Biotic Action of Cobalt (II)-Hydroxytriazene Complex

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***Abstracts*- Iron and cobalt share comparable chemical characteristics and can be found together or individually in a range of environmental and biological samples, especially in alloys. Iron is an essential element for the proper functioning of many metabolic processes, such as oxygen transport, enzyme activity, and the regulation of cell growth and differentiation. In contrast, cobalt is an important trace element and the only metal found in vitamins, particularly Vitamin B12. Cobalt compounds act as effective catalysts and are commonly used in various industrial applications. In present work biological activities of cobalt complex have been analyses**

***Keywords*- Spectral analysis, Metal complex, Antibacterial , Antimalarial, Binary complexes**

I. INTRODUCTION

Metal based drugs are often much explored area of research in drug development. In context of this, four sulfanilamide based hydroxytriazenes namely HTSN-0, HTSN-1, HTSN-2 and HTSN-4 have been used to prepare metal complexes with Divalent cobalt, then characterized and used for investigated biological applications namely viz anti-microbial and antimalarial activity.

The synthesis of Divalent cobalt-hydroxytriazene complexes has been done by conventional method. And then characterized by IR and Mass spectrophotometry.

II. EXPERIMENTAL

Following four complexes have been investigated for anti-bacterial and antifungal activity-

(i). $[Co(HTSN\text{-}O)_3]$
(ii). $[Co(HTSN\text{-}1)_3]$
(iii). $[Co(HTSN\text{-}2)_3]$
(iv).$[Co(HTSN\text{-}4)_3]$

In present work an attempt has been made to study the biologicalactivities of theCobalt (II) binary complexes.

III. RESULTS AND DISCUSSION

3.1-ANTI-MALARIAL ACTIVITY

The antimalarial activity of Cobalt complexes of sulpha drug based hydroxytriazenesare depicted in Table 1. These results were stated by IC_{50} values and compared with standarddrug reference (chloroquine, quinine). The IC_{50} values vary from 0.79 to 1.23µg/mL against *P.falciparum,*which can be considered as excellent to good antimalarial activity.

In this investigation, $[Co(HTSN\text{-}2)_3]$ with MEAN IC_{50} 0.79 µg/ml,$[Co(HTSN\text{-}1)_3]$with MEAN IC_{50} 0.80 microgram/mililitreand$[Co(HTSN\text{-}0)_3]$ with MEAN IC_{50} 0.89 microgram/mililitrehave nearby value as compared to reported drug.It can be considered as the most effective inhibitors of parasite growth while $[Co(HTSN\text{-}4)_3]$with MEAN IC_{50} 1.23 µg/mLrevealed the good activity against *P.falciparum* 3D7 strain.

Table No. 1. Antimalarial activity of complex against *P.Falciperum*

Minimal Inhibition Concentration		
S. No.	Compound code	MEAN IC50 VALUESa
1	$[Co(HTSN\text{-}O)_3]$	0.89 µg/mL
2	$[Co(HTSN\text{-}1)_3]$	0.80 µg/mL
3	$[Co(HTSN\text{-}2)_3]$	0.79 µg/mL
4	$[Co(HTSN\text{-}4)_3]$	1.23 µg/mL
Reference drug		
1	Chloroquine	0.20 µg/mL
2	Quinine	0.268 µg/mL

IV. CONCLUSION

It is apparent from the investigation of hydroxytriazenesand cobalt complexes have shown potent antimalarialactivity as compared to the anti-microbial activity. All four complexes which were screened for activity have shown excellent to good activity compared with Chloroquineas standard drug but they are less active against fungicidal strain.

Conclusively the present study has taken forward sulpha drug based new hydroxytriazenesand can be used for anti-malarial action. Also, biologically active metal complexes were found more sensitive for anti-malarial activity.

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