

Neonicotinoid pesticide residues found in Irish honey

February 17 2021, by Thomas Deane



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Researchers from Trinity and Dublin City University found that Irish honey contained residues of neonicotinoid insecticides.

Neonicotinoids are the most widely used group of insecticides globally, used in plant protection products to control harmful insects.

Neonicotinoids are systemic pesticides. Unlike contact pesticides, which remain on the surface of the treated parts of plants (e.g. leaves), systemic pesticides are taken up by the plant and transported throughout its leaves, flowers, roots and stems, as well as incorporated into pollen and nectar.

In the European Union, their use is now restricted due to concerns about risks to bees and other non-target organisms. At the time of sampling for this study, their use was still approved in Ireland for certain [agricultural crops](#).

Key findings

- Of 30 honey samples tested, 70% contained at least one [neonicotinoid](#) compound
- Almost half (48%) the samples contained at least two neonicotinoids
- Exposure to pesticides does not just occur in agricultural settings
- This research for the first time has identified the presence of clothianidin, imidacloprid and thiacloprid in Irish honey from a range of hive sites across a range of land use types
- The proportion and concentration of neonicotinoids in honeys from both agricultural and urban habitats, compared with semi-natural or other land covers, suggests that exposure of bees to neonicotinoids can potentially occur in a variety of environments

Residue levels were below the admissible limits for human consumption according to current EU regulations, and thus pose no risk to human health.

However, the average concentration of one compound (imidacloprid)

was higher than concentrations that have been shown in other studies to induce negative effects on honey and bumble bees.

Dr. Saorla Kavanagh, lead author on the study, currently working at the National Biodiversity Data Centre, said: "Given that these compounds have been shown to have adverse effects on honey bees, wild bees, and other organisms, their detection in [honey](#) is of concern, and potential contamination routes should be explored further."

Professor Jane Stout, from Trinity's School of Natural Sciences, said: "These results suggest that bees and other beneficial insects are at risk of exposure to contaminants in their food across a range of managed habitats—not just in agricultural settings. And even though we found residues at low concentrations, prolonged exposure to sublethal levels of toxins can cause effects that are still not fully understood by scientists or regulators. Therefore, we shouldn't relax restrictions on their use."

Dr. Blánaid White, DCU, said: "Our findings are consistent with others from outside Ireland, and neonicotinoids unfortunately seem to be ubiquitous in honeys worldwide. It's reassuring that residues do not exceed safe levels, but it is an important warning that neonicotinoids should not be reintroduced into Irish environments, as they could potentially cause health or environmental concerns."

Provided by Trinity College Dublin

Citation: Neonicotinoid pesticide residues found in Irish honey (2021, February 17) retrieved 27 April 2024 from

<https://phys.org/news/2021-02-neonicotinoid-pesticide-residues-irish-honey.html>

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