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Studying of Biological Activity for (Azo --Seven Cycles) Derivatives.

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ABSTRACT

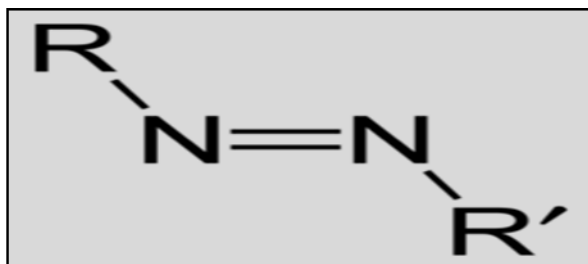
Our past study, we prepared many compounds six membered ring such as oxazepin but now in this studying , we will studying of two types of microbialon these compounds ((bacteria and fungi)) , all compounds are containing (azo group ,hetero cycles with hetero atoms) which have bio activity toward most of bacteria and fungi and they have a wide spectrum of bio- active characterization and properties and due to its content from nitrogen atoms and significant pharmacological activities in oxazepine compounds.

Keywords: oxa, signific, field.

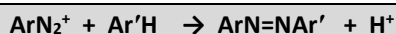
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INTRODUCTION

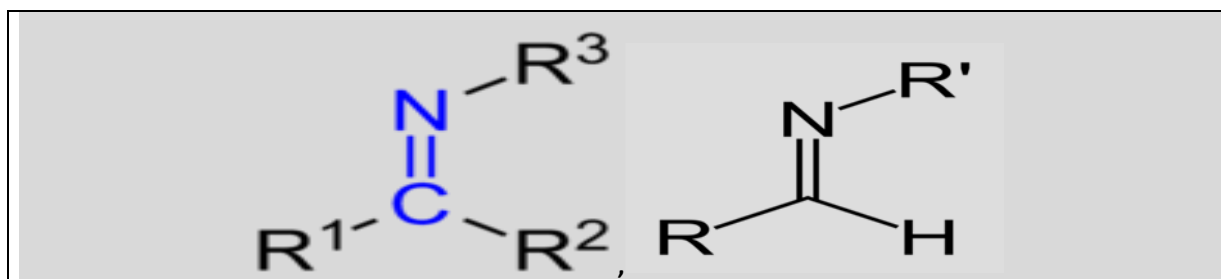
Azo derivatives have been reported to possess antimicrobial and many other pharmacological activities such as antitumor, antiulcer, antihistaminic, anti-inflammatory activity and analgesic activities (2-4). Furthermore the seven membered ring (3) nucleus is widely present in nature. It was envisaged that the cycle containing these moieties in their molecular frame work might show enhanced biological activity, cyclic compounds containing nitrogen and oxygen atoms possess potential pharmacological activities (3-8). Azo compounds represent an important class of compounds as they are utilized as starting materials in the preparation of industrial products.



Aromatic azo compounds can be synthesized by azo coupling, which entails an electrophilic substitution reaction where an cyclic compounds diazoniumcation are attacked by another aryl compound, especially those substituted with electron-donating groups:



Schiff bases are a very important type of organic compounds which have great applications in several biological fields. These great applications of imine groups have generated a great deal of interest in transition metals complexes and other applications (8-12).



Oxazepine compounds have been widely used as protective group of amino group in organic synthesis. It is resulting from imine compounds react with phthalic anhydride, Maleic anhydride and substituted phthalic anhydride to give 1,3-oxazepine-4,7-dione and test it is biological activity. Oxazepine (benzodiazepine) derivative introduced in 1965 for use in relief of the psychoneuroses characterized by anxiety and tension, oxazepam is nonhomologous seven membered ring that contains, two heteroatoms (oxygen and nitrogen). The reaction of oxazepine with primary aromatic amine gives. The corresponding 1,3-diazepine-4,7-dione. Many of the benzodiazepines and their oxides show interesting sedatives, muscle relaxant and anticonvulsant properties in animals

