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ELECTROANALYTICAL CHARACTERISATION OF NITROSAMINES FOR THEIR POST-COLUMN AMPEROMETRIC DETECTION

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N-Nitrosamines (NAs) are carcinogenic, mutagenic and teratogenic substances that can occur in human diet and other environmental media [1]. In particular, NAs represent a serious contamination problem for meat and meat products subjected to technological processes [2].
Nitrosamines are traditionally analyzed by gas or high performance liquid chromatography coupled with thermal energy analyzer [3], mass spectrometric [4] or spectroscopic [5] detectors.
NAs show also electrochemical properties that make electrochemical techniques as good alternative methods for their determination [6-10].
In spite of the good sensitivity shown by these methods the main disadvantage is the poor selectivity that require the coupling with an efficient separation method. On the best of our knowledge only few attempts regarding the post-column polarographic determination of NAs at mercury electrodes were proposed [11-13].
In order to couple the electrochemical detection to a chromatographic separation it is essential to verify the electrochemical response of the analytes according to the composition of the various mobile phases used in chromatography.
Therefore, in the present work an extensive electroanalytical characterization of NAs (n-PYR, n-MOR, n-DEA, nDPhA) was carried out for the purpose of developing analytical methods based on post-column amperometric detection. Preliminary experiments were carried out by cyclic voltammetry to investigate NAs electrochemical behavior on Au, Pt and glassy carbon electrodes in typical mobile phases, and to select the best electroanalytical detection conditions. In addition, flow injection analyses were carried out in order to evaluate some performance parameters such as sensitivity, limit of detection and response stability.

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