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Synthesis and fungicidal screening of metal complexes of 2-amino-4-p-bromo-phenyl oxazole with Mn(II), Fe(III), Co(II), Ni(II) and Cu(II)

A.K. MISHRA, NIRANJAN LAL and SEEMA ANANAD

Department of Chemsitry, D.N. (P.G.) College, Meerut - 250 002 (India)

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ABSTRACT

Metal complex of Cu(II), Ni (II), Co(II), Fe(III) and Mn(II) having general composition $[ML_2X_2]$, where L_2 = 2 Amino-4 P-Bromophenyl Oxazole x = pyridine. The characterization of ligands as well as metal complexes have been made on the basis of elemental analysis. Magnetic susceptibility, infrared spectra and magnetic moment data. The fungicidal screening was done on *Phoma enigua, Macrophomina phaseoli* and *Collecto trichem-capsici* and a percentage inhibition was found after 168 hours.

Key words: Cu(II), Ni (II), Co(II), Fe(III) and Mn(II) complexes, ABPO.

INTRODUCTION

The chemical property of oxazole and their derivative have been reported due to their pharmacological activity[1,2]. Analytical application and chelating capactiy[3] hypertensive[4], analgesic, anti-inflamatory[5,6], antibacterial, antiviral[7] antitubercular[8], anticonvulsant[9], Urinary tract infection sedative[10], cardiac simultant[11], antihistaminic muscle relaxant and hypertensive.

EXPERIMENTAL

All the reagent used were of Anala R grade or used after distillation.

Preparation of the ligand AB PO

P-Bromo aectophenone was added to bromine (8ml) in dry-benzene (40cc) and the mixture was vigorously shaken in sunlight tii the colour due to bromine was discharged to this solution urea (15mg) was added. The flask was refluxed in a water bath using double surface water condenser for about 27 hours. The reaction product was cooled and extracted with ether and the continuous removal of unreacted Ketone and bromine. The product was basified with concentrated ammonia and kept over night. It was then filtered and the product was repeatedly washed with water and dried in vaccum. The yiled was 67% and M.P. 336°C.

Preparation of complexes

The complex have been synthesized by mixing ehtanolic solution of ligand of (0.03 M) with 0.01M) of Cu(II), Co(II), Ni (II) Fe(III) and Mn(II) with their acetate salts in pyridine with stirring and refluxing them for two hours. The contents were concentrated and cooled to obtain brownish black crystals the process carried out in each case was similar in nature with slight variation of timing of reflux, On the basis of analytical date the complex formulate ML_2X_2, where M=Cu(II), Co(II), Ni (II), Fe(III) and Mn(II) and X=Pyridine.

The metal complexes were analysed using standard procedure. The infrared spectra of the ligand and metal complexes were recorded on IR-20 spectrophotometer employing KBr Pellets. The electronic spectra were recorded on Cary-23-

90 spectrophotometer. Magnetic susceptibility were measured by Guoy Method using mercury tetraisothiocyaneto Co(II) as calibrant. Analytical data and magnetic moment data and electronic spectra are recorded in table 1.

RESULTS AND DISCUSSION

From elemental analysis in all cases the stioichiometry ratio comes about 1:2 except in case of Fe where it in (1:3).

The fungicidal activity of ligand and metal complexes were recorded in table 2. Their acivity were determined by using growth method. The by using growth method. The fungitoxicity also varies form fungus to fungus as well as on the change of concentration. At higher concentration the ligand as well as the metal complexes are more toxic. The toxicity decrease with decrease of concentration,on comparison with other oxazole it is found that 2-Amino. 4-(P-flurophenyl) Oxazole and its metal complexes are more toxic than 2-Amino-

Table 1: Table for elemental analysis

Compound	% analysis found/calculated C	H	N	M	Br
$[Co(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	38.30(38.21)	3.52(3.47)	8.20(8.10)	8.45(8.53)	23.18(23.13)
$[Ni(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	39.22(39.25)	3.22(3.27)	8.30(8.32)	8.70(8.72)	23.72(23.76)
$[Cu(C_9H_7N_2OBr)_2(CH_3COO)_2$	40.08(40.04)	3.08(3.03)	8.45(8.49)	9.68(9.63)	24.28(24.23)
$[Fe(C_9H_7N_2OBr)_2(CH_3COO)_2$	41.62(41.70)	3.12(3.15)	8.88(8.84)	5.82(5.88)	25.22(25.24)
$[Mn(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	42.48(42.46)	3.15(3.11)	8.43(8.41)	8.10(8.68)	25.29(25.23)

Table 2: Fungicidal testing of ABPO and its metal complexes Growth respnse of *phoma enijua, Macrophomina phaseoli* and *colletatrichum-cabsici* (After 168 hours at 25±1°C on Czepeck's Dox Agar Medium) at three concentrations (in ppm) in relation to the ligand 2-Amino-4-(P-Bromophenyl) Oxazole (ABPO) and its metal complexes)

Text Sample	Average percentage Inhibtion After 168 hours *Phoma - Exigua*			*Macrophomina phaseoli*			*Collectotrichum capsici*		
	(Concentration in PPM) 100	50	20	100	50	20	100	50	20
$[Co(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	47.2	29.6	15.0	40.1	25.0	17.9	49.8	19.0	19.1
$[Ni(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	46.8	31.5	14.8	39.9	24.7	17.8	49.6	19.8	19.7
$[Cu(C_9H_7N_2OBr)_2(CH_3COO)_2$	42.4	26.8	13.2	35.1	20.8	13.4	45.8	14.6	15.5
$[Fe(C_9H_7N_2OBr)_2(CH_3COO)_2$	33.0	17.2	1.4	26.7	11.2	3.0	35.5	4.9	5.0
ABPO	74.4	56.4	40.8	65.7	50.8	43.6	75.6	44.3	84.0
$[Ni(C_9H_7N_2OBr)_2(CH_3COO)_2]2H_2O$	52.0	36.3	20.6	45.0	30.3	22.8	54.7	23.8	24.2

4-(P-chloro phenyl) Oxazole and its metal complexes. 2 Amino-4-(P-Chlorophenyl) oxazole and its metal complexes are more toxic than 2-Amino-4-(bromophenyl) oxazole and its metal complexes.

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REFERENCES

1. Dauses, S.A., *Laboratories Britt. Pat. Abs.,* **69**: 59220 (1963).
2. Dilworth, J.R., *Coord. Chem. Review.,* 2129 (1976).
3. John, Myeth and Brothers Ltd. *French Pat. Chem. Abs.,* **74**: 53675 (1971).
4. Ito, I., Murakami, S. and Kote, K. *Japan Pat.* 70,15,733 (1970).
5. Carrar, G., Chaincone Gazz, *Chem. Ital.,* **82**: 652 (1952).
6. Saeter, P.E. and Lindberg, U.H., *Patent,* **3**: 401,172 (1968).
7. Kanaka, Yuichi, Yaushiko, Japan Kokai, **75**: 101,395 (1975).
8. Clavde, Fauran, Coletle Daozon Goy, *Fr. Demande*, **2**: 249,656 (1975).
9. Elso Manghise and Guiseppe Ger. *Often,* **2**: 381,948 (1974).
10. Pattanayak, B.K., Rout, D.N., Andina, Q., *Chem*. SOC, **55**: 264 (1978).
11. Vogal. A.I. Text book of quantitative analysis revised by Besett, J Denny RC. JEffry, J.H. Mendhamm J, ELBS 5th Edition London (1996).