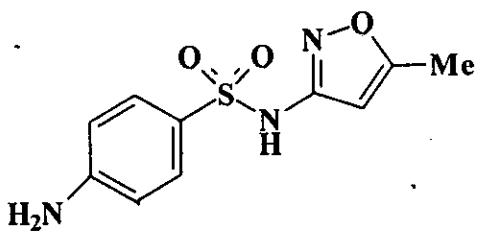
Introduction

No doubt that, it is critically vital to determine the purity and concentration of any therapeutic drug in high accuracy and precision. Since most of them are toxic in high concentration, detection of the dose is very essential. One of the most important procedures is the spectrophotometric method. In this study we represent a spectrophotometric method for two sulfur containing antibiotics sulfamethoxazole and the aminoglycoside, lincomycin hydrochloride, in addition to antispasmodic drug, mebeverine hydrochloride. The applied methods are characterized by their simplicity, selectivity and high sensitivity. In this chapter, short notes are given about the physical and chemical characters, besides, mode of action and use. A historical survey on some previous works concerned with the drugs under investigation is shown briefly.

1. Literature survey for the determination of sulfamethoxazole:-



***Definition*[1]:**

Sulfamethoxazole is 4-amino-N-(5-methyl-3-isoxazolyl) benzene sulfonamide. It is one of more than 3000 synthesized sulfonamides. It contains not less than 99 % and not more than 101 % of $C_{10}H_{11}N_3O_3S$ calculated with reference to the dried substance. It has a molecular weight of 253.31.

***Characters*[1]:**

Sulfamethoxazole is an almost white crystalline powder, practically insoluble in water, freely soluble in acetone, soluble in warmed alcohol and slightly soluble in ether. It dissolves in dilute solution of NaOH. It has the melting point of 167 °C.

***Action and use*[2]:**

It has antimicrobial activity (bacteriostatic and bactericidal activity). Its mode of action depends on blocking dihydropetroate synthetase enzyme, inhibiting the formation of folic acid, an important precursor to the synthesis of nucleic acids, and hence preventing the synthesis of nucleic acids.

Several procedures have been developed for the determination of sulfamethoxazole in both pure and dosage forms. Some of them are described in brief:

Lin et al[3] provided a basic principal and experimental technique of non relative component reference multiplier derivative spectrophotometry for the determination of sulfamethoxazole (I) and trimethoprime (II). The procedure overcomes the problem of overlapping in derivative spectrophotometry and the quantitative analysis of lower content component in mixture can be done without separation. This method was investigated to assay the contents of (II) and used to assay the zero crossing derivative spectrophotometry for the assay of (I) in pharmaceutical preparations. The average recoveries of (II) and (I) were 102.5±1.63 % (cv) and 100.3±0.99 % (cv), respectively. The results showed that it can not only effectively remove the interference from each other, but also give a high sensitivity and accuracy.

Mohamed et al[4] developed a simple spectrophotometric method for the determination of 15 sulfonamides in bulk and dosage forms. The methods were based on the interaction of p-benzoquinone with sulfonamides in 0.1 M HCl. The resulting chromophore was measured at 500 nm. The effect of different variables on colour development were established. Beer's law was obeyed in concentration range of 10-50 µg/mL. Results for the analysis of different sulfonamide tablets and ophthalmic solutions marketed locally were in good agreement with that of a reference method.

Issa et al[5] developed a spectrophotometric method for micro-determination of sulfamethoxazole and trimethoprime drugs. The proposed method was based on charge transfer (CT) complex formation of the drug