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Screening and Biological evaluation of some novel tetra hydro pyrimidines

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Abstract

Pyrimidine and its derivatives have been considered for over a century due to their different biological performance against unrelated DNA and RNA including anti tubercular, antibacterial, immunodilator, antiallergic etc. The 1, 2, 3, 4- tetrahydro Pyrimidine ring system is of particular biological concentration because it has many pharmacological and medicinal applications. Now think about the range of biomedical applications and the pharmacological report of these groups of compounds. New series of 1,2,3,4-tetrahydro Pyrimidine antimicrobial and anti bacterial activity has been screened by Broth Dilution Method in comparatively minimal inhibition concentration.

Keywords: Pyrimidine, Broth Dilution Method, minimal inhibition concentration.

INTRODUCTION

Pyrimidine is a six membered heterocyclic compound consisting of two nitrogen atoms at one and three positions of heterocyclic ring. Generally pyrimidine derivatives such as 2-hydroxy-substitutedpyrimidine, 2-mercaptosubstituted- pyrimidine and 2-amino-substituted pyrimidine are studied. Pyrimidines have been isolated from the nucleic acid hydrolysis. Pyrimidines have been considered as the building blocks of DNA and RNA. Several analogues of pyrimidines have been used as compounds that interfere with the synthesis and functioning of nucleic acids e.g. fluorouracil, which has been used in cancer treatment. Also there are some thiouracil derivatives, which produce adverse reduction in susceptible patients. Is found more potent and less likely to produce side effects and is being widely used. There are several other important groups of pyrimidines with medicinal uses.

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Derivatives of pyrimidine have broad variety of usages. Folic acid and Vitamin B2 also contain Pyrimidine ring system. Pyrimidine ring system with having a mercapto group occupy a unique position in medicinal chemistry. These types of derivatives play a crucial task in genetic processes and synthetic drugs. Some of the therapeutic activities of pyrimidine derivatives can be summarized as Antitumor and Antihypertensive.

MATERIALS AND METHODS

Activity of compound confirm against bacteria like grampositive and gram negative. Gram positive includes *Staphylococcus aureus*, *Streptococcus pyogenes* and gram negative such as *Escherichia coli*, *Pseudomonas aeruginosa*. It is used for anti-fungal activity including candida and asperginos clavatus, too. Amplicillin and chloramphenicol are used for antibiotic. Reference anti fungal drug fluconazole used for the evaluation of minimal inhibition concentration [MIC]. By using Broth Dilution Method the antimicrobial and antifungal activity shown in Table-1.

For primary and secondary screening, serial dilutions were prepared. The control tube contained no antibiotic is instantly sub cultured through dispersion uniformly, proper for the increase of the test organism and plant for store at 36 ^{0}C during the night. The accuracy of the drug concentrations is interpret by MIC

of control organism. The total expansion of the control tube prior to storage is compare.

RESULTS AND DISCUSSION

Primary and secondary screening

Prepared compound was reducing to 2000 microgram per milliliter used for stock solution. To compare the turbidity for inoculums test strain is adjusted to 10^{8} .

First screen:

Concentration for first screening of all synthesized compounds were (1) 1000 microgram per milliliter (2) 500 micrograms per milliliter and (3) 250 microgram per milliliter. If active compound found in first test all active compound again tested in second test.

Second screen:

The compound is found active in first test were also diluted to (1) 200 microgram per milliliter (2) 100 microgram per milliliter (3) 50 microgram per milliliter, (4) 25 microgram per milliliter (5) 12.5 microgram per milliliter and (6) 6.250 microgram per milliliter concentrations.

Reading Result:

The maximum strength of diluted shows 99.00 % inhibition zone is in use as IC. All the results are fully depend on size of inoculums.

CONCLUSIONS

It can be concluded that the heterocyclic compounds belonging to 1, 2, 3, 4- tetrahydropyrimidine series have anti ulcer, anti tuberculosis and herbicidal activity. But the prepared compounds had different substitutions at Para position of Pyrimidine ring and several of the prepared products showed considerable excellent antibacterial and anti fungal activity of compounds as shown in Table-1.

Competing interests

The authors have declared that no competing interests exist.

References

1. G.A. Howard, B. Lythgoe and A.R. Todd; *J. Chem. Soc*., 476-477.
2. H K. Mitchell and J.F, *J. Am. Chem. Soc*., 69, 674-677.
3. J. A. Van Allan; *Org. Synth*., 32, 45.
4. Russell and G. H. Hitchings; *J. Am. Chem. Soc.,* 74, 3443-3444.
5. Mc Gavack, S. Keni-gsberg, and S. Pearsib; Bull N. Y. *MedColl*.,16, 58.
6. J. Baddiley. G.W. Kenner & A.R. Todd; *J. Chem. Soc.,* 657.
7. C.C. Heidelberger, P. Dannberg, D. Mooren, *Scheiner Nature*, 179, 663.

Table-1. Summary of the antimicrobial and antibacterial activity

Compounds	Zone of inhibition (in mm)					
	Antibacterial activity				Antifungal activity	
	Gram +ve		Gram –ve		*C. albicans*	*A.clavatus*
	S. aurous	*S. pyrogenes*	*E. coli*	*P. aeruginosa*		
J1	16	**18**	17	**19**	19	**22**
J 2	16	**19**	*16*	*17*	21	**24**
J 3	**18**	17	16	18	**23**	**23**
J 4	**18**	***17***	***18***	***16***	***21***	***20***
J 5	17	15	**21**	15	17	**23**
J 6	11	10	11	13	**25**	17
J 7	10	17	19	13	19	**23**
J 8	21	09	16	08	17	**24**
J 9	19	15	10	06	**25**	19
J 10	20	17	16	12	**22**	16
J 11	11	22	**24**	09	16	**24**
J 12	**18**	04	12	10	**20**	13
Amplicillin	**18**	**19**	**20**	**20**	**-**	**-**
Chloramphenicol	**21**	**20**	**23**	**21**	**-**	**-**
Fluconazole	**-**	**-**	**-**	**-**	**24**	**24**

8. L. Vio and M.G. Mamolo Farmaco , Chem. Abstr 38 (4), 255.
9. J . B . Press and R.K. Rushell; U.S. Pat. , 4, 670, 560, *Chem. Abstr*. ,107.
10. R. K. Rushell, J.J. Mancnally, R. Falotiko; *J. Med. Chem*., 31, 1786
11. Okada,Hirochi; Chem. Pharm. Bull , 47(3), 430,(Eng); *Chem. Abstr*., 130.