



Polarographic Investigation on Taxim-AZ in presence of Nickel(II)

B Srinivasa Rao¹, TR Kishore², V Suryanarayana Rao³

¹Department of Chemistry, S.S.B.N. Degree College, Anantapur, Andhra Pradesh, India.

²Faculty of Chemistry, Sri Chaitanya Jr. College, Anantapur, Andhra Pradesh, India.

³Department of Chemistry, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, India.

Abstract A polarographic method have been developed for the analysis of Taxim-AZ and Nickel(II) in pharmaceutical dosage forms. It is possible to determine the Nickel(II) and Taxim-AZ in the range of 1×10^{-7} M to 1×10^{-6} M and 0.146 – 1.46 μ g/25ml. Well defined peak at potentials -0.95V Vs SCE for Ni(II) and -1.55V Vs SCE for Taxim-AZ were obtained respectively.

Keywords Polarographic method, Taxim-AZ and Nickel(II) system

Introduction

Taxim-AZ is a combination of cefixime and azithromycin. Cefixime is a cephalosporin antibiotic [1-2] and it is used to treat and cure bacterial infections. It is often used to treat Sinusitis, Tonsillitis, Bronchitis, Pneumonia, Cystitis, Kidney infections and Gonorrhea. Azithromycin prevents bacteria from producing the proteins that are required to help them reproduce. It is a fast acting antibiotic which is used to treat a wide number of bacterial infections.

Reagent and Equipment

All the chemicals used were of analytical reagent grade and the solvents were of spectroscopic grade.

Analytical balance, electrodes, ELICO digital pH meter, ELICO POLOROGRAPH this consists of three units (i) Dropping mercury electrode (ii) Main operated DC-Polarographic unit (CL-23) (iii) Mains operated self balancing strip chart recorder (LR-101P).

Experimental Solution

2.5ml of Nickel ion (Ni^{+2}) (1×10^{-4}) and 2.5ml of drug (Taxim-AZ) (0.1 mg/ml) solution are taken in a 25 ml standard flask.

The solution is made up to the mark with an ammonical buffer of pH-9. The solution is transferred into a polarographic cell [3-4]. The polarogram is recorded and it is shown in Fig-1.

Results and Discussion

The polarograms reveals that (Fig-1) Ni(II) show a wave with a small current at -0.95V Vs SCE. The drug Taxim-AZ show a wave at -1.55V Vs SCE. The admixture peak at -0.8V Vs SCE.

Effect of Ni (II) Ion Concentration

The effect of metal ion concentration is studied keeping the drug concentration [5-6] of Nickel ion and the peak current was studied from the observation. A straight line is obtained as shown in Fig-2. Ni(II) can be determined in the concentration range 1×10^{-7} M to 1×10^{-6} M. The microgram range is 0.146 – 1.46 μ g/25ml.



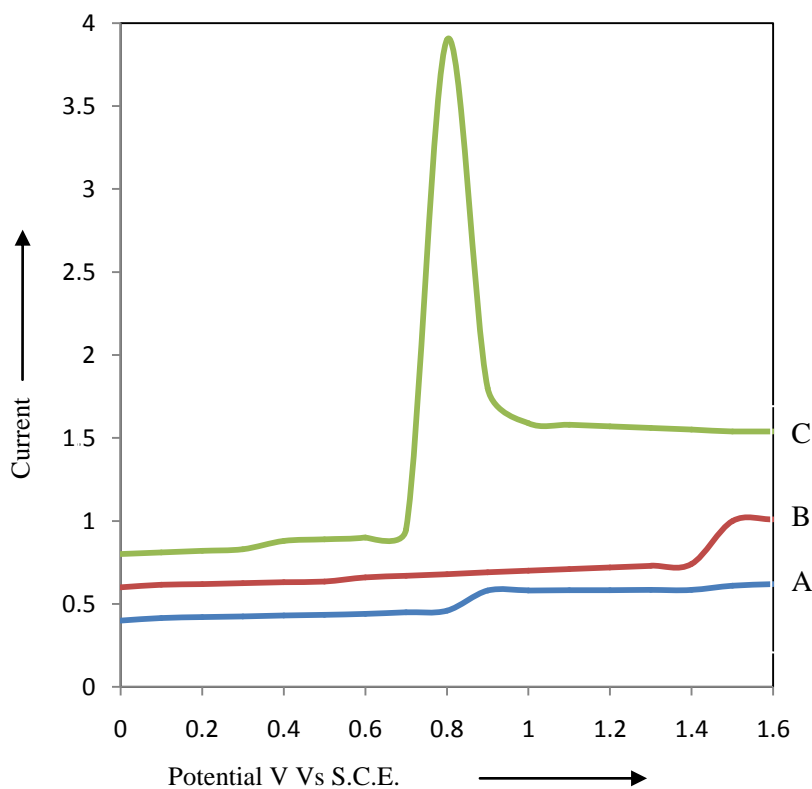


Figure 1

- A. Polarograms of Ni(II) in ammonical medium ($p^H - 9$)
 B. Polarograms of Taxim-AZ in ammonical medium ($p^H - 9$)
 C. Polarograms of Ni(II) + Taxim-AZ in ammonical medium ($p^H - 9$)

