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VALIDATION METHOD FOR PESTICIDE RESIDUE AFTER GAMMA IRRADIATION

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Pesticide residues include the remaining substances or mixtures, metabolites and impurities in food which are considered to be toxicological significance. The goal of this work was validation method for the determination of residue by UPLC PDA and GC MS techniques. Special scope has been chlorpyrifos from apple after oil and emulsion formulation Radar EW and Radar EC treatment. In order to fully respond to this task, it has been induced the degradation products of active component -chlorpyrifos from these formulations. The degradation products chlorpyrifos-oxon, 3,5,6-trichloro-2-pyridinol (TCP) and o,o -diethyl thiophosphate (DTPA) received after gamma radiation samples in a permanent for 66 hours with 2,5 KGray from Co-60 source. Gamma radiation is the closest degradation to natural conditions, followed degradation path, based on the chemical and microbiological processes. Four different extraction procedures have been used: liquid-liquid extraction (Dutch procedure), solid phase extraction with HLB cartridge, multiwall carbon nano tubes and Quechers extraction. The recovery for these clean up methods has been in range 75-94%. The validation parameters for UPLC PDA has been: LOD 0,06 ppm, LOQ 0,18 ppm. The linearity was confirmed by correlation coefficient, $R=0.998$ for UPLC. The parameter for GC MS has been on ppm level also. The correlation coefficient for GC MS is 0.999. The result on apple samples showed that for pesticide residue quantifications is more adequate GC MS technique that is characterized by highest recovery, the lowest standard deviation and better LOQ.