Rapid Electrochemical Analysis of Plant and Synthetic Indigo Dyes

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Plant indigo was a very important dye historically, but it was later replaced by synthetic indigo. In recent years, plant indigo has been recognized for its artistic value and reduced environmental impact. However, the price of plant indigo is much higher than that of synthetic indigo. In this work, we propose an electrochemical method for quickly distinguishing plant indigo from synthetic indigo. This method uses an electrochemical fingerprint technique. Using the different fingerprints of plant indigo and synthetic indigo, corresponding indexes were developed for identification. In addition, this technology can also distinguish plant indigo and synthetic indigo mixed in different ratios. This rapid technology requires no large-scale instruments and has great potential for dye analysis.

Keywords: Electroanalysis; Indigo dyes; Fast identification; Fingerprints; Differential pulse voltammetry

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