CHAPTER I

INTRODUCTION

Literature survey of the investigated compounds

1.1. *Ciprofloxacin Hydrochloride*

The polarographic behaviour of ciprofloxacin was investigated by **Tekstor** et al[1] using differential pulse polarography. Two well–defined peaks were observed in acidic, neutral and slightly alkaline media. In 0.1 M KCl, peaks were observed at -1.54 V and -1.70 V aganist SCE. In solution of pH > 10, only one peak was observed at -1.87 V against SCE in 0.1 M LiOH. The method was applied for the determination of ciprofloxacin in human serum.

Determination of ciprofloxacin in urine by adsorptive stripping voltammetry at mercury and carbon-paste electrodes was investigatd by **O'Dea** et al[2]. Stripping curve of the prepared solution was recorded using a hanging mercury drop electrode or a carbon-paste electrode aganist Ag/AgCl. Calibration graphs were rectilinear. Detection limits were 0.258 and 0.231 μg/ml ciprofloxacin using hanging mercury drop and carbon-paste electrodes, respectively. Results were low due to the limited accumulation properties of ciprofloxacin with the reduction process selected. The coefficient of variation with the carbon–paste electrode was 4.1% (n = 5).

Study on the polarographic behaviour of ciprofloxacin, was investigated by **Zhao** et al[3]. Portions of standard ciprofloxacin solutions were treated with phosphate buffer of pH 6.8, 0.1 M H_2O_2 and diluted to 25 ml with H_2O. Oscillopolarography was performed with measurement of the

second-derivative peak height at –1.17 V. The calibration graph for the drug was linear within the range of 0.38-7.60 μg/ml. The method was applied to the analysis of ciprofloxacin tablets, with recoveries of 95.8-101.45 %.

Spectrophotometric determination of ciprofloxacin in its dosage forms was investigated by **Rao** et al[4]. The method was based on complexation reaction between the drug and ferric ion in acidic medium. The absorbance of the solution was measured at 440 nm against a reagent blank. The complex formed was stable for 4.0 hour. Beer's law was obeyed from 6.0 to 150 μg/ml of the drug. The coefficient of variation was 0.3%. Alternatively, portion of the drug solution was treated with aqueous 0.1% 3-methylbenzothiazolin-2-one hydrazone hydrochloride and 0.2% ceric ammonium sulphate in 0.5 M sulphuric acid. The absorbance of the solution was measured at 425 nm aganist a reagent blank. The formed complex was stable for 30 min. Beer's law was obeyed from 6-12 μg/ml of the drug, and the coefficient of variation was 0.5%.

Spectrophotometric determination of ciprofloxacin in pharmaceutical formulations was studied by **Mathur** et al[5]. The method was based on complexation reaction of the drug with ferric chloride in acidic medium. The absorbance was measured at 432 nm aganist a reagent blank. Beer's law was obeyed from 16-160 μg/ml of the drug, and the colour was stable for more than 24 h.

Spectrophotometric determination of ciprofloxacin in pure form and in tablets through charge-transfer complex formation was investigated by