Identification of bisphenol A in bottled water using solid-phase extraction and ultra-performance liquid chromatography–tandem mass spectrometry

Ahmed Maeed Alammari1, Mohammad Rizwan Khan1*, Ahmad Aqel1, Zeid Abdullah Alothman1, Ibrahim Hotan Alsohaimi2, Ameen Alsubhi1

1.Department of Chemistry, College of Science, King Saud University, Riyadh 11451, Saudi Arabia

2. Chemistry Department, College of Science, Jouf University, Sakaka, Saudi Arabia

Abstract

Bisphenol A (BPA) is a unsafe chemical applied in polycarbonate and epoxy resin production that mainly used as water and food, and thus initiating the adversative concern to human health. In the present study, new method based on solid-phase extraction and ultra-performance liquid chromatography-tandem mass spectrometry was used for the extraction and identification of BPA in bottled drinking water samples. The BPE extraction was performed by means of Bond-Elut-C18 SPE cartridge deprived of any additional purification of the sample extracts. The analysis of BPA was obtained in less than 1 min with Acquity® BEH C18 column and mobile phase methanol and water (80:20, v/v) at flow rate 0.2 mL/min. Under the most promising extraction conditions, the method has shown tremendous linearity ($R2$ = 0.998), limit of detection (0.02 µg/L), limit of quantification (0.06 µg/L) and precision in terms of intra- and inter-day, providing relative standard deviation values <1% and <3% , correspondingly. The optimized method was used for the determination of BPA in bottled drinking water samples of various kinds and origin, which displayed that bottled samples contain BPA ranged from 0.29 µg/L to 24.88 µg/L. The adequate recovery values were obtained between 96% and 99%. The applied technique is rapid and low-cost as it needs a lower quantity of supplies, and provided advantages over conventional method.

Biography: Mohammad Rizwan Khan is an Associate Professor in the Department of Chemistry, King Saud University, Saudi Arabia. He earned his bachelor's and master's degrees in chemistry from the Aligrah Muslim University, India in 2000 and 2002, respectively.

Publications:

1. Ultra Performance Liquid Chromatography Mass Spectrometry: Evaluation and Applications in Food Analysis 2. Structure-Based Screening of DNA GyraseB Inhibitors for Therapeutic Applications in Tuberculosis: a Pharmacoinformatics Study 3. Monitoring of acrylamide carcinogen in selected heat-treated foods from Saudi Arabia 4. Supplementary Material 5. Synthetic aggregate for use in concrete

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