

**OR242***Honeybees' detection of foragers with cuticular profile altered by Varroa***Federico Cappa**, Claudia Bruschini, Stefania Meconcelli, Ilaria Protti, Giuseppe Pieraccini, Stefano Turillazzi, Rita Cervo

The ecto-parasitic mite *Varroa destructor* represents a crucial driver for the extensive worldwide beehive losses and the parasite is currently considered one of the major threat for apiculture. Therefore, effective methods to stop mite transmission among beehives are of primary importance to save honeybee colonies from further decline. Nevertheless, the strategies adopted by mites to invade a new colony and the potential counter-adaptations of honeybees to defend their hives from outer threats have not been deeply investigated so far. In a previous study we showed that, at low infestation rates, mites remain within the hive and promote their reproduction by riding nurses, distinguished from foragers through different chemical cuticular signatures. When infestation level increases, the cuticular chemical profile of nurses and foragers tends to overlap, promoting mite departure from exploited hives by riding pollen foragers. Once on a forager, the parasites may alter their hosts' chemical profile to make them undetectable in order to promote the mite transmission among colonies. Here, we investigated the alterations induced by *Varroa* mites on the cuticular hydrocarbons profile of honeybees. Our gas chromatography-mass spectrometry analyses showed an increase in cuticular methylated compounds of parasitized bees. Then, we used lure presentation experiments to evaluate the bees ability to distinguish between individuals with a parasite-altered cuticular profile and unparasitized bees. Behavioural assays were conducted by presenting freeze-killed foreign foragers, either experimentally exposed to *Varroa* or unexposed, to honeybees at the entrance of their colonies. We found an increase in the explorative and aggressive responses of the bees towards bee-lures with a parasite-altered cuticular profile, highlighting the fact that *Apis mellifera* honeybees are able to recognize the alterations induced by the *Varroa* mites in the cuticular profile of other bees and they might use such chemical cues to prevent parasitized individuals from entering into a colony.