DIFFICULTIES IN QUANTIFICATION OF HETEROCYCLIC AROMATIC AMINES IN FOODS

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Heterocyclic aromatic amines (HAs) are the major mutagenic compounds isolated from broiled and grilled meats and fish. Thus, it is important to establish databases on HA content in cooked food that are representative for the eating habits of the population. Because of the relatively low amounts of HAs formed in food matrixes (0.1-50 ng/g), the challenge has been to develop rapid analytical methods that isolate and unequivocally identify HAs in these complex matrices at the low ppb level. A purification step must be carried out, followed by a separation technique such as liquid chromatography (LC), gas chromatography (GC) or capillary electrophoresis (CE).

This communication describes difficulties find in extraction of HAs from meat cooked matrices. Two different extraction procedures were tried: Gross method which uses the coupling of LLE with diatomaceous earth as solid support and two SPE steps with propylsulfonic acid (PRS) and C18 is the most popular tandem method and can yield two extracts clean enough for the determination of polar and less-polar heterocyclic aromatic amines. A faster method to extract HAs from meat samples on a single extract.

All together, nine HAs, IQ, MeIQx, 4,8-DiMeIQx, PhIP, Trp-P-1, Trp-P-2, AαC, MeAαC, Glu-P-1 were encountered in meat samples. However, in some cases were detected at levels below their limit of quantification. Using Gross method average recoveries varied from 27 to 50.6 % for the IQx compounds, 60 % for PhIP, 31.6 % for Glu-P-1 and for the piridoindoles the recoveries varied from 41.2 to 60.3 %. The single extract clean-up procedure gave lower recoveries PhIP, Trp-P-1, Trp-P-2, AαC, MeAαC. Thus, analyte extraction during sample pretreatment is not complete, and different strategies must be used for the correction of analytical results.

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