MATERIALS AND PROCEDURES

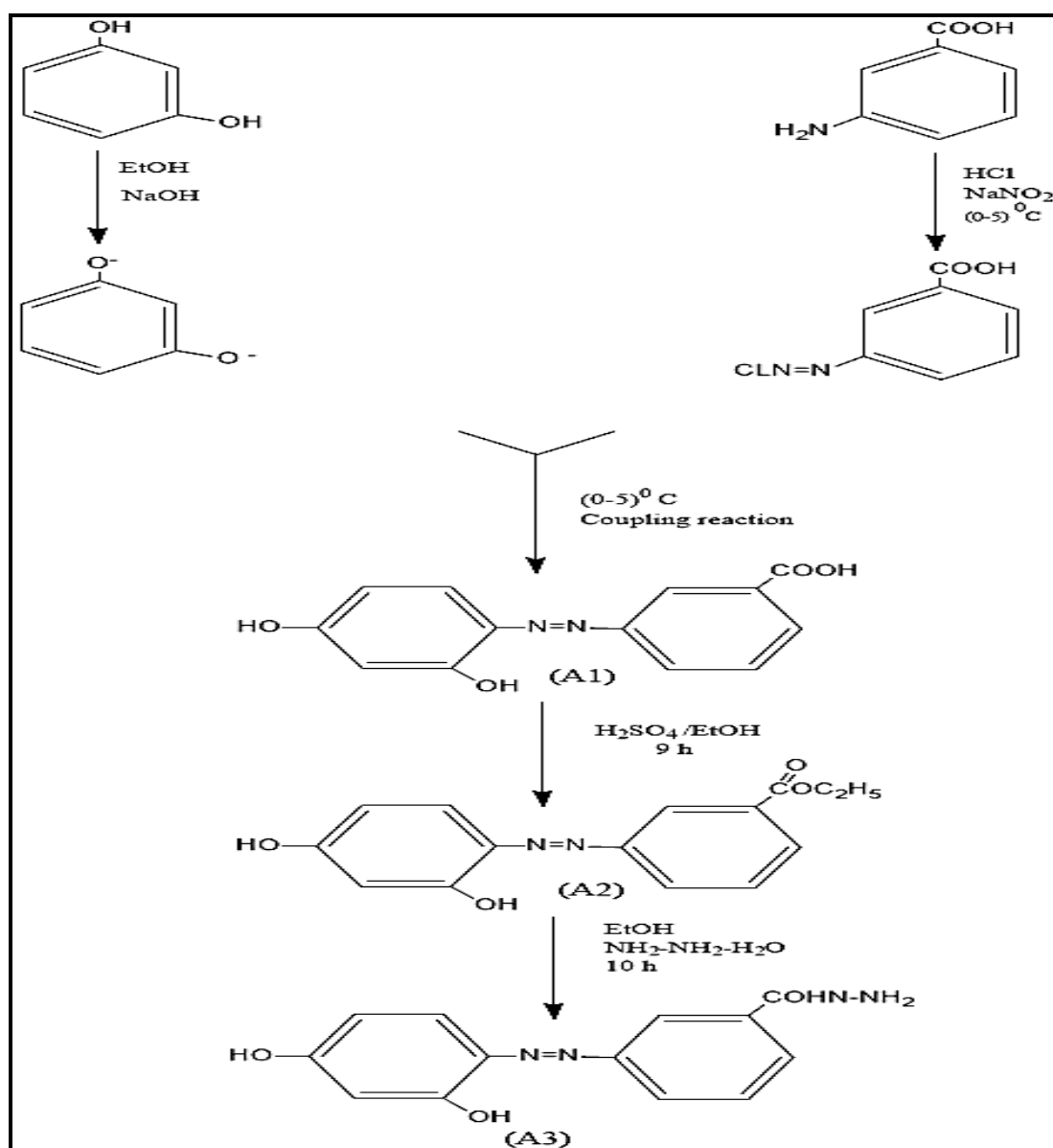
The chemical materials such as Agar for bacteria and fungi and some instrumentals carried out in college of education, biological activity carried out in Bio-lab in bio department.,

