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SYNTHESIS OF SOME NEW ANTIMICROBIAL HETROCYCLES COMPOUNDS OF 1,2,3- TRIAZOLES DERIVITIES

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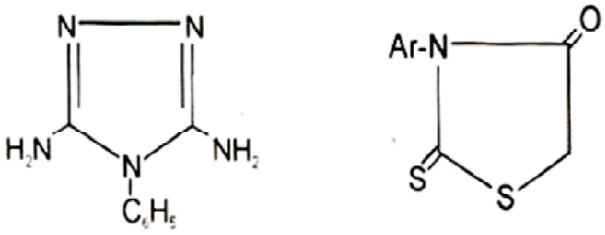
ABSTRACT

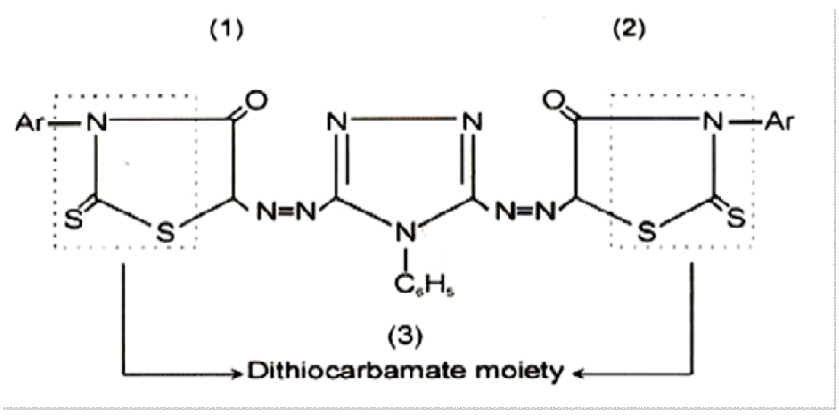
The Paper describes modern drugs essentially consist of heterocyclic systems like triazoles and their derivatives, pyridines etc. These compounds form the basic skeleton of synthetic drugs, fused with other biologically important moieties these furnish variety of compounds whose therapeutic actions are known and pharmacological activities. 1,2,3, triazole derived compound possess potential antibacterial activities against drug sensitive as well as drug resistant pathogens.

KEYWORDS: Activities, Triazoles, Antimicrobial

The compounds containing sulphur and nitrogen atoms have been found their uses in medicinal chemistry 1,2,3, triazole derivatives are known to exhibit a wide range of biological activities such as pharmacological activities (Zhang *et al.*, 2019), anti-inflammatory activities (Plech *et al.*, 2015) and fungicidal activities (Reddy *et al.*, 2016) (Constantinescu and Lungu, 2021). In this paper examine the Antimicrobial Activities of 3', 5'-bis (3-aryl rhodanln-5-ylazo)-4'-phenyl- 1', 2',4-triazoles and its derivatives. 1,2,4-triazoles are found to be associated with diverse pharmacological activities, antiinflammatory activities and fungicidal activities. The dithiocarbamates constitute by for the most important groups of organic fungicides like maneb, zineb, nabam, vapum and ziram for controlling plant diseases. Rhodanin by the virtue of in corporating the dithiocarbamate (>N-C-S-) moiety, are inherently toxic to bacteria and fungi and thus have evoked considerable attention (Constantinescu and Lungu, 2021) A large number of 3-heteroarylrhodanines have been reported as fungicides further the compound (3) contains fungitoxic azo (-N=N-) group.

In the view of these valid observations, biolabile rhodanine and 1,2,4-triazole nuclei have been united through the fungitoxic azo (-N=N-) bridge to examine how far this combination could sum up their antifungal activities in the title compounds.





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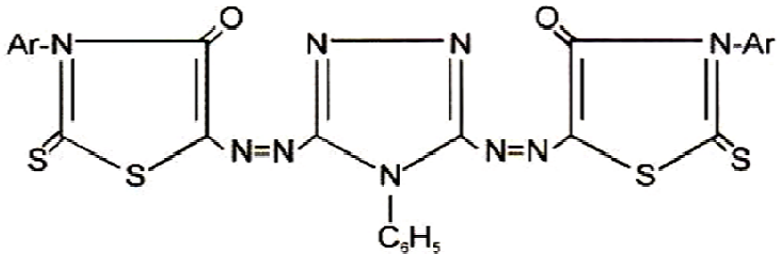
EXPERIMENTAL

The 4- Phenyl -3,4-diamino-1,2,4-Triazoles was diazotized by the following method reported by Singh *et al.* (1980) 4-Phenyl -3,5 -diamino -1,2,4 -triazoles (2.8g) was dissolved in H_3PO_4 (15 ml.), cooled in ice bath and treated drop wise with a cold solution of sodium nitrite (3g). To this cold diazotized solution, an ice cold solution of 3-phenyl rhodanine (5.79) in acetone (20 ml) containing sodium acetate (2.1 g) was gradually added with stirring and cooling. The reaction mixture was further stirred for 1 hour at 0-5 °C. and allowed to stand overnight at room temperature to give coloured product which was filtered and crystallised from ethanol. Yield: 65%, M.P. - 181°C.

RESULTS AND DISCUSSION

The, prepared triazoles compounds with their M.P., yields, molecular formulae and elemental analyses are reported in Table 1 and spectral data of some compounds in Table 2.

