



Single drop analysis of hydroquinone using screen – printed graphene electrode

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A new, simple and rapid electrochemical method for determination of hydroquinone was developed using a screen - printed graphene electrode (SPGE). The SPGE was fabricated on polyvinyl chloride. In this work, 0.1 M phosphate buffer at pH 7 was used as a supporting electrolyte. A volume of 60 μL of hydroquinone were dropped onto the electrode. The electrochemical detection of hydroquinone was performed by cyclic voltammetry (CV). The potentials were scanned from -0.8 to 0.6 V with a scan rate of 100 mV s^{-1} . Under optimum conditions, a reduction peak current was linearly proportional to hydroquinone concentration in range of 100 to 5000 μM , with a detection limit of 60 μM . Analysis of hydroquinone in whitening creams samples was determined. The obtained results were validated with the results from the high performance liquid chromatography (HPLC). It was found that there was no significant difference between two methods when using the paired *t*-test at 95% confidence level. High precision (RSD was less than 3 % (n=5)) and high accuracy (89-113% recoveries) were obtained. The developed sensor is reliable, portable and ease of use.

Keywords: Hydroquinone; Screen- printed graphene electrode (SPGE); Cyclic voltammetry(CV); Whitening cream