

## Research Article

# Antimicrobial studying of (Imidazole) derivative from pyrimidine

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Received: 26.04.20, Revised: 15.05.20, Accepted: 05.06.20

## ABSTRACT

This study involves Synthesis five membranering (Imidazole) derivative from (pyrimidine), and used it to explain the Biological activity against three isolates of two types of G<sup>+</sup>&G<sup>-</sup> of (bacteri) and two types of (fungi) by using three different concentration (5,10, 20 mg/ml<sup>-1</sup>), which have high effect activity a n d toward many types of bacteria and fungi due to its contraire to (N) atoms in their structure therefore this have biological and pharmacological functions.

**Keywords:** pyrimidine, Biological activity, Imidazole, Azo.

## INTRODUCTION

Azo derivatives represent the largest class of dyes. Azo dyes have a broad industrial application field. They are used for coloring of synthetic and natural textile fibers, leather plastics, paper and oils.[1,3] A number of azo dyes are used as drugs for treatment of bacterial and fungi infections[4,5], and it is recognized that mutations can lead to formation of tumors,[6] Among five membered heterocyclic (Imidazole) is a class of organic compounds of a great important in medicinal Chemistry which have been found to exhibited antibacterial antifungal and anti-inflammatory properties in order to investigate their probable anticancer activity, they exhibited significant cytotoxicity against both of the carcinogenic cell and caused DNA fragmentation of the HT-29 cells [9,10]

Imidazoles compounds derivatives from (Schiff bases) which explain variety of applications, antitumor, in the biological engineering and anticancer for activity.[11]

## MATERIALS AND PROCEDURES

The chemical materials such as A gar for bacteria and fungi and some instrumentals carried out in

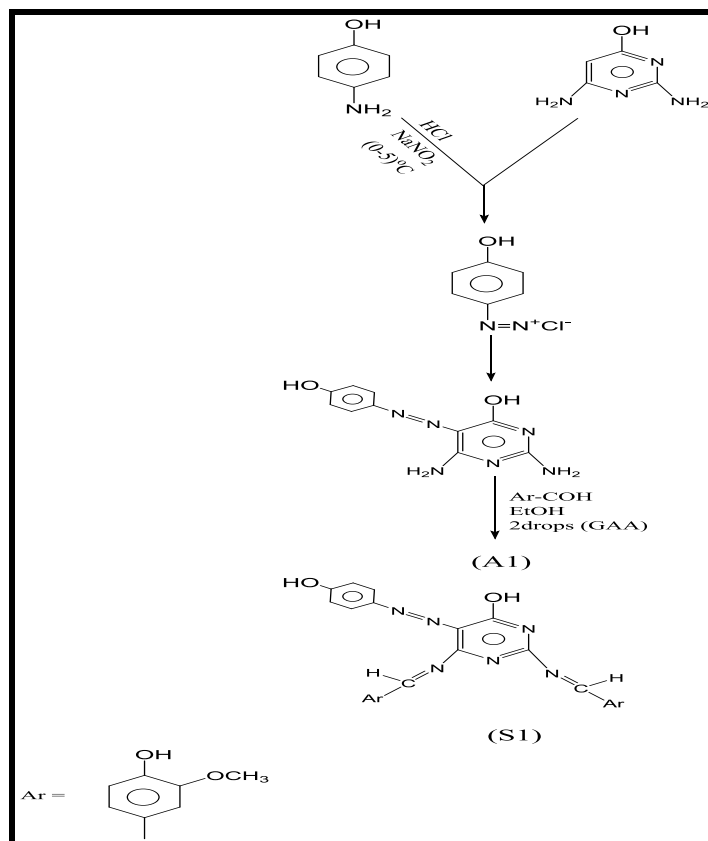
College of education, biological activity carried out in Bio-lab in bio-department

## Studying of compound Effect on Antimicrobial:-

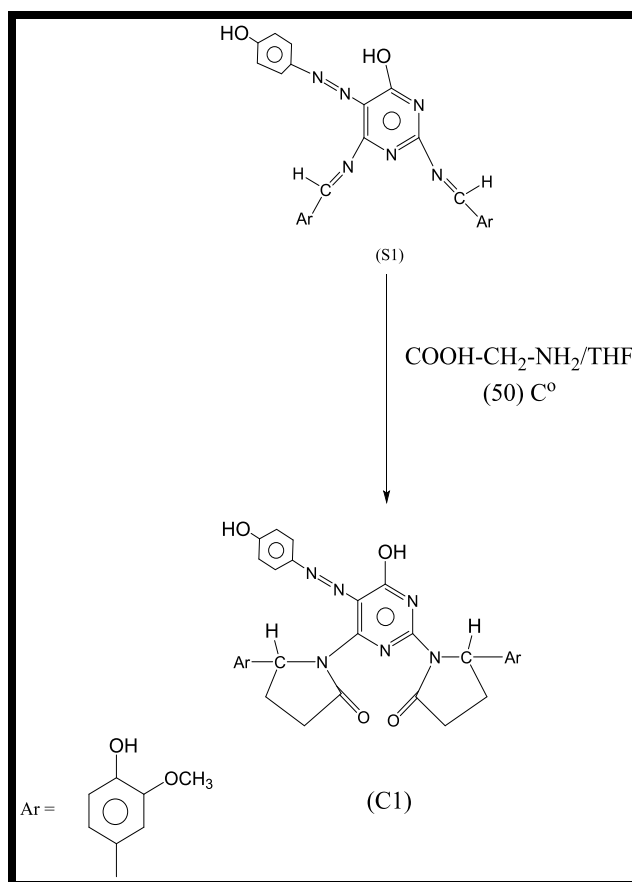
The biological activities of prepared compound ( ) have been tested for antibacterial and anti-fungi activity by agar with biological methods[12], it was tested at three conc. (5, 10, 20 mg/ml<sup>-1</sup>) dissolved in (DMSO) as a solvent by using two types of bacteria (*E-Coli*, *Proteus Vulgaris*) of two types of fungi (*A.niger* & *p.chrysogenum*). these its strains incubated for 24hr at 37C° (bacteria) but fungi strains incubated for two days at 37 C° .

