PP-022 [Bee Health]
The gypsy mushroom (Cortinarius caperatus) as a source of antiviral activity against the deformed wing virus

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No antiviral treatment against honey bee viruses is currently available for practical applications and the level of viral infection can only be controlled indirectly by reducing the number of Varroa mites in honey bee colonies. In this study, we investigated the ntiviral potential of the gypsy mushroom (Cortinarius caperatus) to reduce DWV infection in honey bees.

Our results indicate that the alcohol extract of C. caperatus prevented the development of DWV infection in cage experiments as well as after direct application to honey bee colonies in a field experiment. The applied doses did not shorten the lifespan of honey bees. The reduced levels of DWV in C. caperatus-treated honey bees in cage experiments were accompanied by significant changes in the gene expression of Tep7, Bap1, and Vago. No residues of C.caperatus were found in honey harvested in the spring from colonies supplemented with the mushroom extract for their winter feeding. These findings suggest that C. caperatus alcohol extract could be a potential natural remedy to treat DWV infection in honey bees. Future studies will concentrate on the identification of specific active compounds with antiviral activity against DWV.