Visible Spectrophotometric Determination of Valdecoxib in Tablet Dosage Forms

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A simple, accurate, rapid, and sensitive visible spectrophotometric method has been developed for the determination of valdecoxib in pure and pharmaceutical dosage forms. The method is based on the reaction of valdecoxib with potassium permanganate to form a bluish green coloured chromogen with an absorption maximum at 610 nm. Beer's law was obeyed in the range of 5-25 µg/ml. The proposed method has been successfully applied to the analysis of the bulk drug and its dosage forms.

Valdecoxib is a nonsteroidal antiinflammatory drug that exhibits antiinflammatory, analgesic, and antipyretic properties. Chemically, it is 4-(5-methyl-3-phenylisoxazolyl) benzene sulphonamide. It is a novel COX-2 inhibitor with a lower incidence of ulcer complication. It has been found to be an effective analgesic in postoperative pain. Literature survey revealed that a HPLC method has been reported for the bioequivalence of valdecoxib in plasma. However, there is no method reported for estimation of valdecoxib in formulation. The present paper aims to report a simple visible spectrophotometric method for estimation of valdecoxib in tablets.

Valus and Valz, containing 10 mg/tab, which are manufactured and marketed by Glenmark Pharmaceuticals Ltd. and Torrent Pharmaceuticals Ltd. were estimated. Valdecoxib was obtained as a gift sample from Glenmark Pharmaceuticals Ltd., Mumbai. A Jasco V-530 UV/Vis spectrometer with 1 cm matched quartz cells was used for all absorbance measurements. All chemicals used were of analytical grade and procured from SD Fine Chemicals, Mumbai.

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A stock solution of valdecoxib (500 µg/ml) was prepared by taking 50 mg of drug in 100 ml of 1 M sodium hydroxide (solution A). The gradient dilutions were prepared by taking 0.25-1.25 ml of solution A in a series of volumetric flasks, and to each flask, 0.5 ml of 0.5% w/v potassium permanganate was added, mixed, and warmed at 50° for 1 min. Stability of colour complex was determined by measuring absorbance of the chromogen at specified time intervals and was found to be stable for 30 min. These results indicated that the proposed method is simple, accurate, sensitive, and reproducible.

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This method is based on the reduction of potassium permanganate to potassium manganate by valdecoxib in presence of 1 M sodium hydroxide, thereby producing reduced species – the bluish green colour chromogen. The colour intensity of the chromogen was intensified with 0.5 ml of 0.5% w/v potassium permanganate warmed at 50° for 1 min. Stability of colour complex was determined by measuring absorbance of the chromogen at specified time intervals and was found to be stable for 30 min. These results indicated that the proposed method is simple, accurate, sensitive, and reproducible.

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**REFERENCES**