

## **Supercritical fluid extraction and quantification of chlorpyrifos insecticides in fresh vegetables by Gas Chromatography with Electron Capture Detection (GC-ECD)**

### **ABSTRACT**

Supercritical Fluid Extraction (SFE) remains an attractive technique with great potentials for the selective determination of pesticides in complex matrices. A rapid and high percentage of recoveries extraction protocol of chlorpyrifos insecticides from fresh tomato, cucumber and potato vegetables matrices using SC-CO<sub>2</sub> was developed in this study. Chlorpyrifos recovered from tomato and cucumber with critical pressure, PC at 30 lbs and critical temperature, TC 500C. On the other hand, the recovery rate of similar insecticides from potato was 101% with PC at 30 lbs and 550C in TC. The recovery rate in tomato matrices was 90%; a cucumber matrix was 110% and 101% recovery from potato. The avg. retention time (tR) was 11.976 min of chlorpyrifos standard and similar tR was found in formulated of tomato and cucumber matrices. The lowest detectable limit (LDL) of chlorpyrifos insecticides was 0.02µg/mL with GC-ECD. Gas chromatography-electron capture detection (GC-ECD) temperature was of injection port and detector 2800C and 3000C, respectively and pressure was 18.5 psi with split less. However, the method is useful to recover non-polar insecticides from the fresh vegetable; thus, further research could be continued with cosolvents to recover the polar residues from different types of fresh vegetables.

**Keyword:** Lowest detectable limit; Critical pressure; Critical temperature; Retention time; Recovery rate