

Glyphosate residues in Brazilian honey – method validation and occurrence

Ana Paula F Souza¹ Nadia R Rodrigues¹ Felix G R Reyes²

¹Analytical Chemistry Division, CPQBA, State University of Campinas

²Food Science and Nutrition Department, FEA, State University of Campinas

anapfs@unicamp.br

Session: pesticide residues and veterinary drugs

Abstract:

The concern with the management of pesticides is related to food safety and environmental damage. Bees are susceptible to environmental disturbances. Their products (such as honey) can be used as bioindicators to define impacts resulting from anthropogenic activities once bees can transport pesticide residues to the hive and contaminate it. Honey is a complex matrix with more than 200 known substances. Therefore, to analyze pesticide residues in this matrix, the analytical method should be developed and validated to provide reliable results. Glyphosate (GLY) is the most widely used herbicide and studies have shown that exposure to this herbicide at sublethal doses has led to reduced sensitivity and decreased associative memory in bees. The development, validation, and application of a method to quantify GLY in Brazilian honey samples were done. The validation data as recoveries averages ranged from 74-79% for GLY and precision values up to 12% were observed. The presence of GLY residues in honey was evaluated in 40 samples from the eucalyptus, orange, and polyfloral origins from five Brazilian States. GLY residues ranged from <LOQ to 0.22 $\mu\text{g g}^{-1}$, six samples showed GLY levels above the EU limit (0.05 $\mu\text{g g}^{-1}$). These results suggest that agricultural practices in Brazil affect honeybee and bee products.

Key-words: Pesticide Residues. Honey. HPLC