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PP-104 [Bee Health]

Effectiveness of innovative BeeSmoke pelleted fuel and remedy ApiBonum *ib* on the vitality of honeybee colonies

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An innovative and sustainable approach to beekeeping involves using commercially available pellet fuels, such as BeeSmoke Forte and BeeSmoke, for daily work in the apiary. A study was conducted to determine the effectiveness of these fuels, including their impact on the strength and behavior of honeybee colonies, their ability to reduce the number of parasitic mites *V. destructor*, and the presence of insecticide/acaricide residues in honey. At the same time, on another apiary, we aimed to determine the acaricidal properties of the innovative agent ApiBonum ib, and its impact on the vitality of honeybee colonies.

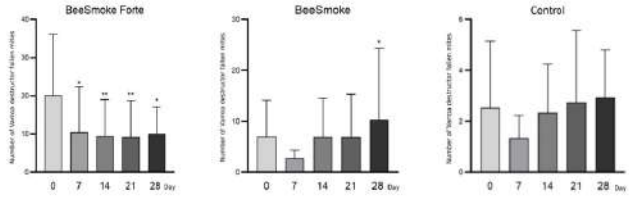
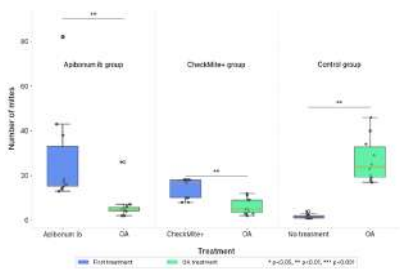


Fig. The number of *V. destructor* mites counted on the hive bottom boards after the application of BeeSmoke Forte (a) and BeeSmoke (b), and control (c) pellet fuels in the smoker ; *$P < 0.5$

It was observed that the smoke produced from burning BeeSmoke Forte, BeeSmoke, and pure wood pellets in a smoker did not alter the behavior of the honeybees or result in their death. Furthermore, the study indicated that BeeSmoke Forte and BeeSmoke significantly affect the number of fallen parasitic mites, specifically *Varroa destructor*. Also, the study analyzed the honey collected before and after using pellet fuels for the presence of insecticide/acaricide residues, and their negative results indicate that the honey collected during the active beekeeping season when these fuels were used is safe for bees and humans to consume.



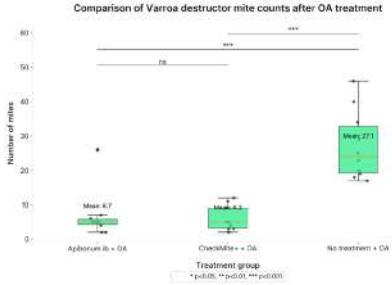


Fig. The number of fallen *V. destructor* mites after honeybee colony treatment (ApiBonum *ib*; CheckMite+; control with no treatment), and after a single shock treatment with oxalic acid.

The research, which was conducted in field conditions, determined the decline of mites in all honeybee colonies treated with ApiBonum *ib*. Also, it was found that ApiBonum *ib* has a positive effect on the vitality, i.e., strengthening of honeybee colonies, since an increase in the number of honeybees was observed in half of the experimental colonies at the end of the study, compared to the initial clinical examination. As a natural remedy, ApiBonum *ib* is not harmful to bees. When used, there is a lower risk of developing resistance to mites, as well as the appearance of residues in honeybee products. ApiBonum *ib* can be a useful tool for maintaining the vitality and hygiene of colonies and possibly as an immunomodulator that stimulates the hygienic behavior of honeybee colonies.

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