Table 1: 3' 5'-bls(3-aryl rhodanin-5-alazo)-4-phenyl-1',2',4'-triazole



(2a-h)

(2 a-h)

Co.No.	Ar	M.P. °C	Yield %	M.F.	Analysis N%	
					N	S
					Calculated% Found%	Calculated% Found%
2a	Hydrogen	183	62	$C_{24}H_{17}N_9S_4O_2$	21.32 21.25	21.66 21.58
2b	2-Methoxy	185	62	$C_{26}H_{21}N_9O_4S_4$	19.35 19.27	19.66 19.56
2c	4-Methoxy	183	61	$C_{26}H_{21}N_9O_4S_4$	19.35 19.28	19.66 19.55
2d	2-Methyl	183	59	$C_{26}H_{21}N_9O_4S_2$	20.36 20.20	20.68 20.50
2e	4-Methyl	181	58	$C_{26}H_{21}N_9O_4S_2$	20.36 20.23	20.68 20.52
2f	4-Nitro	198	56	$C_{24}H_{15}N_{11}O_4S_6$	22.61 20.52	18.80 18.69
2g	3-Nitro	197	55	$C_{24}H_{15}N_{11}O_4S_6$	20.61 20.50	18.80 18.72
2h	4-Chloro	173	61	$C_{24}H_{15}N_9O_4S_2Cl_2$	19.09 18.91	19.36 19.21

Table 2: Spectral data of some representative number of compounds

Comp. No.	IR D_{max} C_m^{-1}	^{1}H NMR 6
2a-	1635 (C=N), 1753 (C=O) 1588 (N=N), 1327 (C=S) (C-S-C) 1610, 1515, 765, 710 (Substituted benzene nucleus)	6.85-7.68 (8H,m, ArH) 3.8 (6H, S, 2 x OCHB) 4.27 (2H, S, 2 x -CH-)
2b-	1630 (C= N), 1745 (C=O) 1580 (N=N), 1320 (C=S) (c-sc) 1600, 1505, 755, 700 (Substituted benzene nucleus)	6.82-7.62 (8H, m, ArH) 3.6 (6H,S, 1 X OCH3) 4.19 (2H,S,2 x-CH-)
2d-	1632 (C=N), 1750 (C=O) 1585 (N=N), 1325 (C=S) (c-s-c) 1605, 1510, 760, 705 (Substituted benzene nucleus)	6.75-7.50 (8H, m, ArH) 3.3 (6H,S, 1 x OCH3) 4.02 (2H, S, 2 x -CH-)
2e-	1625 (C=N),'1735 (C=O) 1585 (N=N), 1322 (C=S) (c-s-c) 1490, 760, 690 (Substituted benzene nucleus)	6.83 - 7.73 (8H, m, ArH) 3.48 (6H, S, 1 X OCH3) 4.20 (2H, S, 2x-CH-)
2g-	1622 (C=N), 1732 (C=O) 1580 (N=N), 1320 (C=S) (C-$0) 1485, 755, 685 (Substituted benzene nucleus)	6.82-7.60 (8H, m, Arl-l) 3.6 (6H,,S, 2 X OCH.) 4.20 (2H, S, 2X-CH-)

The antibacterial activity of six such compounds was evaluated and the results were compared with antibacterial activity of parent rhodanines. The screening result have been reported in Table 3.

It is noted from the screening data that rhodanines (1) and azodyes (2) are toxic against both organisms at higher concentration, but their activity decreases on dilution. The compounds both 1 and 2 are more toxic to S. aureus than E. coli.

Table 3: Number of replication in each case = 3

Zone of Inhibition (m.m.)				
Compound No.	S. aureus Concentrations used		E. coli Concentrations used	
	100 µgml^{-1}	10 µgml^{-1}	100 µgml^{-1}	10 µgml^{-1}
1a	8	7	7	6
1e	10	8	9	7
1f	12	10	11	8
2a	0	7	8	6
2e	14	10	13	9
2f	19	12	18	11
Amphicillin	24	20	19	16

It is noted from the screening data that nitro and chloro substituents introduced in aryl moiety present at rhodanin nuclei increase the antibacterial activity where as the magnitude of antibacterial activity of these compounds (2) is not so interesting as expected from:

CONCLUSION

On the basis of above results that nitro and chloro substituents introduced in aryl moiety present at rhodanin nuclei increase the antibacterial activity where as the magnitude of antibacterial activity of these compounds (2) is not so interesting as expected from:

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REFERENCES

Constantinescu T. and Lungu C.N., 2021. Anticancer Activity of Natural and Synthetic Chalcones. Int. J. Mol. Sci., **22** (21):11306.

Plech T., Kaproń B., Paneth A., Kosikowska U., Malm A., Strzelczyk A., Stączek P., Świątek Ł., Rajtar B. and Polz-Dacewicz M., 2015. Search for factors affecting antibacterial activity and toxicity of 1,2,4-triazole ciprofloxacin hybrids. Eur. J. Med. Chem., **97**:94-103.

Reddy P.V., Kamala Prasad V., Manjunath G. and Ramana V., 2016. Synthesis, characterization and evaluation of antibacterial activity of (E)-N'(substituted benzylidene)-2 (2-fluorobenzyl)-5-ethyl-2H-1,2,3-triazole-4-carbohydrazides. P. Ann. Pharm. Fr., **74**(5):350-7.

Singh S., Yadav L.D.S. and Singh H., 1980. J. Antibact, Antifung Agents, Japan, **18**(7): 13-17.

Zhang J., Wang S., Ba Y. and Xu Z., 2019. 1,2,4-Triazole-quinoline/quinolone hybrids as potential anti-bacterial agents. Eur. J. Med. Chem., **174**:1-8.