

Gas Chromatography Coupled to Tandem Mass Spectrometry and Liquid Chromatography Coupled to Tandem Mass Spectrometry Qualitative Determination of Pesticides Found in Tea Infusions

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Abstract : The aim of this study was to investigate the residues of pesticide found in tea water infusions. A multi-residues method to determine 147 pesticides has been developed using the QuEChERS (Quick, Easy, Cheap, Effective, Rugged, Safe) procedure and dispersive solid phase extraction (d-SPE) for the cleanup the pesticides from complex matrices such as plants and tea. Sample preparation was carefully optimized for the efficient removal of coextracted matrix components by testing more solvent systems. Determination of pesticides was performed using GC-MS/MS (100 of pesticides) and LC-MS/MS (47 of pesticides). The selected reaction monitoring (SRM) mode was chosen to achieve low detection limits and high compounds selectivity and sensitivity. Overall performance was evaluated and validated according to DG-SANTE Guidelines. To assess the pesticide residue transfer rate (qualitative) from dried tea in infusions the samples (tea) were spiked with a mixture of pesticides at the maximum residues level accepted for teas and herbal infusions. In order to investigate the release of the pesticides in tea preparations, the medicinal plants were prepared in four ways by variation of water temperature and the infusion time. The pesticides from infusions were extracted using two methods: QuEChERS versus solid-phase extraction (SPE). More that 90 % of the pesticides studied was identified in infusion.

Keywords : tea, solid-phase extraction (SPE), selected reaction monitoring (SRM), QuEChERS

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