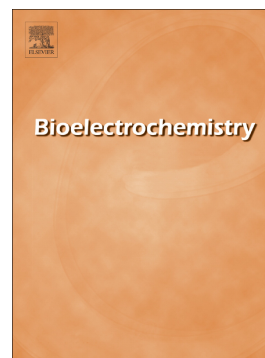


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## Conductometric biosensor for arginine determination in pharmaceuticals

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### Abstract

A new conductometric biosensor based on coimmobilized urease and arginase has been developed for arginine determination in pharmaceuticals. First, the main parameters of the selected method of immobilization (concentrations of arginase, urease, and glutaraldehyde, time of incubation) were optimized. An influence of the solution parameters (buffer ionic strength, capacity, pH,  $Mn^{2+}$  concentration) on the biosensor operation was studied, working conditions were optimized. After biosensor optimization, the main analytical characteristics were as follows. The limit of detection - 2.5  $\mu M$ , the linear range - 2.5 - 500  $\mu M$ , the sensitivity to arginine  $13.4 \pm 2.4 \mu S/mM$ , the response time - 20 s. The signals repeatability and operational stability in continuous exploitation were studied over one working day and during one week. Additionally, the selectivity of the developed biosensor towards arginine was essayed relative to other aminoacids.

The developed biosensor has been used to measure arginine concentrations in some drugs. The results obtained were in high correlation with the characteristics declared by producers.

**Keywords:** arginine, arginase, urease, biosensor, conductometry

### Introduction

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