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Development of a dye-complex based spectrophotometric method for determination of azithromycin in bulk and dosage forms using alizarin red

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Background and Aims: Azithromycin, a broad spectrum macrolide antibiotic is extensively used for treatment of the infections caused by susceptible microorganisms. Azithromycine has a low molar UV absorptivity due to lack of strong choromophores. The aim of this work is to develop a method based on formation of dye-complex between the drug and an acidic dye like alizarine red.
Methods: Alizarin red was dissolved in water and the dye solution was added to a solution of azithromycin in dichloromethane. Then, the organic phase was separated and the intensity of the color developed in this phase was measured at 450 nm. The effects of the main parameters such as pH of the aqueous phase, effective concentration of the drug and the dye, buffer composition and the organic solvents were fully studied. The proposed method was validated and applied for determination of the drug in bulk and two commercial dosage forms.
Results: The best results were obtained when drug and dye concentrations were 5 µg/ml and 0.1 µg/ml, respectively, pH of the aqueous phase was adjusted to 6 using phosphate buffer at 10 mM concentration. No interferences were observed between the excipients of a tablet and a suspension dosage forms .
Conclusions: The method was proved to be precise, accurate and sensitive enough for determination of azithromycin in bulk and dosage forms studied.

Keywords: Azithromycin; Determination; Dye-complex method