

## NOVEL INDIRECT SPECTROPHOTOMETRIC APPROACHES FOR SPIRAMYCIN QUANTIFICATION IN DOSAGE FORMS USING NAPHTHOQUINONE DERIVATIVE REAGENTS

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**Abstract.** The development and validation of new spectrophotometric methods for the determination of spiramycin in pure and dosage forms have been described. Indirect analysis was performed *via* charge transfer reaction between spiramycin and naphthoquinone derivatives 1,2-naphthoquinone-4-sulphonate and phyloquinone in alkaline medium, resulting in formation of coloured complexes with maximum absorption at 453 and 456 nm, respectively. The reaction conditions, including solvent, reagent concentration, and reaction time, were optimized. Linear calibration graphs were plotted for the NQ-drug derivatives over the concentration range of 0.85–18.0 µg/mL and showed correlation coefficients of 0.9998, with a detection limit of 0.25 µg/mL and quantification limits about 0.75 µg/mL. The molar absorptivity and Sandell's sensitivity were  $7.42\text{--}9.14 \times 10^4 \text{ L} \times \text{mole}^{-1} \text{cm}^{-1}$  and  $0.0092\text{--}0.0095 \text{ µg/cm}^2$ , respectively. Both methods demonstrated good precision, accuracy and robustness with %RSD below 3.1%. The methods were successfully applied for spiramycin quantification in tablet dosage forms. The suggested approaches are simple, effective, and sufficiently reliable to be employed as alternative quality-control methods.

**Keywords:** spectrophotometry, 1,2-naphthoquinone-4-sulphonate, phyloquinone, charge-transfer complex, validation.

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