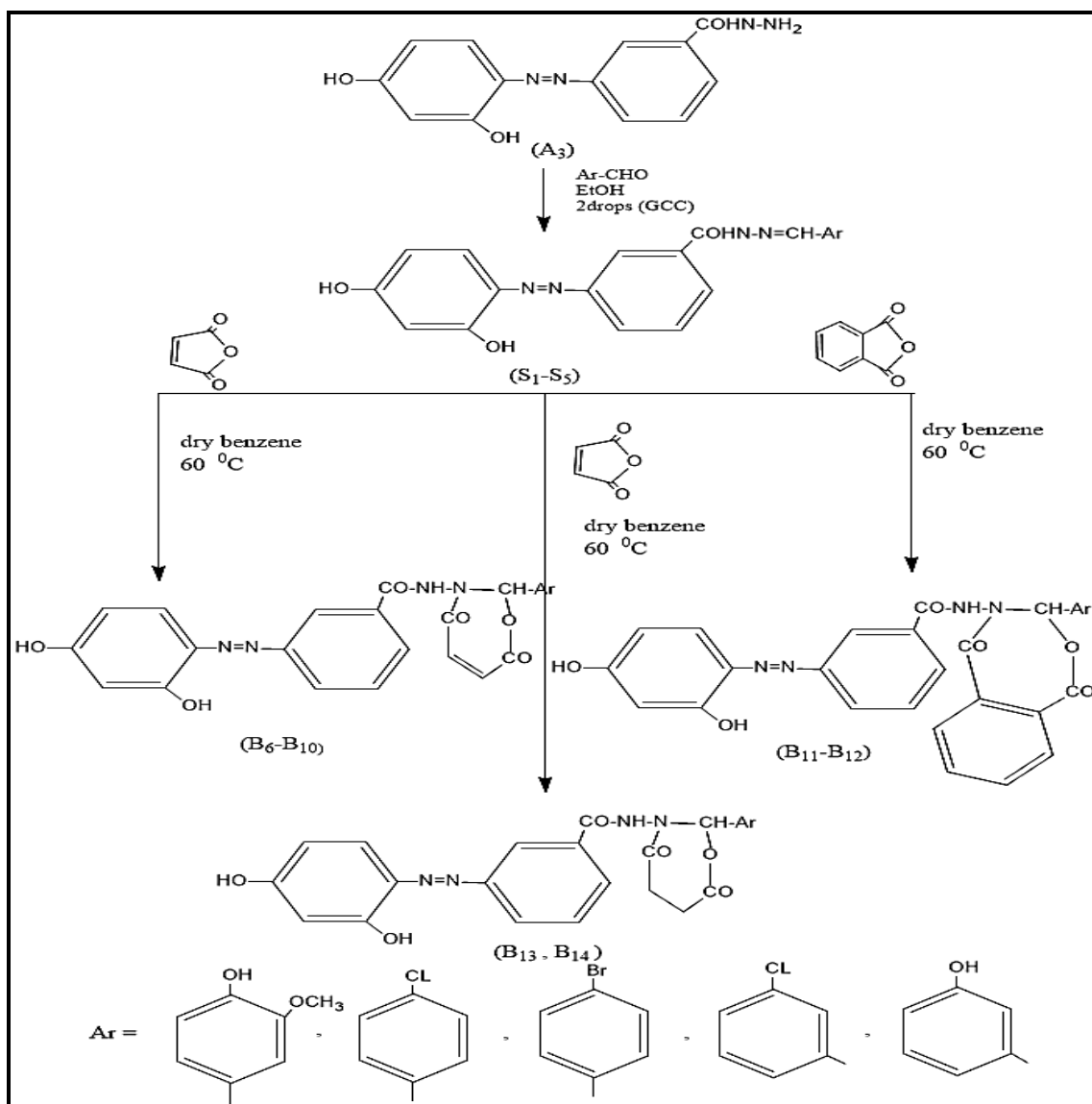
Screaming of antimicrobial effect:

The biological activities of prepared compound have been tested for their antibacterial and antifungal activities by agar via biological methods (10). The antibacterial studying and antifungal studying were tested at three concentration (10, 20, 30) mg/ml concentrations in DMSO as solvent through using two types of bacteria (*E-Coli* and *Pseudomonas aeruginosa*) and two types of fungi (*A. niger* and *P. chrysogenum*) tested at three concentration (10, 20, 30) mg/ml. These bacterial strains were incubated for 24hr at 37°C and fungi strains incubated for two days at 37°C.

Prepared Compounds In Our Past Paper (1) :

In our past work, we prepared many azo-cyclic compounds, but we will study the bio-activity for them (second part of compounds) compounds in this work :





In previously paper of our work, we synthesized these sulfur cyclic compounds but now we will study of antimicrobial activity against bacteria and fungi.

