

عنوان مقاله:

Determination of Selenium in Black Tea Leaves Using the Air-assisted Cloud Point Extraction Method: Evaluation of the Method's Environmental Performance

محل انتشار:

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خلاصه مقاله:

For the first time, air-assisted cloud point extraction (AA-CPE) procedure was applied to determine selenium in black tea samples at room temperature. The Air agitation is powered by a small fish tank generator to improve the dispersion phase and reduce the critical temperature for surfactants. The ligand and surfactant were ۱-(۲-hydroxy-۵-ptolylazo-phenyl)-ethan-one (HPAPEO) and TritonX-۱۰۰, respectively. Afterwards, the extracted selenium complexes were injected into a hydride generation atomic absorption spectrometer (HG-AAS). At the optimal conditions of experimentation, a linearity from ۰.۳ to ۱۰۰۰ $\mu\text{g L}^{-1}$ was constructed with an enhancement factor, preconcentration factor, detection limit, and extraction recovery of ۱۵۰, ۱۰۰, ۰.۰۲ $\mu\text{g L}^{-1}$, and ۹۹.۱-۱۰۲%, respectively. The AA-CPE technique's accuracy has been proven using certified reference materials. Ultimately, the Red-Green-Blue (RGB۱۲), Analytical Greenness Metric Approach (AGREE), and Complementary Green Analytical Procedure Index (ComplexGAPI) scales have been applied to assess the whiteness and greenness of this method. An accurate evaluation of the criteria has been performed to ensure this procedure is eco-friendly for the environment.

کلمات کلیدی:

Air-assisted cloud point extraction, Analytical greenness metric approach, Complementary green analytical procedure index, Whiteness scale, selenium, Tea Leaves

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