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Evaluation of endocrine disruptors in drink samples using a green extraction technique coupled to liquid chromatography and tandem mass spectrometry

Phthalic acid esters (PAEs) are widely used as plasticizers in the manufacture of consumer and industrial products to improve their flexibility as well as other handling properties. These substances are not chemically bound to the polymeric matrix and they can be easily released to the environment as well as food samples that can produce important toxic effects on humans even at very low levels of concentration. For these reasons, it is especially relevant to develop highly sensitive analytical methodologies to determine PAEs in food matrices, since they constitute an important via of human exposure to these contaminants.

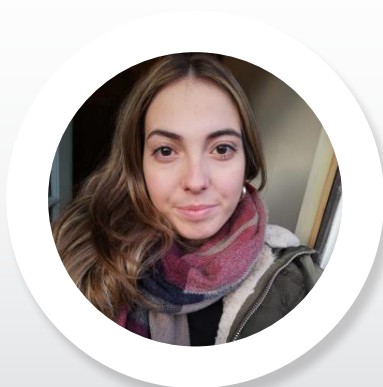
In this sense, the QuEChERS (Quick, Easy, Cheap, Effective, Rugged & Safe) method developed by Anastassiades et al. [1] for the determination of pesticides in fruits and vegetables, can be applied as sample pretreatment for both the extraction of PAEs from beverage samples and the clean-up of the matrix.

The aim of this work is to develop a new methodology based on the original QuEChERS method [1] for the determination of a group of twelve phthalates in beverage samples, including beer, cider and grape juice. The separation and quantification was carried out using an ultra-high performance liquid chromatography-tandem mass spectrometry system. The methodology was validated obtaining recovery values in the range 75-120 % and limits of quantification between 0.034 and 0.809 µg/L. In addition, twenty five real samples were evaluated to demonstrate the applicability of the developed procedure for the analysis of PAEs in real drink samples.

Biography

Ruth Rodríguez Ramos is a PhD student at the Department Unit of Analytical Chemistry of the University of La Laguna (ULL) located in Tenerife (Canary Islands, Spain). In 2017 and 2018, she finished her Bachelor and Master's degrees in Chemistry, respectively. She is developing her PhD thesis about the development of new analytical methodologies for the determination of endocrine.

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