

# Turkish Journal of Medical Sciences

Turkish Journal


of


Medical Sciences

Electrochemical Biosensor Based on Horseradish Peroxidase for the Determination of Oxidizable Drugs

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Departments of <sup>1</sup>Analytical Chemistry, <sup>2</sup>Biochemistry, Faculty of Pharmacy, Ege University, Bornova, İzmir-TURKEY Abstract : An amperometric biosensor based on a carbon paste electrode modified with horseradish peroxidase (HRP) is defined as a device for the quantitative and qualitative detection of oxidizable drugs. This paper demonstrates the advantages of using HRP as the biocatalyst in the in vitro detection of oxidizable drugs in the presence of hydrogen peroxide. Amperometric analysis and batch experiments were carried out in acetate buffer (pH 4.8) in the presence of hydrogen peroxide. Amperometry was performed by applying a potential of -0.1 V (vs. Ag/AgCl), in the presence of hydrogen peroxide and adding a drug which has an oxidizable group (OxG; e.g. -OH, -NH, -SH). The results show that the HRP-modified electrode responds rapidly to micromolar changes in the OxG addition. The current signals obtained are proportional to the OxG concentration. Experimental variables, such as pH, operating potential, change in the percentage of HRP, and reproducibility are discussed. The stability of the HRP-modified electrode is also demonstrated.

 [Keywords](#)

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**Key Words:** Biosensor, Amperometry, Horseradish peroxidase, Oxidizable drugs

Turk J Med Sci 2000; **30**(4): 349-354.

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