عنوان مقاله:

Food Analysis: Task specific ionic liquids for separation of nickel and cadmium from olive oil samples by thermal ultrasound-assisted dispersive multiphasic microextraction

محل انتشار:

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خلاصه مقاله:

In this study, a novel task-specific ionic liquid (TSILs) was used for highly sensitive extraction and separation of nickel and cadmium in olive oil by thermal ultrasound-assisted dispersive multiphasic microextraction (TUSADMPμE). By proposed method, a mixture containing of hydrophilic TSILs (α- Cyano-4-hydroxycinnamic acid diethylamine; [CHCA] [DEA] and 1-(2-Hydroxyethyl)-3-methylimidazolium tetrafluoroborate; [HEMIM] [BF4]) as a complexing and extracting solvent, acetone as a dispersant of TSILs was added to diluted olive oil with n-hexane containing Cd (II) and Ni (II) that was already complexed by TSILs in 60OC at pH 6.0-7.5. After optimized conditions, the enrichment factor (EF), Linear range (LR) and limit of detection (LOD) were obtained (19.3; 19.6), (5.0- 415 μg L-1; 2.7- 92 μg L-1) and (1.3 μg L-1; 0.6 μg L-1) with [CHCA] [DEA] and (13.7; 14.2), (7.5- 600 μg L-1; 3.6- 128 μg L-1) and (2.2 ng L-1; 0.9 μg L-1) with [HEMIM][BF4] for Ni and Cd ions in olive oil samples respectively. In addition, the ions extraction with [CHCA] [DEA] is more efficient than [HEMIM][BF4] by TUSA-DMPμE method (less than 60%). Moreover, the validation of methodology was achieved by standard oil by microwave digestion/ETAAS technique and spike samples with atom (trap flame atomic absorption spectrometry (AT-FAAS

کلمات کلیدی:

Olive oil,Cadmium and nickel,Thermal ultrasound-assisted,dispersive multiphasic,microextraction,Task specific ionic liquid,Atom trap flame atomic,absorption spectrometry