for a method to define maximum residue levels in honey (MRLs)

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DOI 10.5073/jka.2018.462.062

Abstract

Honey produced by honeybees exposed to plant protection products (PPPs) can contain residues of the applied active substances. A final decision of the residue definition (RD) in honey and on suitable test designs has not yet been made for MRL settings in honey according to Regulation (EC) No. 396/2005, and the discussion is still ongoing.

The concentration of residues in honey is influenced by many factors, such as the extent of filtration and metabolism by the honeybees, the characteristics of the PPP and its active substance(s) (a.s.), respectively, the use pattern of the PPP and, of course, by the amount of stored nectar containing residues of the active substance. Under realistic field conditions the amount of nectar containing residues depends on the

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ICP-PR Bee Protection Group

18. - 20. October 2017, València (Spain)

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Job & Margreet van Praagh with award,
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Foto
Pieter A. Oomen (Bumble bee *Bombus lapidarius* on thistle)

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Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation. In der Deutschen Nationalbibliografie: detaillierte bibliografische. Daten sind im Internet über http://dnb.d-nb.de abrufbar.

ISSN 1868-9892
ISBN 978-3-95547-064-7
DOI 10.5073/jka.2018.462.000

Printed in Germany by Arno Brynda GmbH, Berlin.