

A NEW SYNTHESIS OF 4-[5-(4-PHENYL-5-SUBSTITUTED-IMINO-1,2,4-DITHIAZOLO)]IMINO-1,2,4-THIADIAZOLO-PYRIDINES

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ABSTRACT

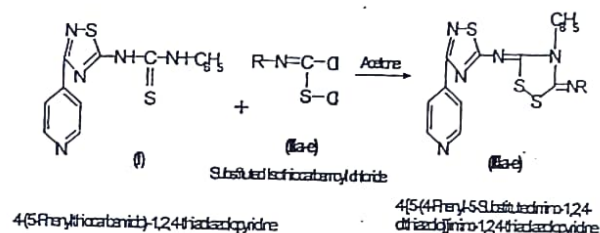
A novel series of 4-[5-(4-phenyl-5-substitutedimino-1,2,4-dithiazolo)]imino-1,2,4-thia-diazolopyridines (IIIa-e) was successfully synthesis by the interactions of 4-(5-phenylthio-carbamido)-1,2,4-thiadiazolopyridines (I) with various isothiocabamoylchloride (IIa-e) in acetone medium. Synthesized compounds were recrystallised and their structures were justified and established on the basis of elemental analysis, chemical characteristic and through spectral studies.

INTRODUCTION

When literature survey was carried out it is observed that dithiazolo, thiadiazolo nucleus containing drugs possess an important applications and significances in industrial, medicinal, drug, pharmaceutical, agricultural and biotechnological sciences¹⁻⁵. Dithiazolo nucleus containing drugs are widely used as chemotherapy for cancer⁶⁻⁷ and anti-HIV drugs⁸, they showed various biological activities⁹⁻¹¹ such as anti-tumor¹², anti-tuberculosis¹³, antidiabetic¹⁴, antiviral¹⁵, anti-fungal¹⁶, anti-hypertensive¹⁷ and anti-histamatic¹⁸. It was also noticed that this dithizines is used as additive in lubricating oil¹⁹ and possess brightening, finishing properties in textile²⁰⁻²³.

Some important reactions of substituted isothiocabamoylchlorides involving nucleophilic displacement of both chlorine atoms have been briefly investigated by Tayade²⁴, Deohate²⁵, Pandey²⁶, Pathe²⁷, Berad²⁸ and Aparajit²⁹. In the viewed of utility and impotence of these compounds in various fields and as part of wider programme in the synthesis of nitrogen, nitrogen and sulphur containing heterocycles and heteroacycles to develop alternative route for the synthesis of five and six membered heterocycles in this labourtory. Hence it appeared sufficiently interesting to explore the synthetic applications of substitutedisothiocabamoylchlorides by further making use of -phenyl, -methyl, -ethyl, t-butyl, p-chlorophenyl group as a blocking group introducing an isothiocabamoylchlorides, these interactions were investigated to syntheses the newer type of series which containing dithizole and thiadiazole nucleus in the same molecules. The present work described somewhat suitable and direct method for the synthesis of the novel series

of 4-[5-(4-phenyl-5-substitutedimino-1,2,4-dithiazolo)]imino-1,2,4-thiadiazolo pyridines (IIIa-e).



Where R = -phenyl, -methyl, -ethyl, -t-butyl, -p-chlorophenyl

EXPERIMENTAL

Melting points of all the synthesized compounds were recorded using hot paraffin bath and are uncorrected. The carbon and hydrogen analysis was carried out on Carlo-Ebra-1106 analyser, nitrogen estimation was carried out on Colman-N-analyser-29. IR spectra were recorded on Perkin-Elmer spectrometer in the range 4000-400 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 purity of the compounds was checked on Silica Gel-G plates by TLC with layer thickness of 0.3 mm. All chemicals used were of AR grade (Indian make) except allylthiourea Lancaster (Germany make). Alkyl/Aryl isothiocyanates, isothiocabamoylchloride, isocyanodichlorides and phenylthiourea have been prepared by known literature methods.

RESULT AND DISCUSSION

Synthesis of 4-[5-(4-phenyl-5-ethylimino-1,2,4-dithiazolo)]imino-1,2,4-thiadiazolo-pyridine (IIIc):