



RESEARCH ARTICLE

UV SPECTROPHOTOMETRIC METHOD DEVELOPMENT AND VALIDATION FOR ENTACAPONE IN BULK AND FORMULATION

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A simple, rapid, accurate, precise and economic method has been developed and validated for the estimation of entacapone in bulk and tablet dosage form using UV spectrophotometry. Methanol was used as the solvent for entacapone. The UV spectrum of entacapone in water showed λ_{\max} at 308 nm and Beer-Lambert law was obeyed in the concentration range of 2-15 $\mu\text{g/ml}$. The result of analysis has been validated statistically. The recovery studies ranged from $99.29 \pm 1.11\%$, confirmed the accuracy of the proposed method. The method was found to be precise with % relative standard deviation 0.80% for inter-day precision and for 0.85% intra-day.

Key words: UV Spectrophotometry, Entacapone, Validation, Antiparkinson agent .

INTRODUCTION

Entacapone is chemically known as 2-cyano-3-(5-dihydroxyamino-3,4-dioxo-1-cyclohexa-1,5-dienyl)-N,N-diethyl-prop-2-enamide and belongs to the class of antiparkinson agents. Entacapone is a selective and reversible inhibitor of catechol-O-methyltransferase (COMT), with mainly peripheral actions. It is used in the treatment of Parkinson's disease as an adjunct to Levodopa/Carbidopa therapy (O'Neil, 2001; Sweetman, 2002). Recently, a few analytical methods for the determination of entacapone were reported and most of them reported high-performance liquid chromatography (HPLC) assay of entacapone in dosage forms, in addition to derivative spectroscopic method (Ramakrishna *et al* 2005; Paim *et al* 2007; Doshi *et al* 2009; Sivasubramanian *et al* 2009; Mohamed and Mohamed, 2010; Soukhova *et al* 2011; Tekale *et al* 2011). But literature survey has not revealed any simple UV-spectrophotometric method for estimation of entacapone. Thus, in continuation of

our previous work on the UV spectrophotometric method development (Patil *et al* 2011), present study is directed toward the development of a simple, precise, accurate and economical spectrophotometric method for estimation of entacapone in bulk and formulation.

MATERIALS AND METHODS

Instruments

Perkin-Elmer UV-Visible spectrophotometer was used for spectral bandwidth 1 nm, wavelength accuracy 0.5 nm and 1 cm matched quartz cells. All the reagents used in this assay were of analytical grade. Pure entacapone was obtained as a gift sample from Ajanta Pharma Ltd., Mumbai. Tablets of entacapone, Entacom (Intas Pharma Ltd.), were purchased from local market.

Analytical procedure

Standard stock solution (100 $\mu\text{g/ml}$) of the entacapone was prepared by dissolving 10 mg