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Easily Prepared Co_3O_4 Doped Porous Carbon Material Decorated with Single-wall Carbon Nanotubes Applied in Voltammetric Sensing of Antioxidant α-lipoic Acid

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Abstract: The homemade, porous carbon material, thermolysis prepared from Novolac phenol-formaldehyde resin, in situ modified with Co_3O_4 nanoparticles and mixed with single-wall carbon nanotubes, was used in selective sensing of prominent antioxidant α-lipoic acid (LA). XRD, SEM and EIS measurements were used for characterization of material composition, structure, morphology and improved conductivity. The quantification of LA at $TPCo_3O_4$&SWCNTCPE was done by a square-wave voltammetric technique in BR buffer solution at pH 6. The linear working range was recorded from 2 to 100 μM of LA and the proposed electrode material was successfully applied in the determination of LA in dietary supplements.

Keywords: Co_3O_4 nanoparticles · carbonaceous material · carbon paste electrode · electroanalytical determination · square wave voltammetry

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