Extraction of Epigallocatechin Gallate from Green Tea and its Characterization using Polymeric electrode PAN/PPY enriched with nano particles of TiO₂ and rGO

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Several publications have reported in the recent years documenting green tea and its flavonoid compounds, i.e. catechins. The article opens up a new issue on using electrochemical methods to identify, to measure and to increase the extraction efficiency of epigallocatechin gallate (EGCG). The conductive polymeric sorbent associated with nano materials was used to enhance the electrode's sensitivity. Conductive polymer electrodes were prepared using electrodeposition (EPD) and electrophoretic (EP). To illustrate the result, the structure of the polymeric electrodes (PAN/PPY/TiO₂/G) was investigated through FTIR analysis, FESEM-EDX, XRD, and electrochemical impedance spectroscopy (EIS). In order to identify and determine the concentration and purity of EGCG extracts, the following techniques were used: chronoamperometric technique with Potentiostat/Galvanostat instrument (AUTOLAB); (HPLC) and UV-Vis spectrophotometry. Our research has highlighted the importance of this method due to obtain high purity (76.02 ± 0.49). According to the results, it has been found that modified polymeric electrodes with nanoparticles (PAN/PPY/TiO₂/G) have high efficiency and low operating expense and less time-consuming to extract high purity EGCG.

Keywords: Electrochemically extraction; Conductive polymeric electrodes; Electrochemical synthesis; Epigallocatechin gallate (EGCG).

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