## RESULTS AND DISCUSSION

According to studying the biological activity for compound (C<sub>1</sub>) to (anti bacteria) in table (1), which this results appear it was found biological activity against all types of bacteria. while table(2) appear antifungal activity from the results that the biological activity ok to this compound has high that biological activity which inhibit the growth of bacteria and fungi and shown to inhibit cellular protein and RNA, due to contain (imidazoline) ring and (N) atom in structure.



**Scheme 1: preparation of A<sub>1</sub> and S<sub>1</sub> compounds**



**Scheme 2: synthesis of (C<sub>1</sub>) compound**

**Table 1: Anti bacteria Activity of Compound (C<sub>1</sub>) (Inhibition Zone in (mm)) at conc. (5, 10, 20 mg/ml<sup>-1</sup>).**

Isolates number	Proteus vulgaris (5, 10, 20 mg/ml <sup>-1</sup> )	E-coli (5, 10, 20 mg/ml <sup>-1</sup> )
1	22	14
	22	15
	25	20
2	27	20
	27	22
	30	26
3	15	14
	15	14
	22	18
4	28	16
	30	22
	35	24



**Photo 1: Antibacterial activity Proteus vulgaris**



**Photo 2: Antibacterial activity- E-coli**

**Table 2: Antifungi activity of compound (C<sub>1</sub>) (inhibition zone (mm)) at conc (5, 10, 20 mg/ml<sup>-1</sup>)A niger**

Isolates number	A. niger (5, 10, 20 mg/ml <sup>-1</sup> )	P.crysogenum (5, 10, 20 mg/ml <sup>-1</sup> )
1	12	14
	15	14
	20	15
2	20	16
	21	18
	26	18
3	14	10
	14	8
	15	12
4	16	16
	20	15
	22	18



**Photo 3: Anti fungi activity-A.niger**



**Photo 4: Anti fungi activity by p. crysogenum**

## REFERENCES

1. M. Prasad Naidu & p. Aruna. decolourization of selected procion dye using fungi acremonium chrysogenum. "Int. J. lied Bio&pharma. Teche", (2013), vol (4); (3) 327-334.
2. Hamid H. M., zeinab N.M. and Istabraq M.A.,synthesis and studies the biological activity of azo compounds "J .of kerbala University" (2011), vol (9), No (3),(75-83).
3. Ajatia,ssAL-Mufrgeiy.,synthesis and antibacterial activities of New 3-amino-2-methyl."Nat.J.of chem" (2012),2(3),150-156.
4. Alexei N.Pankratov,"Helvetical.chem. Acta Azo-coupling reaction used in analytical chemistry " (2004), vol (87) ,(6),1561-1573.
5. Radhiyah .A.Aldujaily.,synthesis and characterization of some new lactam from Azo., "oriental J.of chem" (2018) ,34(1),371-380.
6. Al-Jamali. N.M., Mieceaad. M. Hanaa.k and Athraq Abdlkadhem; synthesis and characterization and physical studies of azo-heterocyclic "pharma Biotika" (2014), 1(1), 102-114.
7. Ozkay.y., Isikdag. I. Incesu.Z. and Akalin.G.;synthesis of 2-substituted -N-[4-(1-methyl-4,5-diphenyl-imidazole-2-yl)acetamide derivatives "Eur.J. Med.chem". (2010), 45(8), 3320-3328.
8. Malhotra, V;Pathak SR; Nath, R; Mukherjee and Shanker.k ;substituted imidazole derivatives as novel cardio vascular agents"Bioorg & Med-chem. Letters" (2011),vol(21),3,936-939.
9. Khalid M.D. and Mohammad A.A.;synthesis of some substituted multinuclear 1,3,4-oxadiazole and 1,3,4-thidiazoles "Nath J. of Chem" (2005), vol(19) 405-411.
10. Abdul Sabar, the Ali ,synthesis and antibacterial activities of new metronidazole and imidazole derivatives "No/ecules" (2009),14(7),2431-2446.
11. Layla Ali. M., Radhiya Abd-Al baki.k., Hanan.F. and Nadia. Izet., biologically active Schiff base and metal complexes "J.of scie. Res in pharma" (2013), 2(3), 7-13.
12. Pandit L.;preparation and investigation of various monomers and studying of the behavior (spectral,physical) "J.Indian Council Chem" (1995), 11, 57,37-48.
13. Al-jamali N.M., AlHusseini,Z. N.o &Abdallahman, S.A.,synthesis and hdentification of oxazipen,diazipen compounds via pericyclic ""Reviewed Int. J.", (2018), vol(2), 3,64-73.
14. Saher Mahmood .J. Nagham. M. Al-jamali, and zinah . Hussein A.; microbial studying of thiazole, oxadiazole derivatives on mouth and teeth bacteria "J. of Res. in Applied Nature & social scie" (2015), 1,1,99-108.