Ultrasonic Synthesis of Polysodium-4-styrene Sulfonate coated Functionalized MWCNTs for Electrochemical Detection of Anti-Oxidant Drug in Red Wine

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A greatly selective, and sensitive 3,4-Dihydroxy-trans-cinnamate sensor based on a poly (sodium 4-styrenesulfonate) (PSSS) coated with functionalized multiwalled carbon nanotubes (PSSS@f-MWCNTs) composite modified electrode was improved. The fabricated PSSS@f-MWCNTs/GCE displayed an excellent voltammetric response for caffeic acid to compared control electrodes. Under optimum conditions, the modified electrode showed a wide linear range at caffeic acid concentrations of 0.4–173.9 μM . The limit of detection is 35 nM and sensitivity is 17.44 $\mu\text{A } \mu\text{M}^{-1}\text{cm}^{-2}$. The improved sensor method was showed good anti-interference, reproducibility, good repeatability, and excellent storage stability.

Keywords: Poly (sodium 4-styrenesulfonate), 3,4-Dihydroxy-trans-cinnamate, TGA, Co-polymer, Ionic polymer.

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