An Electrochemical Fingerprint Approach for Direct Soy Sauce Authentic Identification Using a Glassy Carbon Electrode

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An electrochemical technique for identifying soy sauce authenticity using a glassy carbon electrode is described. Due to the presence of salt in soy sauce, a three-electrode system can be directly inserted into soy sauce without the addition of electrolyte. The free amino acids and ATP-related compounds in soy sauce can be oxidized during differential pulse voltammetry (DPV) to form a fingerprint pattern. By using the presence/absence of peaks as criteria to calculate ratios, the DPV profiles can be used for identifying sixteen different soy sauces in this work. We believe this proposed methodology can be further extended to other food quality screening applications.

Keywords: Electrochemistry; Soy sauce; Glassy carbon electrode; Cluster analysis; Food safety ; Fingerprint

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