

**P 121. Residues of fungicides in citrus essential oils from Brazil**Rodrigues AS<sup>1</sup>, Alves AAR<sup>1</sup>; Rezende CM<sup>1</sup>; Bizzo HR<sup>2</sup><sup>1</sup>Instituto de Química, Universidade Federal do Rio de Janeiro;<sup>2</sup>Embrapa Food Technology

bizzo@ctaa.embrapa.br

Keywords: fungicides residues; citrus essential oils; essential oils from Brazil; carbaryl

Brazil is one of the largest exporters of essential oils (EO), and *circa* 95% of the exported volume is due to citrus oils [1]. The country is also one of the largest consumer of fungicides. Residues of organochlorides and organophosphorides pesticides have been found in Brazilian citrus oils in amounts well above those allowed by *Codex Alimentarius* standards [2]. Continuing a systematic investigation on contaminants from Brazilian citrus oils, the objective of this work was to develop a method for the detection and quantification of fungicide residues, namely carbaryl, delta-cyhalothrin, dithianon, prochloraz, tebuconazole and thiabendazole in citrus oils. The oils were passed through solid phase extraction column (C18) and after elution and concentration, the samples were analyzed by gas chromatography coupled to mass spectrometry using a DB-5 (30m X 0.25mm X 0.25 µm) capillary column. Helium was used as carrier gas at 1.0mL/min. Mass detector was operated in selective ion monitoring (SIM) in electronic ionization mode at 70eV. Calibration curves were built for each fungicide with standards. The limits of detection (LOD) and quantification (LOQ) were, respectively, 6.25 mg/L and 15,6 mg/L for carbaryl, 0.61 mg/L and 1.53 mg/L for delta-cyhalothrin, 1.33 mg/L and 3.32 mg/L for dithianon, 0.94 mg/L and 2.36 mg/L for prochloraz, 0.60 mg/L and 1.51 mg/L for tebuconazole and 2.21 mg/L and 5.53 mg/L for thiabendazole. Fifteen samples of commercial oils from different producers were analyzed. In one sample of lime oil (OE1) were found residues of carbaryl (18.0 mg/L), dithianon (7.9 mg/L) and tebuconazole (6.81 mg/L). A second sample of lime oil (OE10) was contaminated with 16,1 mg/L of carbaryl. Delta-cyhalothrin was detected in sample OE2 (orange oil) in 3.87 mg/L. In these oils, the residues found are well above those stated in *Codex Alimentarius*.

Acknowledgments: Conselho Nacional de Desenvolvimento Tecnológico (CNPq).

1. Bizzo HR et al. (2009) Quim. Nova 32: 588-594.

2. Alves AAR et al. (2012) J. Braz. Chem. Soc. 23: 306-314.