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Microwave -Assisted Extraction in Open Vessel Method and GC-ECD for Analysis PCBs in Soil

AUTHORS

Ahmed HALFADJI / UNIVERSITÉ IBN KHALDOUN TIARET, TIARET, TIARET

PURPOSE OF THE ABSTRACT

A green method focused on microwave-assisted extraction in open vessel (MAE-OV) and gas chromatography with electron capture detection (GC-ECD) was used for the determination of 26 congeners of polychlorinated biphenyls (PCBs) in soil samples. The limit of detection (LOD) and limit of quantification (LOQ) were evaluated for commercial PCBs mixture Aroclor1260. LOD and LOQ were calculated for each PCB congener, in the ranges (0.03?0.27 ng g⁻¹) and (0.11? 0.70 ng g⁻¹), respectively. After optimization, 26 PCBs congeners were successfully extracted from soil samples with recovery amounts ranging between 84.7% and 117.3% for all PCBs congeners. The evaluated method of MAE-OV showed good separation and extraction of all PCBs congeners from soil samples. Extraction parameters such as solvent choice, power and extraction time were investigated. This study indicated that MAE-OV could be an interesting alternative method to extract PCBs from soils, since it is economical, easy, fast and requires low amounts of solvents.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Microwave -assisted extraction in open vessel | Polychlorinated biphenyls | soil analysis | Gas chromatography (GC-ECD)

BIBLIOGRAPHY