



## A REVERSED-PHASE HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD FOR DETERMINATION OF CHLORTHALIDONE IN PHARMACEUTICAL FORMULATION

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### ABSTRACT

A simple, specific, sensitive, precise, and accurate high performance liquid chromatography method was developed for the determination of chlorthalidone in pharmaceutical tablet forms. Chlorthalidone is a diuretic drug frequently prescribed by Indian physicians for treatment of cardiac, hepatic, renal and pulmonary diseases. The method was carried out on reverse phase C-18 column (Lichrospher, Merck<sup>®</sup>) (250×4mm, 5µm particle size) using a mixture of 50mM disodium hydrogen phosphate: methanol: acetonitrile in the ratio of 70:30:05 (pH adjusted to 3.5 with orthophosphoric acid) as mobile phase. Hydrochlorothiazide was used as internal standard. The detection was carried out by UV-detector at 220 nm at column temperature 30±2°C. The calibration curve was found to be linear in the range of 0.1 to 3.2 µg/ml. The intra-day and inter day percentage coefficient of variation was found 3.3085 and 0.3702 respectively.

**Key words:** Diuretic drug, chlorthalidone, HPLC, Pharmaceutical Formulation.

### INTRODUCTION

Chlorthalidone is diuretic drug which increases the rate of urine flow. However diuretics also increase the rate of excretion of Na<sup>+</sup> and accompanying anion Cl<sup>-</sup>. Sodium Chloride content in the body is the major determinant of the extracellular fluid volume, and most clinical applications of diuretics are directed towards reducing the extracellular fluid volume by decreasing the total body NaCl<sup>1</sup>.

Diuretics are used, either alone or in combination with other drugs for the treatment of hypertension<sup>2</sup>. Particularly diuretic compounds promote excretion of water and electrolytes via kidneys. They are also used in the treatment of heart disorder, hepatic, renal and pulmonary diseases when salt and water retention capacity results in oedema or ascites<sup>3</sup>.

Chemically Chlorthalidone is 2-chloro-5-[(1*R*S)-1-hydroxy-3-oxo-2, 3-dihydro- 1*H*-

isoindol-1-yl] benzenesulphonamide<sup>4</sup>.

Chemical structure of chlorthalidone is shown below<sup>6</sup>.

Diuretics have been misused and abused in sports where weight categories are involved, such as weight-lifting, boxing and wrestling, in order to reduce body weight rapidly. Not only for ethical reasons but also because of serious health risks, the use of such type of compounds is prohibited by the International Olympic Committee<sup>5</sup>.

Literature survey reveals the reports of spectrophotometric and HPLC methods for the determination of chlorthalidone in pharmaceutical dosage forms and biological fluids<sup>4,6-2</sup>. The objective of the present work was to develop a simple, efficient and reproducible method for quantitative determination of chlorthalidone in pharmaceutical preparations.