Figure 1: $p^H = 9$ $[Ni(II)] = 1 \times 10^{-4} M$ $[Taxim-AZ] = 0.01 \text{ mg/ml}$

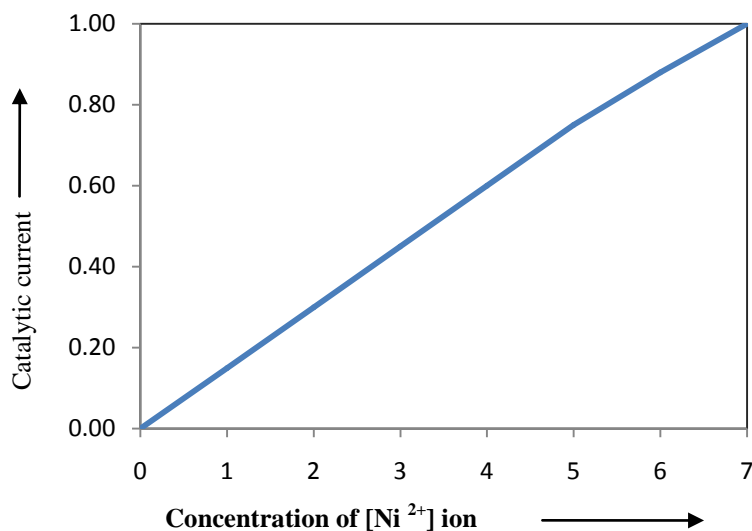


Figure 2

Effect of Drug (Taxim-Az) Concentration

The concentration of drug Taxim-AZ concentration keeping the metal ion concentration constant. The peak currents are measured at different concentration of drug Taxim-AZ. These studies reveal that the drug can be determined in the range of 0.05 to 0.5 mg/ml using catalytic hydrogen waves. A graph is drawn between the concentration of



Taxim-AZ and peak catalytic current [7]. A graphical linear plot is obtained is shown in Fig-3. Two concentrations of Taxim-AZ 0.05 to 0.5 mg/ml can be determined with metal ion.

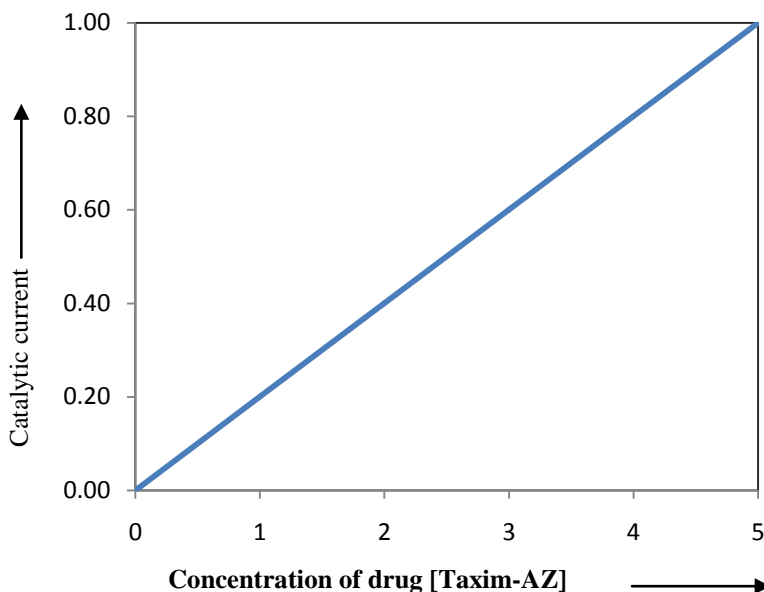


Figure 3

Effect of Height of Mercury Column

The effect of height of mercury on catalytic current is studied that there is no change in catalytic current with different heights of mercury column. This observation reveals that the wave is not diffusion controlled. The data is presented in Table-1.

Table 1: Effect of height of Mercury column
 $[\text{Ni(II)}] = 1 \times 10^{-7} \text{M}$ $[\text{Taxim-AZ}] = 0.1 \text{ mg/ml}$ $\text{p}^{\text{H}} = 9$

Height of mercury column cm	Catalytic current μA
50	1.5
55	1.6
60	1.5
65	1.4
70	1.5

Conclusion

The proposed method is selective, accurate, precise and sensitive. It is possible to determine the metal ion and Taxim-AZ in the range of $1 \times 10^{-7} \text{M}$ to $1 \times 10^{-6} \text{M}$ and 0.05 to 0.5 mg/ml respectively in pharmaceutical samples.

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