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SYNTHESIS OF 3-(2-SUBSTITUTED THIOCARBAMIDo-10-H-PHENOTHIAZINE-10-YL)-N,N-DIMETHYL-PROPANE-1-AMINE

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ABSTRACT

Heterocyclic nucleus containing drugs showed remarkable and noticeable pharmacodynamics and pharmacokinetics properties. They generated their own identity and importance in agricultural, pharmaceutical, medicinal and drug sciences. Benzonido and pyridino, dithiazolo, quinolino and alkylaminoheterocycles showed important applications in industrial, pharmaceutical, medicinal and drug chemistry. Considering all these facts, recently in this laboratory interactions of 3-(2-chloro-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (1) was carried out with various thiourea (2) by using in isopropanol medium to isolate 3-(2-substitutedthiocarbamido-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (3). The justification and identification of the structure of these newly synthesized compounds had been established on the basis of chemical characterization, elemental analysis and through spectral data.

Keywords: Substituted thiourea, 3-(2-substituted thio carbamido-10-H-phenothiazine-10-yl)-N,N dimethyl propane-1-amine.

INTRODUCTION

In this laboratory, the synthetic applications of cyanoguanidine had been briefly explored [1]. As evident from the structure 7-chloro-1-methyl-5-phenyl-3H-1,4benzodiazepine-2- oneit was observed that there are three reactive sites in this molecule for the reactions. This molecule possesses -chloro,-aryl and -methyl important reactive sites for the reactions. As a wider programme of this laboratory in the synthesis of nitrogen, nitrogen and sulphur containing heteroacycles and heterocycles. The interactions of cynoguanidine with various thioureas and alkyl/arylisothiocyanates have been investigated in sufficient details [2-5]. Some of these compounds showed remarkable pharmaceutical and biological activities [6]. The synthesized heteroacycles are used as a best intermediate [7,8] in the synthesis of thiadiazoles, dithiazoles, thiadizines, triazines, Hector's bases etc.

An exhaustive literature survey on substituted thio biureto, pyridino, dithia ozoyl and bezonido nucleus containing drugs created their own identity in medicinal and pharmaceutical sciences. Hence taking all these things into considerations interactions of 3-(2-chloro-

10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (1) with thiourea (2) in isopropanol medium was investigated to synthesize, 3-(2-substitutedthio- carbamido-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (3). (Scheme-1). These reactions are hither to unknown. The justification and identification of the structure of these newly synthesized compounds had been established on the basis of chemical characterization, elemental analysis and through spectral data. (**Scheme-I**)

MATERIALS AND METHODS

The melting point of the all synthesized compounds was recorded using hot Paraffin bath. The carbon and hydrogen analysis were carried out on Carlo-Ebra 1106 analyzer. Nitrogen estimation was carried out on Colman-N-analyzer-29. IR spectra were recorded on Perkin Elmer Spectrometer in range 4000-400 cm⁻¹ in KBr pellets. PMR spectra were recorded on Brucker Ac 400 F Spectrometer with TMS as internal standard using CDCl₃ and DMSO-d₆ as solvent. The purity of compound was checked on silica Gel-G Pellets by TLC with layer thickness of 0.3 mm. All chemicals used were of AR-grade.

Synthesis of 3-(2-Thiocarbamido-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine(3a):-

A mixture of 3-(2-chloro-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (1) with (0.1M), thiourea(2) (0.1M) and isopropanol (40ml) was refluxed on boiling water bath for 4 hrs.

During boiling suspended 3-(2-chloro-10-Hphenothiazine-10-vl)-N,N-dimethylpropane-1-amine went into the solution and the new product was found to be gradually separated out ,which on basification with dilute ammonium hydroxide afforded white crystals. It was filtered in hot conditions and recrystallized with aqueous ethanol to obtained (3a), yield 87%, melting point 124°C. Properties:-It is white, crystalline solid having melting point 124 °C. It gave positive test for nitrogen and sulphur. Desulphurised with alkaline plumbite solution. It formed picrate, melting point 110°C. Elemental analysis:-C[(found 67.4%) calculated 68.96], H[(found 7.17%)calculated 7.58%], N[(found 16.1%) calculated 16.19], S[(found 6.72%) calculated 7.35].

IR Spectra:-The IR spectra was carried out in KBr pellets and the important absorption can be correlated as (cm $^{-1}$) 3277.12 (N-H stretching), [-CH $_3$ stretching] 2852.26, 1169.29 (C-N stretching), 1465.15(C=C streching), 1135.22 (=C=S). NMR Spectra:-The spectrum was carried out in CDCl $_3$ and DMSO-d $_6$. This spectrum distinctly displayed the signals due to Ar-H, protons at δ 8.1377-8.0113ppm, Ar-NH protons at δ 7.5486-7.0703 ppm, -CH $_2$ protons at 2.8892-2.5692 ppm., -CH $_3$ protons at 1.2408 ppm and -NH $_2$ protons at δ 3.9478-3.2234 ppm.

Similarly, 3-(2-chloro-10-H-phenothiazine-10-yl)-N,N dimethylpropane-1-amine (1)was interacted with phenylthiourea (2b), methylthiourea (2c), ethylthiourea (2d) and allylthiourea (2e) in same reaction conditions as mentioned above the products which were synthesized are as depicted in Table No. 1.

Table 1. Synthesis of 3-(2-substituted thio-carbamido-10-H-phenothiazine-10-yl)-N,N dimethyl propane-1-amine

Sr.No	Compound No	3-(2-Substitutedthiocarbamido-10-H-phenothiazine- 10-yl)-N,N dimethylpropane-1-amine	Yield (%)	m.p. ⁰ C
1	2b	phenyl	74	229
2	2c	methyl	78	168
3	2d	ethyl	63	174
4	2e	allyl	73	154

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