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The Structure and Biological Activity of Bromopyrazoline

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Abstract
The pyrazoline derivative was synthesized by reaction of 1-(3,4,5 tribromophenyl)-3-phenyl-pyrazoline-5-one with 4-dimethyl aminobenzaldehyde. The new compound was characterized by infrared, ^{1}H-NMR, mass spectroscopy and elemental analysis. The biological activity was compared with amphotericin B as standard.

Keywords: Pyrazoline, Synthesis, Elemental Analysis

Introduction
Pyrazolines are important nitrogen containing five-member heterocyclic compound. Several pyrazoline derivatives possess important pharmacological activities and therefore they are usful material in drug research. Pyrazoline are used as antitumor [1] ammunosuppressive [2] anti bactererial [3], antitubercular agents [4]. Some the pyrazoline derivatives are reported to have antiflammatory, anticancer [5], antidiabetic [6].

Experimental
Chemicals:
Ethylbenzoyl acetate and 3,4,5 tribromophenyl hydrazine.

Instrumentation
Melting point were measured on gallenkamp electronic melting points apparatus, the elemental analysis was performed on a perkin-Elmer 2400. Infrared spectra were recorded using potassium bromide disks on a pye unicam SP-3300 infrared spectrophotometer. ^{1}H-NMR experiments were run at 300MHz on an a varian mercury VX-300NMR spectrometer using TMS as internal standard in deuterated dimethyl sulphoxide. The mass spectra were recorded on Shimadzu GCMS-Q-P-1000EX mass spectrometer 70ev.
Synthsis of 1-(3,4,5 tribromophenyl)-3-phenyl-pyrazoline-5-one:
Amixture of 3,4,5 tribromophenyl hydrazine (34.5gm, 100 mmole) and ethylbenzoylacetate (19.2gm,100mmole) in a round bottom flask (500ml) in absolute ethanol (200ml) are stirred for 30minutes at room temperature. The reaction mixture is refluxed for 14hrs. Concentrate to its half volume and kept overnight. The solid was recrystallized from ethanol.

Table 1: Physical characterization of pyrazoline derivative

MP.C° Colour	Solvent yield %	MF (M.wt)	Elemented analysis calcd/found		
			C%	H%	N%
153-155 Brown	Ethanol 90	$C_{15}H_9N_2OBr_3$ 472.9609	38.05 37.97	1.91 1.63	5.92 5.80

Results and discussion
Spectroscopic studies of 1-(3,4,5 tribromopheny)- 3-phenyl pyrazoline -5-ne.
The infrared spectrum of pyrazoline derivative Table 2 exhibt astrong band at 1718cm^{-1} due to carbonyl group and strong band at 1578cm^{-1} due to C=N. The ^{1}H-NMR spectrum of the pyrazoline derivative Table 2 deuterated DMSO-d_6 showed a singlet signal at 7.61ppm due to (CH_2) and mutiplets in range 6.50-7.23 ppm due to phenyl protons.

Table 2: Spectroscopic data for pyrazoline derivative

IR(KBr) νcm^{-1}	1HNMRδ(PPm)
νC=O 1718cm^{-1} νC=N 1578 νC=C 1535	7.61(S, Pyran ring) 7.23 (m, Ar)

Biological activity:

Measurement of antimicrobial activity using diffusion disc method:

A filter paper sterilized disc (diameter 80mm) saturated with measured quantity of the sample is placed on plate containing solid bacterial medium (nutrient agar broth) or fungal medium (dox's medium) which has been heavily seeded with the spore suspension of the tested organisms. After incubation, the clear zone of inhibition surrounding the sample is taken as measure of inhibitory power sample [7, 8, 9, 10] the experiments were performed using test bacterial organisms belonging to the gram positive and gram-negative groups namely staphylococcus auteus and eschirichia coli respectively, as well as candida albicans and Aspergillus flavus as tested fungi. The compound under investigation ere dissolved in DMSO as an inactive solvent towards all microorganisms. The concentration of DMSO solutions were 0.2 mg/ml.

In spite of the face that all the tested compound showed antimicrobial activity.

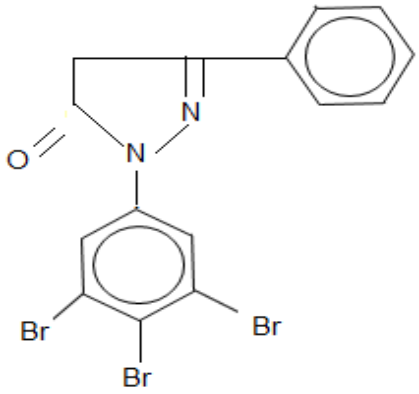

Table 3: The inhibition zones (mm) of pyrazoline the activity of 2.5mg/ml of the sample amphotericin B was used as standred

Staphylococcus aureus (+ gram)		Escherichia coli (- gram)		Aspergillus f		Candida albicans	
Pyrazoline derivative	14	Pyrazoline derivative	11	Pyrazoline derivative	21	Pyrazoline derivative	11
Amphoterecine B	8	Amphoterecine B	6	Amphoterecine B	27	Amphoterecine B	16

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