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Original Research

Optimization and Validation of Kinetic-Spectrophotometric Technique for the Determination of Pesticide Dicamba in Infant Baby Foods Using Solid Phase Extraction Method

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Abstract

The objective of this paper was to develop and apply the kinetic-spectrophotometric method for the determination of the pesticide dicamba in infant baby foods available in Serbia. The method is based on the inhibition effect of dicamba on the oxidation of sulfanilic acid (SA) by hydrogen peroxide in universal buffer (pH = 9.66) in the presence of Co^{2+} ion. The reaction was monitored spectrophotometrically at 368 nm. The HPLC method was used as a comparative method to verify the results of the kinetic method. Under the experimental conditions proposed, dicamba showed a linear dynamic range of 0.31 to 3.10 μg mL^{-1}, and from 3.10 to 31.00 μg mL^{-1} with standard deviation from 1.77 to 4.55 %. Limit of detection and a limit of quantification are 0.101 μg mL^{-1} and 0.306 μg mL^{-1}, respectively. The kinetic method was efficiently applied for dicamba determination in baby food samples after solid phase extraction. This method is highly sensitive, simple, easy to operate, and requires cheap reagents. It can be successfully used for routine analysis of dicamba in baby food.

Keywords: dicamba, kinetic method, SPE, HPLC, baby food samples

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