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Abstract

Ambient flame ionization (AFI) coupled with triple quadrupole tandem mass spectrometry was developed for quantitative analysis of sodium saccharin (SAC) in various food samples. Typically, the micro-flame by the combustion of *n*-butane provided a heating zone for fast desorption and ionization of analytes in milliseconds. Then high ion abundance of analyte could be produced in a short time, which made AFI-MS possess a very high sensitivity for SAC detection and was particularly appropriate for the quantification in multiple reaction monitor (MRM) mode. Liquid samples were introduced into outer flame using dip-it tips in order to facilitate a rapid and high-throughput analysis. Saccharin-*d4* was used as the internal standard to compensate for the variations of the ion intensities. With a minimal sample preparation, a linear range of 4-100 μg/mL was developed with all linear relationships of different matrices (including coke, juice, liquors, sunflower seeds and sweetmeats) greater than 0.992. Recoveries for coke and apple matrices were ranged from 88.4% to 108.9 % at the concentration of 5, 20, 80 μg/mL and the limits of detection (LODs) were in the range of 0.12-0.21 μg/mL. Furthermore, the feasibility of this method was exhibited by the quantification analysis of SAC in seventeen real samples. These results indicated that AFI-MS was a valuable strategy for rapid screening detection and precise quantification analysis of SAC in food.