SENSITIVE AND INTERFERENCE-FREE GLUTAMATE AMPEROMETRIC BIOSENSOR FOR THE MONITORING OF FOODSTUFFS

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L-Glutamate (Glu) is a well-known flavour enhancer that is present in several foodstuffs either as an additive or a natural compound. Glu monitoring is an important issue since the excessive intake of this flavour enhancer can cause allergic and neurotoxic effects. Glu is currently determined by chromatographic [1] or capillary electrophoretic [2] methods, which require extensive sample pre-treatment and expensive equipments. A suitable alternative is represented by amperometric biosensors, low cost devices that could provide specific, rapid and repetitive analyses of complex matrices. In the last decade a number of biosensors for glutamate detection have been proposed [3-7], but the above mentioned requirements have not been completely met. In order to face these problems a proper selection of the electrode material and the use of permselective films are required [8].
This work describes the development and optimization of an amperometric biosensor for glutamate monitoring in foodstuffs. The biosensor is based on glutamate oxidase (GLOD) immobilized by a gel of bovine serum albumine and glutharaldeyde onto a platinum electrode modified with a permselective overoxidized polypyrrole film. Different experimental conditions have been tested for the enzyme immobilization, and the optimized biosensor, integrated in a flow injection system, has been characterized in terms of linearity, LOD, LOQ, repeatability and stability of response. The excellent anti-interference characteristics towards the main interferents present in real food matrices have allowed the application of the biosensor in the accurate monitoring of Glu in different kind of foodstuffs.

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