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Estimation of drotaverine in bulk and pharmaceutical formulations by precipitation reagents

■ G. HIMAVATHI AND M. KIRANMAI REDDY

Author for Correspondence -
G. HIMAVATHI
Department of Chemistry,
GITAM Institute of Technology,
GITAM University,
VISAKHAPATNAM (A.P.)
INDIA
Email : khimavathi@yahoo.co.in

See end of the article for authors affiliation

ABSTRACT - Three simple accurate visible sepectrophotometric methods (A.B and C) have been developed for the estimation of Drotaverine (DRT) in bulk and pharmaceutical formulations. The estimation was done based on its complex formation with alkaloids using spectrophotometric methods. Drotaverine forms a molecular complex with SNP (Sodium Nitro Prusside) in method-A, CTC (Cobalt thiocyanate) in method B and DDQ (2,3-dichloro-dicyano-1,4-benzoquinone) in method C during its quantitative precipitation. The absorbance of nitrobenzene layer was measured at the respective wavelength of maximum absorbance against the reagent blank. To determine Drotaverine colour reaction was used in addition to precipitation reaction. They are based on the colour formation with either unreacted precipitant of the filtrate or released precipitant from the molecular complex. All the variables have been optimized. The proposed methods are validated statistically. Recovery studies were carried out by standard addition method.

Key words - Drotaverine, SNP, CTC, DDQ and Spectrophotometer

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Drotaverine is an antiparnodic drug an analog of papaverine with smooth muscle relaxit properties. It is a selective inhibitor of phosphodiesterase 4 and has no anticholinergic effects. Chemically, Drotaverine is (1-(3,4-diethoxybenzylidene)-6,7-diethoxy-1,2,3,4-tetrahydroisoquinolene) an isoquinolene derivative. It is considered as a highly potent spasmolytic agent[1].

It is accompanied by a mild calcium channel blocking effect. The mild impact of Drotaverine is hypotension vertigo, nausea and palpitation. Some studies stated that drotaverine was effective nearly 80,s in treating renal colic[2]. According to the literature survey it is revealed that few methods such as HPLC[3-6], Spectrophotometry[7-9], TLC[10], ion exchange[11], GC[12-13] were used for the estimation of drotarverine.

Since there is no much literature reported for the estimation of drotaverine by visible spectrophotometric methods. In the present work successful attempt was made to assess quantitatively bulk drug and pharmaceutical formulations by precipitation reagents.

EXPERIMENTAL METHODOLOGY

In the present work systronics UV-Visible spectrophotometric instrument of model number 117 was used with a pair of 10mm matched quartz cells. For pH measurements an Elico LI.120 digital pH meter was used.

Preparation of stock solution:

All the chemicals used were analytical grade and the solutions were prepared with distill water.

Method A:

SNP (Sodium Nitro Prusside) solution was prepared by dissolving 5g in 100ml of water. 5 per cent ($1.67x10^{-1}$M), 5g of hydroxylamine monohydrochloride was dissolved in 100ml of