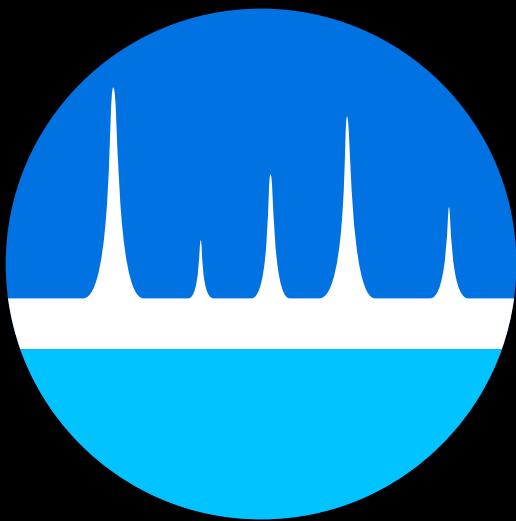


CONGRESSO LATINO-AMERICANO DE CROMATOGRAFIA E TÉCNICAS RELACIONADAS

**Campos do
Jordão, Brasil**

**28-31, Outubro
2025**



**COLACRO XX
(2025)**

**LIVRO DE RESUMOS
*BOOK OF ABSTRACTS***

Determination of abamectin and difenoconazole residues in *Scaptotrigona postica*: validation of a QuEChERS-UHPLC-MS/MS method and application in environmental samples

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Bees are essential pollinators for biodiversity maintenance and agricultural production, yet populations have been declining due to the intensive use of pesticides. Compounds such as abamectin and difenoconazole, widely applied in crops, can cause sublethal effects or even mortality in native species such as *Scaptotrigona postica*, a stingless bee of ecological and socioeconomic importance. This study aimed to develop and validate a sensitive and selective analytical method for the determination of residues of abamectin and difenoconazole in *S. postica* tissue samples, using adapted QuEChERS extraction and UHPLC-MS/MS analysis. Validation was performed according to ANVISA Resolution RDC No. 166/2017 and demonstrated adequate linearity ($r^2 > 0.99$) for both analytes. In the biological matrix, the limits of detection (LOD) and quantification (LOQ) were 22.4 and 67.8 ng mL⁻¹ for difenoconazole, and 26.5 and 80.2 ng mL⁻¹ for abamectin. Intraday precision showed RSD values of less than 8%, while interday precision remained below 10%. Recovery rates were within the ANVISA acceptance criteria, ranging from 85% to 97%, and matrix effects were considered insignificant, ensuring method reliability. When applied to environmental samples collected from hives located near strawberry crops in Bom Repouso (MG, Brazil), only difenoconazole was detected and quantified. The presence of this pesticide evidences environmental contamination and potential risks to colony health. The developed method proved to be robust and suitable for complex environmental matrices, representing a promising tool for monitoring studies and environmental risk assessment of native bees exposed to pesticides in agricultural landscapes.

Keywords: *Scaptotrigona postica*; UHPLC-MS/MS; QuEChERS; abamectin; difenoconazole.

Acknowledgements: The authors thank the University of São Paulo (USP), the São Paulo Research Foundation (FAPESP), and the LaQuAAE laboratory team for their support in conducting this research.