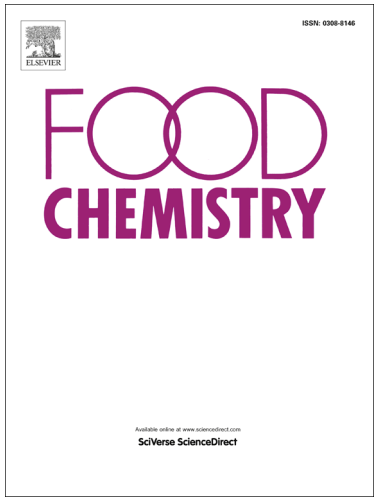

Air-assisted liquid-liquid microextraction integrated with QuEChERS for determining endocrine-disrupting compounds in fish by high-performance liquid chromatography-tandem mass spectrometry

Zhoufei Luo, Jing Lu, Haipu Li, Yi Tu, Yuehao Wan, Zhaoguang Yang

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Air-assisted liquid-liquid microextraction integrated with QuEChERS for determining endocrine-disrupting compounds in fish by high-performance liquid chromatography-tandem mass spectrometry

Zhoufei Luo, Jing Lu, Haipu Li*, Yi Tu, Yuehao Wan, Zhaoguang Yang*

Center for Environment and Water Resources, College of Chemistry and Chemical Engineering, Central South University, Changsha 410083, PR China

*Corresponding author, Tel: +86-731-88876961, Postal address: Lushannan Road 932#, Changsha 410083, PR China.

Email addresses:

lihaipu@csu.edu.cn (Haipu Li)

zgyang@csu.edu.cn (Zhaoguang Yang)

Abstract:

A new, sensitive, and rapid method based on the Quick, Easy, Cheap, Effective, Rugged and Safe (QuEChERS) approach and air-assisted liquid-liquid microextraction (AALLME) technology was developed for the determination of 20 endocrine-disrupting compounds (EDCs) in fish by high-performance liquid chromatography-tandem mass spectrometry. The method first integrates AALLME into QuEChERS to achieve clean-up and enrichment of the EDCs in one step. A self-made glass tube was enfolded with plasticine to withstand the high centrifugal force. The established method was developed by optimization of the parameters. High linearities ($R^2 > 0.9924$) and recoveries (78.2-118.6%) at three spiked levels (5, 10, and 20 ng g^{-1}), and low relative standard deviation values (1.1-14.5%) and limits of detection (0.03-0.80 ng g^{-1}) were obtained. The method comparison shows the proposed method is superior as it involves less organic solvent usage, simple operation and high efficiency. This method was successfully applied to different fishes for analyzing EDCs.

Keywords: Endocrine disrupting compounds; QuEChERS; Air-assisted liquid-liquid microextraction; Fish; High-performance liquid chromatography-tandem mass