Electrochemical Determination of Acebutolol on the Electrochemically Pretreated Screen Printed Carbon Electrode

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This work reports the electrochemical determination of acebutolol (ACE) by the screen printed carbon electrode (SPCE). Before the determination, the SPCE was activated by the electrochemical pretreatment. This pretreatment creates the edge plane active sites on the SPCE surface and also it creates the electrochemically active functional groups. The activation process was confirmed by the Raman, SEM and electrochemical analysis. The activated SPCE (aSPCE) revealed the better electrochemical performance when compared with SPCE. It is presumed that, this remarkable performance was obtained from the edge plane active sites and the electrochemically active functional groups (such as carbonyl groups and hydroxyl groups). Further, this aSPCE utilized to the ACE determination in phosphate buffer solutions which received a great significance of analytical performances. It revealed the good sensitivity ($1.02 \mu\text{A } \mu\text{M}^{-1} \text{cm}^{-2}$), linear range (0.01 to 200 μM) and low LOD (0.006 μM). Moreover, it shows significant anti-interference properties in suspected interfering compounds.

Keywords: Edge plane; polymer inks; beta blocker; heart disease; carbonyl groups and basal plane.

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