

How Do SuperDFM Strong Microbials Affect Varroa destructor in Relation to Lactobacillus within Apis mellifera?

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Apis mellifera, or the western honey bee, have been in a constant battle with the growing population of *Varroa destructor*, an invasive mite that can take over a hive in a matter of weeks. These mites create huge issues for farmers and beekeepers, which affects our food supply and the economy as a whole. This project was created to test the relationship between *Lactobacillus* and *Varroa* mites within *Apis mellifera* through manipulation of the probiotic SuperDFM Strong Microbials. Over 200 bees were harvested from the control and test groups before and after the implementation of SuperDFM Strong Microbials. After collecting and recording the mites from both the brood (larvae) cells and the adult bees, the bee specimens from the hives were dissected under a microscope, contents of the ileum and rectum removed, and a serial dilution was formed with these contents. Using an oil immersion microscope, the *Lactobacillus* was counted based on morphology. In both rounds of experimentation, the *Lactobacillus* within the bee gut microbiota increased dramatically after the introduction of SuperDFM Strong Microbials. Not only did the *Lactobacillus* levels rise exponentially, the number of *Varroa* mites found in the hive was greatly reduced. This project exhibits the strong correlation between the *Lactobacillus* levels within the *Apis mellifera* gut microbiota and the *Varroa destructor* within the hive itself. The results found in this experiment can be applied to hives through the western hemisphere in order to decrease the number of these invasive mites and stabilize many bee colonies through the use of SuperDFM Strong Microbials.