Accepted Manuscript

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PII: S0165-9936(15)00147-8
DOI: http://dx.doi.org/doi:10.1016/j.trac.2015.04.012
Reference: TRAC 14460

To appear in: *Trends in Analytical Chemistry*

Please cite this article as: M.Á. González-Curbelo, B. Socas-Rodríguez, A.V. Herrera-Herrera, J. González-Sálamo, J. Hernández-Borges, M.Á. Rodríguez-Delgado, Evolution and applications of the QuEChERS method, *Trends in Analytical Chemistry* (2015), http://dx.doi.org/doi:10.1016/j.trac.2015.04.012.

Evolution and applications of the QuEChERS method

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HIGHLIGHTS

- QuECHERS (quick, easy, cheap, effective, rugged, and safe) method for analysis
- QuECHERS is the most frequent sample pretreatment in residue laboratories
- QuECHERS applied for the extraction of a wide diversity of analytes and matrices
- Modified QuECHERS improved recoveries, and avoided degradation and matrix effects
- QuEChERS has mainly been combined with LC-MS and GC-MS

ABSTRACT

It is widely recognized that the QuEChERS (quick, easy, cheap, effective, rugged, and safe) method is relevant in pesticide residue analysis. Many official laboratories around the globe are routinely using it due to the advantages encapsulated in its name. However, the frontiers of the application of QuEChERS are not yet established. The method is effective for the analysis of other groups of compounds, including pharmaceuticals, mycotoxins, and polycyclic aromatic hydrocarbons, in a wide variety of complex matrices. This review article provides a general overview of the most relevant modifications of the QuEChERS method that have been widely accepted and applied (including both extraction and clean-up) and a general view of the different groups of compounds to which it has been fruitfully applied. We do not include those approaches where only half the method has been used.

Keywords:
Bioanalysis
Environment
Extraction
Food
Mycotoxin
Pesticide
Pharmaceutical
Polycyclic aromatic hydrocarbon
QuEChERS