

Analysis of total phenolic compounds in tea and fruits using diazotized aminobenzenes colorimetric spots

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The present work describes a novel and rapid approach for evaluating total phenolic compounds (TPCs) in tea and fruits using colorimetric spots and the digital image-based (DIB) method. Colorimetric spots were formed by reacting diazotized aminobenzenes namely sulfanilic acid, sulfanilamide, or aniline with TPCs in the extract to form an azo dye. The limit of detection (LOD) was 6.5, 5.5, or 5.1 mg GAE (gallic acid equivalent) L⁻¹ and the analytical range was 25–500, 20–500, or 18–200 mg GAE L⁻¹, respectively.

Correlation with the Folin-Ciocalteu

assay was significant (Pearson coefficient, $R = 0.970\text{--}0.991$) while the antioxidant activity assay was moderate to high ($R = 0.737\text{--}0.977$). The method developed was successfully applied to the analysis of tea and fruits and showed RSD ($n = 3$) not exceeding 9.6, 8.5, and 9.7%, respectively. Ecologically, the DIB method developed could determine the variation of TPCs within cultivars and was found to be strongly dependent on the growing environment.