

عنوان مقاله:

Polarographic Assessment of Lead and Cadmium in Industrially Processed Fruit Juices : A Comparative Study

محل انتشار:

هفتمین همایش بین المللی مطالعات میان رشته ای در صنایع غذایی و علوم تغذیه ایران (سال: 1402)

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خلاصه مقاله:

The safety of consumable liquids, mainly industrially processed fruit juices, is a critical public health concern due to potential contamination with toxic metals, such as lead and cadmium. These contaminants pose a significant health risk due to their bio-accumulative nature. This study aimed to measure the concentrations of lead and cadmium in five commercially available fruit juice varieties and assess compliance with Iran's national standards for permissible limits. Thirty samples from five widely consumed juice brands were collected from supermarkets in Zanjan, Iran. The selection included four fruit flavors: orange, apple, grape, and pineapple. Samples were subjected to acid digestion using nitric acid and hydrogen peroxide in a microwave digestion system before quantification of metal concentrations via a validated polarographic method. Statistical analyses, including ANOVA and T-tests, were performed using SPSS software (version ۱۸). The analysis indicated an average lead concentration of  $۱.۸ - ۰.۱۷۵$  mg/L across the samples, surpassing the permissible limits set by national standards. Cadmium concentrations were below detectable levels. The discrepancy between the observed lead levels and the acceptable standards underscores an urgent need for regulatory enforcement and industry compliance to reduce lead contamination in fruit juices. While cadmium levels were within acceptable parameters, the presence of lead in concentrations exceeding national standards in commercially available fruit juices is concerning and warrants immediate attention to prevent potential health consequences.

کلمات کلیدی:

Lead, Cadmium, Fruit Juices, Polarographic Analysis, Food Safety, Public Health Standards

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