SIMPLEX-OPTIMIZED AND FLOW-INJECTION SPECTROPHOTOMETRIC ASSAY OF TETRACYCLINE ANTIBIOTICS IN DRUG FORMULATIONS

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Summary

The modified simplex method was applied to the selection of the proper experimental conditions for the flow injection spectrophotometric determination of tetracycline, chlortetracycline, oxytetracycline and demeclocycline. In the method a 157 mm3 sample volume was injected, for all the compounds, into the carrier stream of iron(III) of concentrations 554, 626, 701 and 447 ppm flowing at rates of 3.72, 4.37, 3.72 and 3.72 cm3 min-1, thus passing through a reaction coil of length 55,85,45 and 45 cm for the respective compounds, all in 0.001 mol dm-3 sulfuric acid as an over-all reaction medium. A high sampling frequency of the order of at least 170 h-1 was attained for all the compounds. A high precision with a relative standard deviation of less than 0.9% (n = 5) was also obtained. The accuracy was found to be high as the Student t-values were calculated to be less than the theoretical values when the results were compared with those obtained by the conventional spectrophotometric method. There were no interferences from excipients in dosage forms when the method was applied to pharmaceutical preparations.

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