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potentiometric detection**

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The most common analytical methods used for the determination of biogenic amines are based on liquid chromatography with spectrophotometric detection [1]. However, these compounds show little retention on conventional reversed-phase chromatographic columns and low detectability by spectrophotometric techniques, involving laborious and hazardous derivatization steps to overcome these drawbacks.

Alternatively, electroanalytical detection offers high selectivity and sensitivity with simple and inexpensive instrumentation, without the need of derivatization steps. Amperometric and coulometric detectors have been proposed for determination of biogenic amines after separation by HPLC but those based on potentiometry seems however overlooked [2].

In this work, a novel RP-HPLC method based on ion-pair chromatography combined with a potentiometric miniaturized ion-selective electrode inserted in a wall-jet flow-cell with low-dead volume is proposed for the simultaneous determination of ten different biogenic amines. The compounds of interest are the aliphatic amines – methylamine, ethylamine, cadaverine, putrescine, spermidine and spermine as well as the aromatic heterocyclic amines - histamine, tyramine, phenethylamine and tryptamine. Different experimental factors were studied such as the ion-pair agent and its concentration, the content of organic modifier and the stationary phase. The optimized method allowed the separation of the mentioned amines with a good resolution using a Luna® Omega 5µm Polar C18 150x4.6mm column by a gradient elution with butane 1-sulfonic acid as ion-pair agent and acetonitrile as organic modifier, at the flow-rate of 1.2 mL min⁻¹. The analysis time was 25 min.

The performance characteristics of the proposed detector were then evaluated and detection limits of the order of 10⁻⁶ mol L⁻¹ (injected concentrations) were obtained for all amines. The described method is now under validation phase according to the requirements of ICH (International Conference on Harmonisation).

Potentiometry already proved its ability as a competitive detection technique in liquid chromatography [2]. Therefore, the proposed method has a great potential to be used for the determination of biogenic amines in different food matrices.

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