

EXTRACTION, DETECTION AND QUANTIFICATION OF HETEROCYCLIC AROMATIC AMINES IN PORTUGUESE MEAT DISHES BY HPLC/DIODE ARRAY

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The presence of heterocyclic aromatic amines (HAs) in foods depends on many factors such as cooking method, time and temperature, the presence of relative amounts of precursors, lipids, antioxidants and water content, for example, supplementation with antioxidants is considered to be an effective measure to reduce HAs exposure. Thus, cooking meat with tomatoes, vegetables, fruits and spices can be useful to lessen the levels of HAs. However, more studies are needed to find the appropriate concentrations to obtain the desirable effect.

The present communication describes the results obtained in the analyses of HAs in bovine meat dishes prepared by three different cooking methods, usual ingredients such as, salt, garlic, wine, olive oil, onion and tomato were added. Control meat samples (cooked without ingredients) were also prepared.

Analyses were performed by HPLC/diode array and detection of the eluted HAs was performed at 263 nm. The calibration graphs for fourteen amines injected into the column were linear up to approximately 2.0 ng/ μ l and the detection limits (signal-to-noise ratio 3:1) ranged from 0.06 to 0.4 ng injected.

Nine HAs, namely 2-amino-3-methylimidazo[4,5-f]quinoline (IQ), 2-amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx), 2-amino-3,4,8-trimethylimidazo[4,5-f]quinoxaline (4,8-DiMeIQx), 2-amino-1-methyl-6-phenylimidazol[4,5]pyridine (PhIP), 3-amino-1,4-dimethyl-5H-Pyrido[4,3-b]indole (Trp-P-1), 3-amino-1-methyl-5H-Pyrido[4,3-b]indole (Trp-P-2), 2-amino-9H-Pyrido[2,3-b]indole (A α C) 2-amino-3-methyl-9H-Pyrido[2,3-b]indole (MeA α C), 2-amino-6-methyldipyrido[1,2-a:3',2'-d]imidazole (Glu-P-1) were encountered in meat samples. A paired Student's t-test showed no significant differences on HAs levels ($p > 0.05$) of control meat samples (cooked without ingredients) and meat samples cooked with ingredients usual in Portuguese diet and rich in antioxidants. Changes on cooking habits are needed to possibility the use of ingredients not only as flavouring but also as protective agents against HAs formation during domestic cooking.

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