

SYNTHESIS OF (1,5-DIPHENYL)-2,4-DITHIOBIURETE

Dr.M.S.Lunge¹, Dr.N.B.Jadhav², Dr.U.S.Shelke³

1,2. Department of Chemistry, Jagadamba Mahavidyalaya, Achalpur City.

3. Department of Chemistry, Rajarshi Chhatrapati Shahu College, Kolhapur.

Email ID: msslunge23@gmail.com

Abstract

Recently in this laboratory, a direct, suitable and simple method for the synthesis of (1,5-Diphenyl)-2,4-dithiobiurete (3a). A novel (1,5-diphenyl)-2,4-dithiobiurete (3a) was synthesized by the interacting 1-phenylthiocarbamide (1a) with phenylisothiocyanates (2a) in acetone-ethanol medium on water bath. The reaction mixture was filtered in hot conditions, after distillation of excess solvent, faint yellow coloured crystals were obtained, recrystallized from ethanol. The structure of the synthesized compounds was justified on the basis of chemical characteristics, elemental and spectral analysis.

Keywords: Phenylthiocarbamide, phenylisothiocyanate, acetone, ethanol, etc.

Introduction

Thiocarbamido, dithiobiureto and triazino nucleus containing drugs possess an important applications and significances in medicinal, pharmaceutical, industrial, agricultural and biochemical sciences¹⁻⁸. The important reactions of amino compounds have been briefly investigate by Pandey⁹, Pathe¹⁰, Berad¹¹, Aprajit¹², Tayade¹³, Deohate¹⁴ and Bhagwatkar¹⁵ for the synthesis of several 5, 6 and 7 membered nitrogen, nitrogen and sulphur containing heterocycles with several references to 1,2,4-triazoles, 1,3,5-thiadiazolidines, 1,3,5-dithiazines, 1,3,5-thiadiazines and s-triazines. These molecules possess various medicinal, agricultural, industrial and biochemical applications and importance, hence the present research scheme was designed to describe somewhat suitable and direct method for a synthesis of the novel (1,5-Diphenyl)-2,4-dithiobiurete.

Experimental

The melting points of all synthesized compounds were recorded using hot paraffin bath. The carbon and Hydrogen analysis was carried out on Carlo-Ebra 1106 analyzer. Nitrogen estimation was carried out on n colman-N-analyzer-29. IR spectra were recorded on Perkin Elmer spectrometer in the range 40000-400 cm⁻¹ in KBr pellets. PMR spectra were recorded on Bruker AC-300F spectrometer with TMS as internal standard using CDCl₃ and DMSO-d₆ as solvent. The Gel-G plates by TLC with layer thickness of 0.3 mm. All chemical used were of AR grades (India Made).

Synthesis of (1,5-Diphenyl)-2,4-dithiobiurete (3a):

(1,5-Diphenyl)-2,4-dithiobiurete (3a) was synthesized by refluxing the mixture of 1-phenylthiocarbamide (1a) with phenyl isothiocyanate (2a) in 1:1 molar proportion in acetone-ethanol medium for 4 hours on water bath, faint yellow coloured crystals were separated out. They were filtered and dried at room condition. Recrystallised from ethanol, Yield 85%.