



SYNTHESIS AND PROPERTIES OF 3-SUBSTITUTED BENZOTHIAZOLYL 1-PHENYL AMINO METHANAMIDES WITH Cu (II) COMPLEX COMPOUND

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ABSTRACT

Several complexes of Cu (II) are formed by refluxing purified copper palmitate with 3-substituted 1-phenyl amino methanamide ($R_1 = H$, $R = CH_3$) in the ratio 1:1.7 using ethanol as a solvent for four hrs. Resultant solution was filtered hot and complexes were recrystallized using petroleum ether solvent. Granular solid complexes of different colors like light blue, green gray and blackish were obtained in sufficient yield.

Key words: Aryl thiocarbamide, 2-Amino benzothiazole, 2-Amino-4-methyl benzothiazole, 3-Substituted benzothiazolyl 1-phenyl amino methanamides, Copper palmitate, Phenyl isocyanate.

INTRODUCTION

2-Amino benzothiazole is a heterocyclic ring system and is active biologically and also enters into complex formation complexes of substitute benzothiazole with transition metal like Cd (II)¹, Hg (II)^{2,3}, have been reported and structural features of this complexes have been determine by magnetic susceptibility, IR and NMR data. These complexes are colored, thermally stable and are non electrolytic in nature.

Three novel of Hg (II) complexes $[Hg(abt)Cl_2]_n$, $[Hg(abt)2(SCN)Cl]$, $[Hg(abt)2SCN_4]$ have been prepared by Enchang Wang by reaction of mercuric chloride and 2-amino benzothiazole in presence of ammonium thiocyanate. These complexes exhibit polymeric one dimensional array, discrete molecular entity, centrosymmetric by nuclear structure. They are also known for thermal stability and luminescent emission.

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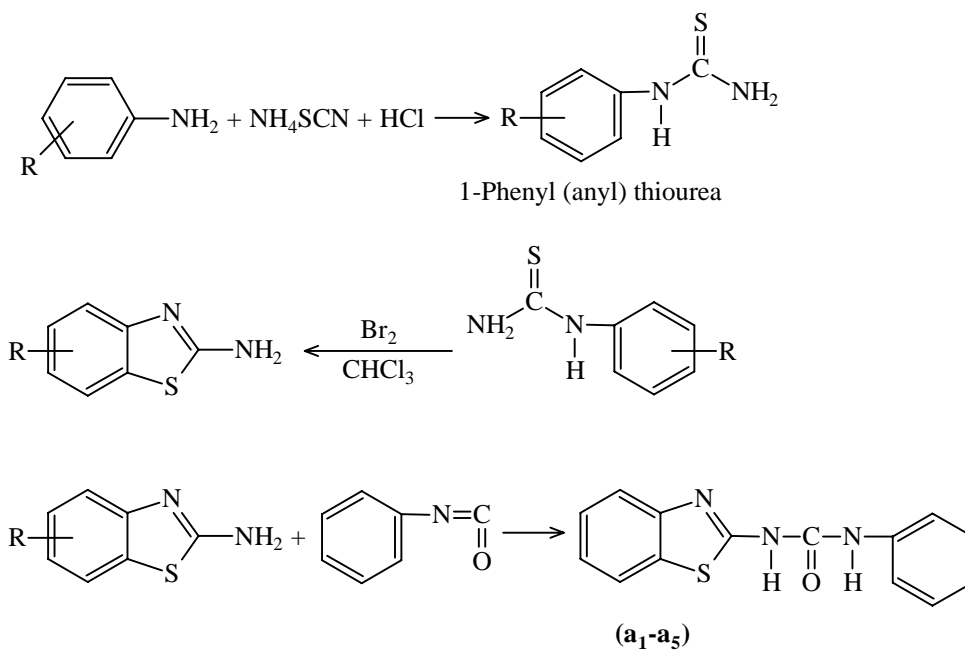
Cd (II) complexes of substituted 2-amino benzothiazoles are known for their antifungal activity against micro organisms *aspergillus niger* and *fusarium oxysporum*.

