

Determination of Ternary Mixtures of Food Dyes by Zero-Crossing Derivative Spectrophotometry

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Key words: derivative spectrophotometry, high performance liquid chromatography, simultaneous determination, food dyes, ternary mixtures, Carmoisine, Tartrazine, Beetroot Red, Sunset Yellow

A derivative spectrophotometric method with zero-crossing has been described for the simultaneous determination of ternary dye mixtures: Carmoisine, Tartrazine, and Beetroot Red (E-122, E-102, and E-162), and Sunset Yellow, Tartrazine, and Beetroot Red (E-110, E-102, and E-162)) in powdered drinks. The procedure involves extraction of the dyes from a powdered drink with distilled water, filtration, appropriate dilution, recording of the first- and second derivative UV spectra, and the measurement of absorbance values at zero-crossing wavelengths. Sensitivity and reproducibility of the method were determined using the standard mixtures. The proposed method was applied to the determination of the above dyes in commercially available powdered drink. RP-HPLC has been also applied as the reference method. Statistical evaluation of the results confirmed good agreement between both methods. However, derivative spectrophotometry has the advantage of being simple, fast, inexpensive and easy to perform.