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A SENSITIVE VOLTAMMETRIC SENSOR FOR CAFFEIC ACID MADE FROM THERMOLISED MODIFIED UF RESINS WITH INCORPORATED Fe(III) AND Ti(IV) OXIDE PARTICLES

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Domestic high performance electrode material was prepared by thermolysis of *in situ* synthesized urea-formaldehyde (UF) resins modified with Fe(III) nitrate and Ti(IV) oxide in different combinations: iron salt and UF resins (SynFe/UF-TP), titan oxide and UF resins (SynTi/UF-TP) and both metal compounds together and UF resins (SynFe+Ti/UF-TP). For comparison, the thermolysis prepared materials produced by simple physical mixture of metal compounds and UF resins (Fe/UF-TP, Ti/UF-TP and Fe+Ti/UF-TP) were made, too. The surface morphology characterization of all materials were done by SEM. Electrochemical results obtain by cyclic voltammetry and impedance spectroscopy have shown that *in situ* synthesized UF material modified with iron and titan compounds prepared by thermolysis, incorporated in carbon paste electrode (SynFe+Ti/UF-TP@CPE) possesses a better electrochemical response and conductivity than the other materials prepared by the same procedure, or pure CPE without addition of extra material. After optimization of experimental conditions and parameters of differential pulse technique, selectivity of proposed electrochemical method was examined. The proposed sensor with incorporated developed material has proven itself as a selective and sensitive electrochemical platform for determination of caffeic acid (CA). It was successfully applied for the determination of antioxidant capacity, based on CA equivalents, for honey, liqueur and juice samples.

Keywords: Modified urea-formaldehyde resin, Thermolysis, Voltammetric sensor, Caffeic acid

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