On the basis of the above refereed literature, attempt was made to synthesis the complexes of three substituted benzothiazolyl 1-phenyl amino methanamides⁴⁻⁹ with metal copper (II) in solution and to study the properties of this complexes.

EXPERIMENTAL

All the chemicals used were of Merck grade and 2-amino benzothiazole and substituted 2-amino benzothiazoles were prepared by oxidative cyclization of aryl thiocarbamide using liquid bromine in chloroform solvent.

Synthesis of 3-substituted benzothiazolyl 1-phenyl amino methanamide was carried out by reaction of phenyl isocyanate with corresponding substituted benzothiazoles in dry benzene medium. The reaction mixture was allowed to stand overnight when crystalline products were isolated and identities of these compounds was confirmed by usual chemical transformation, elemental analysis and IR spectra.

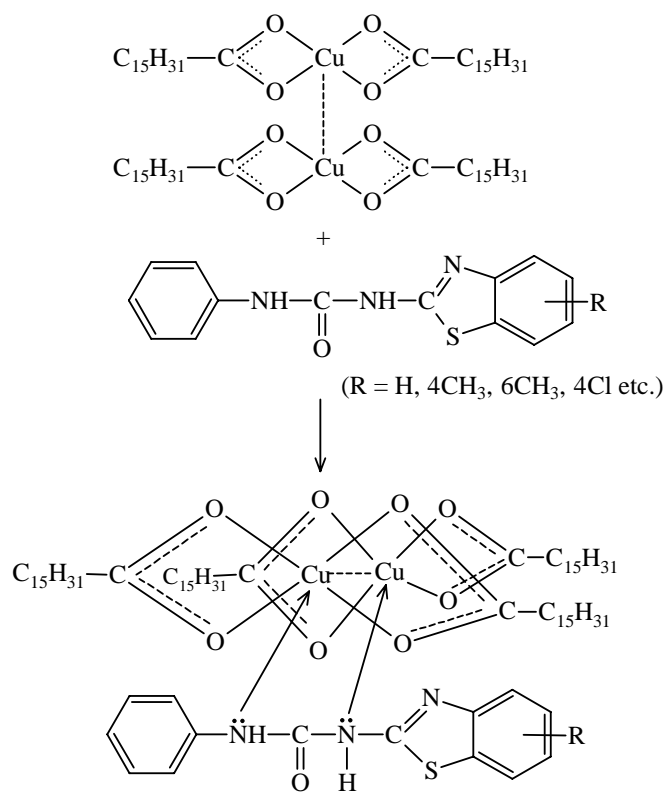


Where R = H (a₁) R = 4-CH₃ (a₂), R = 6CH₃ (a₃), R = 6NO₂ (a₄), R = 6-Cl (a₅).

Complex formation

Purified copper palmitate (10 mL 0.2 M) was refluxed with a solution of 3-substituted benzothiazolyl 1-pheny amino methanamide in a ratio 1: 1.5 using ethyl acetate as a solvent in a long neck flask for four hrs. Solution was filtered hot and colored complexes were isolated.

Reaction



Proposed structure of complex

Table 1: Physical data of complexes

Compd.	Composition of complexes	Color	Melting point (°C)	Yield (%)	Molecular weight
a ₁	[2Cu(C ₁₅ H ₃₁ COOH) ₂ BTAM]	Blue	82	98	875
a ₂	[2Cu(C ₁₅ H ₃₁ COOH) ₂ M ₄ BTAM]	Bluish black	190	85	889

Cont...

Compd.	Composition of complexes	Color	Melting point ($^{\circ}\text{C}$)	Yield (%)	Molecular weight
a₃	[2Cu(C ₁₅ H ₃₁ COOH) ₂ M ₆ BTAM]	Grey	165	93	889
a₄	[2Cu(C ₁₅ H ₃₁ COOH) ₂ NO ₂ BTAM]	Light green	230	94	920
a₅	[2Cu(C ₁₅ H ₃₁ COOH) ₂ Cl(6)BTAM]	Grayish black	280	80	898

RESULTS AND DISCUSSION

It was observed that these complexes were stable in nature and the metal ions were capable to coordinate with the nitrogen atom of the legend.

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