

**Research Published by: [University of Oxford](#)**

A recent study conducted by the **University of Oxford** has found that **bumblebees are unable to detect the presence of pesticides in nectar**, even at lethal levels. This discovery raises concerns as it means that bumblebees are at a higher risk of pesticide exposure, which poses a threat to crop pollination. The research, [published in eLife](#), **highlights the importance of understanding how bees interact with pesticides.**

**Bees play a crucial role in pollinating agricultural crops**, but this also exposes them to pesticides when they collect nectar and pollen. While bees possess the ability to taste and differentiate sugary solutions, **the researchers aimed to determine whether this sense of taste could help them avoid consuming pesticides.**

The research team employed two methods to investigate whether bumblebees (***Bombus terrestris***) could taste neonicotinoid and sulfoximine pesticides in nectar that mimicked the composition of oilseed rape. They first used **electrophysiology** to observe the responses of neurons in the bumblebee's mouthparts, tracking the frequency of neuronal activity and the strength of taste response. Additionally, the researchers conducted behavior experiments by offering the bumblebees either pure sugar solutions or sugar solutions contaminated with pesticides for consumption.

The results revealed that the neurons in the **bumblebees' mouthparts** responded similarly to both sugar solutions and sugar solutions containing pesticides. This suggests that bumblebees **lack the mechanisms to detect and avoid common pesticides in nectar**. Furthermore, the bees consumed equal amounts of food regardless of whether the solution contained pesticides, even at concentrations that would typically make them ill.

These findings are significant as they demonstrate that bumblebees are unable to rely on their sense of taste to avoid pesticide exposure. Lead author **Dr. Rachel Parkinson** from the University of Oxford emphasizes that bumblebees are likely to consume nectar contaminated with pesticides in the field, as they are unable to taste the presence of these harmful substances.

Although the bees did not consume less of the pesticide-laced solutions, the researchers did observe that the compound quinine, known for its "bitter" taste, acted as a deterrent for the bees at higher concentrations. At lower concentrations, the bees consumed a smaller amount of the sugar solution, but the duration of their contact with the feeding solution remained the same.

This study, titled "**Mouthparts of the bumblebee (*Bombus terrestris*) exhibit poor acuity for the detection of pesticides in nectar**," has been published in eLife.

**Source: [elifesciences.org](http://elifesciences.org)**