UTILIZATION OF SPME METODOLOGY TO STUDY RECOVERY AND PRESENCE OF ORGANOCHLORINE PESTICIDES IN ORGANIC TOMATO

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Reduction of adversed agrochemicals in the environment is one of the organic agriculture target. However, there are few studies about the existence of pesticides residues in organic products. So, studies concerning to the presence of residues of pesticides natural occurring (present in the environment) in organic cultivated products are crucial. The objective of this work was to evaluate the presence and the recovery of organochlorine in tomato grown in a organic system using as methodologic strategy the solid phase microextration (SPME) [1]. Thirty four tomato samples from organic farm system were analyzed. Aproximately 1g of tomato pulp was used. This amount of pulp was dissolved in 20mL of ultrapure water and homogenized in Ultraturrax® for 1min at 6.500 rpm. The obtained extract was filtered in paper of slow filtration and transferred to the extracting bottle, using a 30µm PDMS (polydimethylsiloxane) fiber. A time of 30 min for adsortion and a magnetic stirring rate of 400rpm was utilized. Capillary gas chromatography analysis was performed using a Thermo GC series 2000® gas chromatograph with electron capture detector (ECD). A DB-XLB column (Agilent®; 30m x 0.32 mm x 0.25 µm) was used with Helium as the carrier gas at a linear flow rate of 1,1mL/min. GC oven temperature was programmed as follows: 50 °C held for 1 min, increased to 210 °C at 50 °C/min, increased to 290°C at 4°C/min and held at 290 °C for 1 min. For thermal desorption, the SPME fiber remained in the injector at 250°C for 2 min. Splitless injection mode was used, and the split valve was opened after 0,8 min. The detector base temperature was 250°C and ECD temperature 300°C, gas of make-up: N_2, flow:30mL/min. For the recovery assay, the samples had been contaminated with a mixture of eight organochlorine pesticides: aldrin, dieldrin, heptacloro, lindano, mirex, 4'4-DDE, 4'4-DDT and TDE, in two levels 5,0 and 8,0 µg/Kg. The recoveries averages in the two levels had been the following ones: aldrin (97%); dieldrin (95%); heptacloro (96%); lindano (116%); mirex (80%); 4'4-DDE (118%); 4'4-DDT (80%); TDE (110%), what is inside the parameters established for the analyses of residues: 70 for 120%. Residues of organochlorine pesticides were not detected in all tomate samples analyzed.

Key Words: SPME, organochlorine, tomato

References: [1] QUINTEIRO, L. M.C., NOBRE, A. L. R., FERREIRA, A.B. B., GODOY, R. L. O, CASTRO, I. M.2003. Microextração em Fase Sólida: Fundamentos e Aplicações em Análise de Alimentos. Boletim do Centro de Pesquisa e Processamento de Alimentos, 21 (1): 1-30.