Recovery test of organophosphate pesticides in essential oils

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Due to the nature of the chemical components of essential oils and the high degree of pesticide use on the crops, there was significant contamination of pesticide residues in essential oils. The development of suitable method of pesticides analysis in essential oil is fundamental. The aim of this work was evaluate the recovery of organophosphate pesticides (OP) residues in bitter orange (*Citrus aurantium*) and mandarin green (*Citrus reticulata blanco)* essential oils.The recovery of fourteen organophosphate pesticides: chlorpyrifos, chlorpyrifos-me, diazinona, dimethoate, ethion, fenthion, fentoato, fenitrothion, fipronil, malathion, parathion-me pyrazophos, pirimiphos-me and triazophos in the sample was evaluated with the extract solution fortified with all analytes at the level of 200µg/kg. The pesticides extraction was based in QuEChERS citrate buffer method which consists of extraction with acetonitrile, followed by the salts addition and dispersive solid phase extraction (DSPE) purification. The purified extract was injected into the system Quattro Micro GC ® from Waters, gas chromatograph coupled to 3Q mass spectrometer. The chromatographic column used was a DB5-MS (30m x 0.25 mm x 0.25 mm), carrier gas helium (1.1 mL/min.), splitless injection at 250 ° C and a mass spectrometer used in positive mode electron ionization (70eV).External standard was used for OP pesticides determination. The concentration range of calibration curve varied from 75-750µg/L. The mean recovery obtained was 80% for both essential oils, which is within the recommended concentrations above 10µg/kg (80 to 110%), which shows that the applied method is suitable for organophosphate residues determination in essential oils.

Keywords: organophosphate, essential oils, GC/MSMS.