Honeybees show withdrawal symptoms when weaned off alcohol

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A team of researchers from Jagiellonian University and the Polish Academy of Sciences has found that honeybees fed a diet of alcohol-spiked food exhibit withdrawal symptoms when the alcohol is removed. In their paper published in the journal *Biology Letters,* the group

describes experiments they conducted with honeybees and why they believe their findings are relevant to treatment of alcoholism in humans.

Prior research has found that studying the habits of other creatures can lead to new insights into human behavior—such research has sometimes involved the study of addiction in other animals. In this new effort, the researchers wondered about the impact of alcohol on bees—in the wild they are quite often exposed to naturally occurring alcohol in nectar.

To learn more about how alcohol might impact honeybees, the researchers set up several beehives in an area where their diet was restricted to the food given to them by the research team. The food for the bees consisted of a type of sucrose. Once the hives were set up, the researchers added a small amount of alcohol to the sucrose, which was consumed by the worker bees. The team allowed the bees to live on the alcohol-spiked sucrose for a significant period of time—long enough for them to become hooked on it. They then made the bees quit cold turkey and monitored how they behaved.

The researchers found that after the alcohol was withdrawn, the bees that worked inside the hive began eating more of the sucrose than they had before and experienced a small increase in mortality rates—an indication that they had developed a dependence on the alcohol. The researchers then resumed adding alcohol to the sucrose but in higher amounts—in some cases, increasing the alcohol concentrations to 20%. The bees reacted much like humans, exhibiting impaired locomotion and problems with foraging and learning new tasks.

The researchers also found that the bees that went out foraging had a higher tolerance for alcohol than the worker bees who remained in the hive. They suggest this indicates that the foragers had developed a resistance to alcohol as they encountered it so often as part of their job.

More information: Monika Ostap-Chec et al, Discontinued alcohol consumption elicits withdrawal symptoms in honeybees, *Biology Letters* (2021). DOI: 10.1098/rsbl.2021.0182