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ON-LINE DETERMINATION OF ARSENIC SPECIES BY HPLC-ICP-MS – and OCCURRENCE OF ARSENICALS IN RICE, APPLE AND SEAFOOD FROM ANKARA, TURKEY MARKETS

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In this study, a method for the determination of arsenic species in foodstuff by HPLC-ICP/MS was developed and validated. There have been many studies related to total arsenic determination in food and the results showed that arsenic levels in rice, apple and seafood are high. However all arsenic species do not have toxic effect on human health. According to the studies conducted As(III) and As(IV) are the most toxic ones among all aresenicals. As a result, speciation gains importance. Extraction for arsenite, arsenate, dimethylarsinic acid and arsenobetaine was carried out both in microwave oven and with methanol solutions. After multistep extractions, the supernatants were collected in the same tube and filtered through 0.45µm syringe filter and injected to HPLC by using a 20µL loop. Arsenic species were determined by both PRP X-100 column and Extend C_{18}. TBAB or $TMAHSO_4$ was used as the ion pairing agent in the mobile phase when it was needed. The accuracy of the proposed method has been checked by analyzing spiked samples and 90-115% recoveries were obtained. Linear working range was between 10-100 µg/L and R^2>0.99. Intra-day and inter-day precision studies were also performed with RSDs below 15% for both. The aim of this study was to investigate the incidence and levels of arsenicals in rice, apple and seafood samples in Ankara, Turkey. The levels of arsenicals were determined using LC-ICPMS. A total of 70 products were analyzed for arsenicals during the second 6 months of 2013.

Keywords: Arsenic Speciation, LC-ICP-MS, seafood, rice, apple

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