CHAPTER III

3. Results and Discussion

3.1. Absorption spectra of the studied drugs with N-bromo-succinimide and amaranth dye

N-haloimides have been used as effective oxidizing/brominating agents for the determination of different drugs[141-143]. N-bromosuccinimide (NBS), being the most versatile, has been used for the spectrophotometric determination of different drugs by Sastry et al. [62, 144, 145]. These methods involve two stages oxidation of the drug by NBS then estimation of unconsumed NBS with celestin blue dye. No attempts have been made to develop a spectrophometric method for determination of NBS using amaranth dye which is preferable because it reacts with NBS simultaneously. However it is used as indicator to estimate cimetidine in titrimetric method[87]. NBS provides molecular bromine at low concentration in polar media[146]. This reacts with the drug, resulting in either oxidation, substitution or addition depending upon the functional group present in the drug, probably a mixture of products, with reproducible data under specified experimental conditions. The remaining molecular bromine is involved in a bromination reaction with the dye (amaranth) to form a colourless product. The remaining amaranth dye is measured spectrophotometrically at their corresponding maximum wavelengths. The absorption spectra of the remaining dye of this method show characteristic λ_{max} value, as shown in Fig. 1.

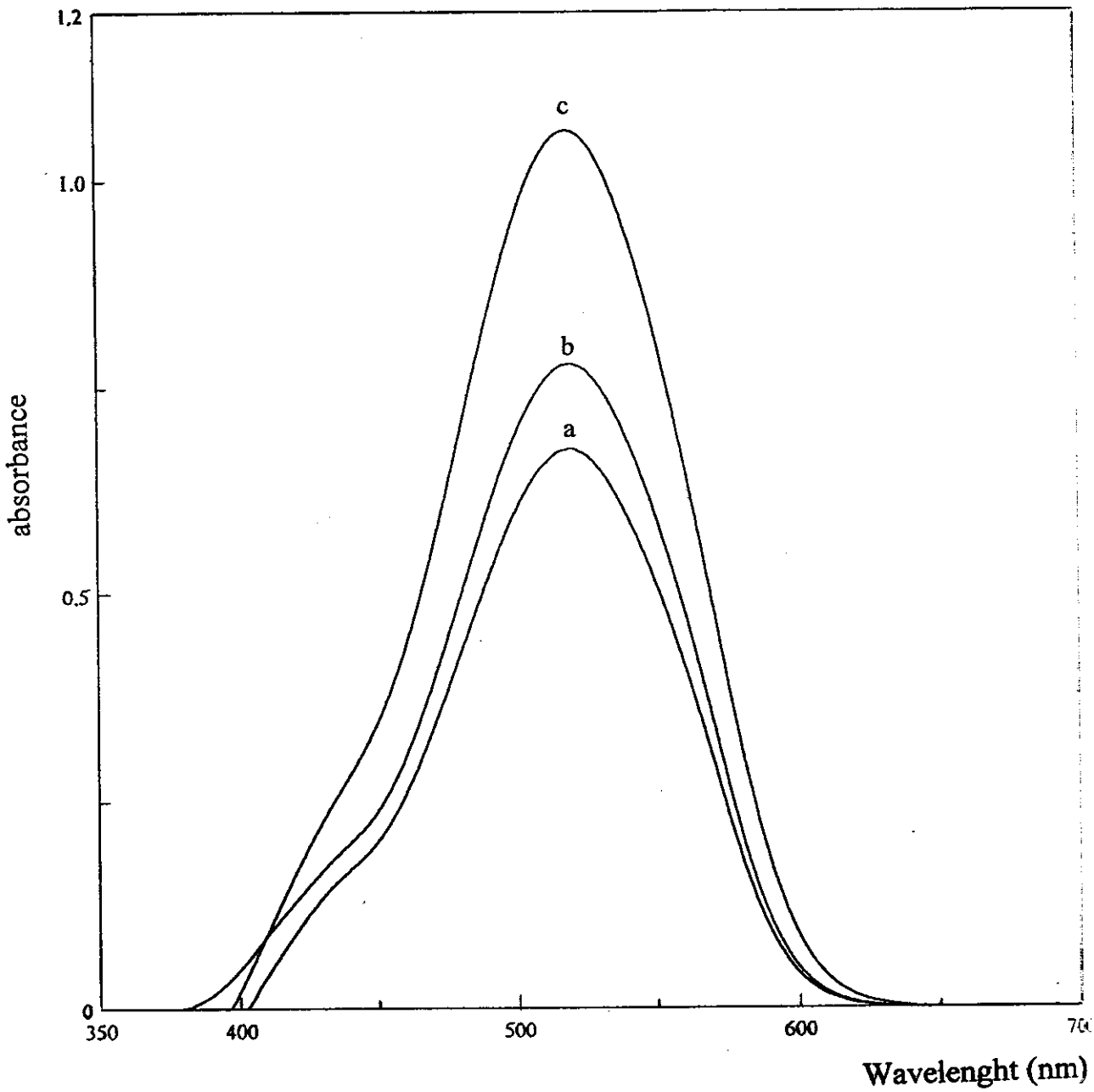
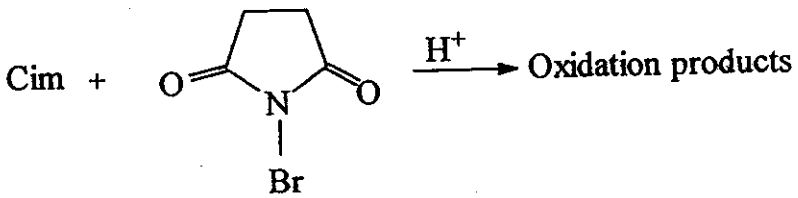
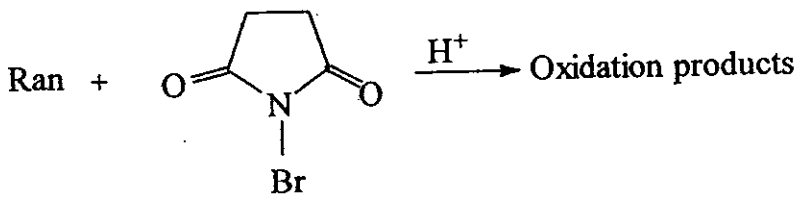
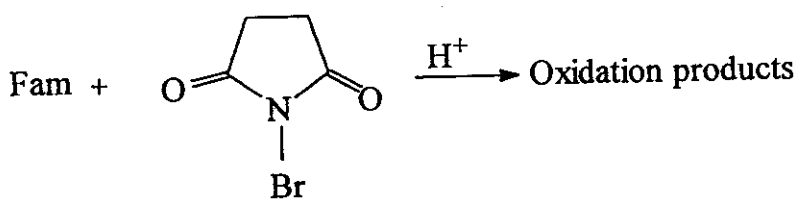


