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SHORT-TERM EFFECT OF *BREVIBACILLUS LATEROSPORUS* SUPPLEMENTED DIET ON WORKER HONEY BEE MICROBIOME

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Introduction: *Brevibacillus laterosporus* is a promising microbiological agent that can be used to prevent and control destructive diseases affecting honey bee colonies. In the present study, the short-term effect of the *B. laterosporus* BGSP11 bee diet on microbiota and mycobiota was investigated.

Methods: The honey bee diet was supplemented with spores of *B. laterosporus* BGSP11 at a concentration of 1×10^8 CFU/mL in sucrose solution. Metabarcoding analysis of the bee microbial community profile was performed based on 16S RNA (bacteriobiota) and Internally Transcribes Spacer (ITS) region (mycobiota) obtained using MiSeq Illumina sequencing. The QIIME2 v2021.4 pipeline was used to analyze the obtained amplicon data library.

Results: The results show that the BGSP11 bee diet slightly altered the bee microbiota and did not lead to potentially harmful changes in the bacterial microbiota. Moreover, it can potentially induce positive changes, mainly reflected in the reduction of opportunistic bacteria. On the other hand, the treatment had a greater effect on mycobiota. However, the changes in the bee mycobiome caused by the treatment cannot be considered a priori as beneficial or harmful, since the interaction between the bee and its mycobiome is not sufficiently studied. The observed positive changes in the bee mycobiome are mainly reflected in the reduction of phytopathogenic fungi that may affect the organoleptic and techno-functional properties of honey.

Conclusion: This pilot study suggests that the introduction of BGSP11 in beekeeping practice as a biological agent could be considered due to no harmful effects observed on the microbiota of bees.

Key words: *Apis mellifera*; *Brevibacillus laterosporus*; microbiome; bacteria; fungi

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