

## **Captopril Electrochemical Oxidation on Fluorine-Doped SnO<sub>2</sub> Electrodes and Their Determination in Pharmaceutical Preparations**

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### **Abstract**

A novel application of fluorine-doped tin oxide (FTO) electrodes is reported in the present work. To this end, the captopril electrochemical oxidation mechanism on FTO electrodes at various pH and its determination in pharmaceutical preparations was investigated. Captopril oxidation on FTO proceeds at pH between 2.0 and 4.0. The study revealed that interferences for captopril determination in pharmaceutical samples was totally suppressed using these electrode materials. Voltammetric survey showed an anodic peak at about 0.375 V (Ag|AgCl) for captopril oxidation, that takes place through an EC process at pH interval 2.0–4.0. The investigation demonstrated that captopril oxidation occurs through protonated species and these electroactive species interact by adsorption on FTO electrodes, with a large heterogeneous rate constant and a mechanism involving  $1\text{H}^+/1\text{e}^-$  in the global reaction. Moreover, a captopril sensor based upon FTO electrodes, with a linear range miliMolar, is proposed. These electrodes are promising candidates for the efficient electrochemical determination of captopril in pharmaceutical preparations.