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Simultaneous determination of Cinnarizine and Domperidone by area under curve and dual wavelength spectrophotometric methods

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Abstract

Accurate, selective and sensitive spectrophotometric methods have been developed and validated for simultaneous determination of Cinnarizine and Domperidone, a binary mixture with overlapping spectra, without preliminary separation. These methods include area under the curve (AUC) and dual wavelength spectrophotometry. For the AUC method, the area under curve of mixture solutions in the wavelength ranges 241-258 nm and 280-292 nm were selected for determination of Cinnarizine and Domperidone and by applying Cramer's rule, concentration of each drug was obtained. In dual wavelength method, two wavelengths were selected for each drug in a way so that the difference in absorbance is zero for another drug. Domperidone shows equal absorbance at 240.2 nm and 273.2 nm, where the differences in absorbance were measured for the determination of Cinnarizine. Similarly, differences in absorbance at 230.8 nm and 259.2 nm were measured for determination of domperidone. The proposed methods were applied for determination of Cinnarizine and Domperidone over the concentration ranges of 2-20 and 2-22 μg mL^{-1}, respectively. The suggested methods were validated as per USP guidelines and the results revealed that they are reliable, reproducible and precise for routine use with short analysis time. The results obtained by the proposed methods were statistically compared to the reported method, and there was no significant difference between them regarding both accuracy and precision.

Keywords: Spectrophotometry; Cinnarizine; Domperidone; Area under curve; Dual wavelength; Pharmaceutical Formulation.

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