

## A Biosensor for Glucose Analysis in Real Samples of Beverages.

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A biosensor consisted of glucose oxidase (GOx) and horseradish peroxidase (HRP) immobilized onto polyaniline activated by glutaraldehyde (PANIG) was developed for spectrophotometric determination of glucose concentrations in real samples of beverages and energetic drinks. Immobilization parameters were optimized for GOx (pH, time and enzyme concentration) and maximum yield (16%) when 5.0 mg of PANIG and 8.9 U prepared in 0.1 mol L<sup>-1</sup> sodium phosphate buffer (pH 7.0) reacted for 60 min at 4° C under gentle stirring. Under optimized operational parameters, the linear operational range for glucose determination was 0.5 to 6.0 mg mL<sup>-1</sup>. The biosensor showed high reproducibility of response, with maximum relative standard deviation of 0.003, and very good stability during repeated use (100% stable in 25 cycles). This biosensor was used for glucose determination in real samples of orange juice, energetic (Red Bull, Fly Horse) and sport drinks (Gatorade and Marathon). The results obtained in the biosensor were very close to those obtained using free enzymes (commercial kits), and could be validate after statistical analysis with a paired *t* test (95% confidence interval).

Keywords: mini-reactor, glucose, glucose oxidase, immobilization, polyaniline.