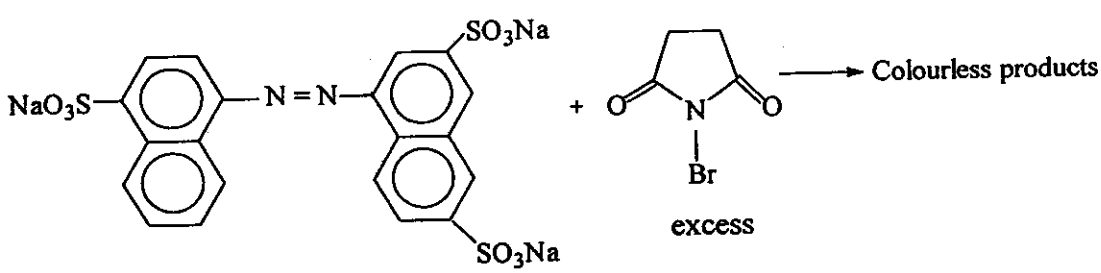
Fig. 1. Absorption spectra for the remaining dye of 2.0 μg ml^{-1} of (a) Cim, (b) Ran and (c) Fam with NBS(100 μg ml^{-1}) and amaranth dye(2.0 x 10^{-3} M).

3.1.1. Suggested mechanism









amaranth dye

(red colour)

In order to investigate the optimum reaction conditions for the colour development of 2.0 μg ml^{-1} of the studied drugs with 20 μg ml^{-1} of NBS for Ran and Fam or 10 μg ml^{-1} of NBS for Cim. The effect of different experimental variables were studied and recorded below.