

Study of biological activity of some complexes of Ni(II) with 1 – Ethyl-phenyltetrazoline – 5 – thione

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ABSTRACT: Some complexes of Ni(II) with 1 – ethylphenyltetrazoline – 5 – thione at meta and para positions are taken to know its biological activity which have been tested against bacteria E.coli and S.aureus

KeyWords: Ni(II), 1-meta-ethylphenyltetrazoline-5-thione(1-m-EPT5TH), phenyltetrazoline –5-thione(PT5TH), 1-para-ethylphenyltetrazoline-5-thione(1-p-EPT5TH), MIC (Maximum Inhibition Constant), SM(Streptomycin – Standard drug against bacteria).

I. INTRODUCTION

Complexes of Ni(II) with 1-ethylphenyltetrazoline – 5-thione¹ are very important against bacteria E.coli² and S.aureus³. They show strong inhibition against bacteria which were being supported by MIC values⁴. Complexes show different types of elevated shapes⁵ against different bacteria.

II. EXPERIMENTAL

Following Ni(II) with 1-ethylphenyltetrazoline -5-thione are being used as antibacterial agents⁶ against bacteria E.coli and S.aureus are formed.

1. $[\text{Ni}(\text{1-m-EPT5TH})_2\text{Cl}_2] \cdot 2\text{H}_2\text{O}$

2. $[\text{Ni}(\text{1-p-EPT5TH})_2\text{Cl}_2] \cdot 2\text{H}_2\text{O}$

20µL of each above mentioned Ni(II) complexes of 1-ethylphenyltetrazoline -5-thione in different discs against bacterial test as antibiotic was taken.

III. RESULTS AND DISCUSSION

Complexes of Ni(II) with 1-ethylphenyltetrazoline-5-thione at meta and para positions were screened against E.coli and S.aureus⁷.

E.coli and S.aureus species are studied at 25ppm, 50ppm, 100ppm and 200ppm respectively for about 96hrs. inhibition⁸. The inhibition zone⁹ formed around each filter paper were measured after inoculation for 96hrs. at room temperature. The result shown in the Table -1.

Table – 1 (Antibacterial Activity)

Complexes	E.coli (%MIC)	E.coli (%MIC)	E.coli (%MIC)	E.coli (%MIC)	S.aures (%MIC)	S.aures (%MIC)	S.aures (%MIC)	S.aures (%MIC)
	At 25ppm	At50ppm	At100ppm	At200ppm	At25ppm	At50ppm	At100ppm	At200ppm
1. $[\text{Ni}(\text{1-m-EPT5TH})_2\text{Cl}_2] \cdot 2\text{H}_2\text{O}$	0	0	5-10	10-20	0	0	0	0
2. $[\text{Ni}(\text{1-p-EPT5TH})_2\text{Cl}_2] \cdot 2\text{H}_2\text{O}$	0-5	5-10	10-15	15-20	0-5	5-10	10-15	15-20
SM	+++	++++	+++	++++	+++	++++	+++	++++

SM = Streptomycin (Standard Drug); Inhibition in %; (-)0-5%; (+) 5-10% ; (++)10-15%;(+++)^{20-24%};(++++)^{24-30%}.

IV. CONCLUSION

The antibacterial activities⁹ for Ni(II) complexes increases with increase in concentration. At higher concentration the activity of both the complexes are very much active against bacteria and they are closer to activity of the standard drug Streptomycin¹⁰ against the E.coli and S.aureus . Ni(II) complexes with 1-p-ethylphenyltetrazoline -5-thione are much more active than the complex of Ni(II) with 1-m-ethylphenyltetrazoline -5-thione.

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REFERENCES

Thesis:

- [1]. Bharati, Ph.D. Thesis , 2013
- [2]. Santosh Kumar, Ph.D. Thesis 2009

Journal Papers:

- [3]. Manoj Kumar, Santosh Kumar and Abhay Kumar; Ultra Chemistry Vol. 6(3) ,370-374 (2010)
- [4]. Manoj Ranjan, Santosh Kumar and Abhay Kumar; Ultra Chemistry Vol. 6(3) ,384-386 (2010)
- [5]. Abhay Kumar, Manoj Ranjan and Santosh Kumar; Napier Indian Advanced Research Journal of Sciences, ISSN-0975-1726, Vol. 3, 73-75 ,Dec. – 2009
- [6]. Manoj Ranjan, Santosh Kumar and Abhay Kumar; Napier Indian Advanced Research Journal of Sciences, ISSN-0975-1726, Vol.3, 103-105 ,Dec. – 2009
- [7]. Manoj Ranjan, Santosh Kumar and Abhay Kumar; J.Chemtracks , 11 (2) , 491-492 , 2009
- [8]. Manoj Ranjan, Santosh Kumar, K.Sharma and Bharati ; J.Chemtracks , 11 (2) , 561-564 , 2009
- [9]. Manoj Ranjan, Santosh Kumar and Abhay Kumar; Ultra Chemistry Vol. 7(1), 145-150 (2011)
- [10]. Santosh Kumar and Manoj Ranjan; IOSR Journal Of Applied Chemistry (IOSR-JAC) E-ISSN: 2278 -5736, Volume 10, Issue 11 Ver. II (November, 2017), PP 51-52