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A good manner for overcoming GCB negative recovery effects in multi residue analysis of pesticides in tea

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Background and Aims: This study is conducted on tea as a main beverage in Iran. In pesticides analysis the presence pigment in tea leaf cause problems in purification extract solvents that lead to use some absorbents such GCB for purification. GCB, however, negatively affected the recovery of planar pesticides. This study was conducted to show a good strategy for dissolve this problems.
Methods: An accurate method based on QuEChERS sample preparation and using spiked calibration curves was developed for determination of 20 pesticide residues in tea by Gas chromatography/ single quadruple- mass spectrometry (GC/ SQ-MS). Triphenyl methane (TPM) solution is used as internal standard.
Results: The recovery of pesticides at 3 concentration levels (n=3) was in range of 79.5-111.4%.The method was proved to be repeatable with RSDr lower than 20%. The limits of quantification for all pesticides were ≤20 ng/g. The analytical results of the proposed method were in good agreement with the proficiency test (FAPAS 19116).The recoveries and repeatabilities were in accordance with the criteria set by SANCO Guideline.
Conclusions: The validated method with using spiked samples for preparation of calibration curves is an accurate, precision and simple method for analysis of pesticides in tea. The use of spiked samples for drawing the calibration curve substantially reduced adverse matrix-related effects and negative recovery affected by GCB on pesticides.

Keywords: Pesticide residues; Tea; GC/MS; GCB; Spiked calibration curve