Antibacterial and Antifungal assay:

According to studying(13-15),the biological activity for compounds was screened , The antimicrobial results are summarized in table (1). From results of antibacterial studies it was found to be potentially activity against all types of bacteria and fungi . while antifungal activity at concentration (10 , 20 ,30 mg.ml⁻¹)were summarized in table (2). It is evident from the results that the biological activity of all compounds has high biological activity which inhibit the growth of bacteria and fungi.

The high bi -activity of compounds [B7 and B12] may be due to their structures which are containing oxazepine ring and chlorine in compounds which shown to inhibitcellular protein and RNA, they included some groups with nitrogen atoms and hence inhibit the bacterial growth.

Furthermore, the mechanism of action of the compounds may involve the formation of hydrogen bond with the active centers of the cell constituents resulting in the interference with the normal cell process.

In general, the intake of a drug depends on the balance between hydrophilic and lipophilic properties and the solubility which are substituent dependent which increases the lipophilicity of a drug and this may be the reason for the enhanced activity upon nitrogen compounds

Table (1): Antimicrobial Activity (bacteria) of Compounds (Inhibition Zone in (mm)) of some Compounds in three Concentration (10 , 20 ,30 mg.ml⁻¹)

Anti Bacteria(10 , 20 ,30 mg.ml ⁻¹)		
Comp. No.	<i>Pseudomonas .aeruginosa</i> (10 , 20 , 30 mg.ml ⁻¹)	<i>E-Coli</i> (10 , 20 ,30 mg.ml ⁻¹)
B6	16	14
	22	14
	22	16
B7	22	14
	24	16
	28	20
B8	14	12
	16	12
	20	14
B10	12	8
	14	10
	14	12
B11	12	6
	12	10
	16	14
B12	22	10
	24	14
	28	18
B13	10	8
	14	10
	18	10

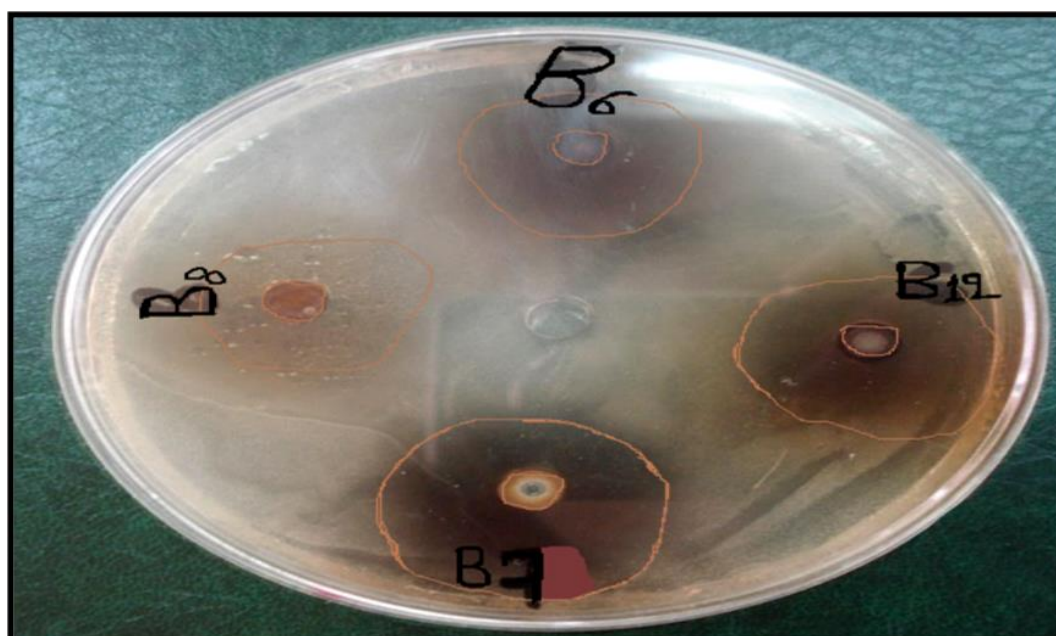


Photo (1): Antibacterial activity –*P.aeruginosain* Concentration(30 mg/ ml⁻¹)

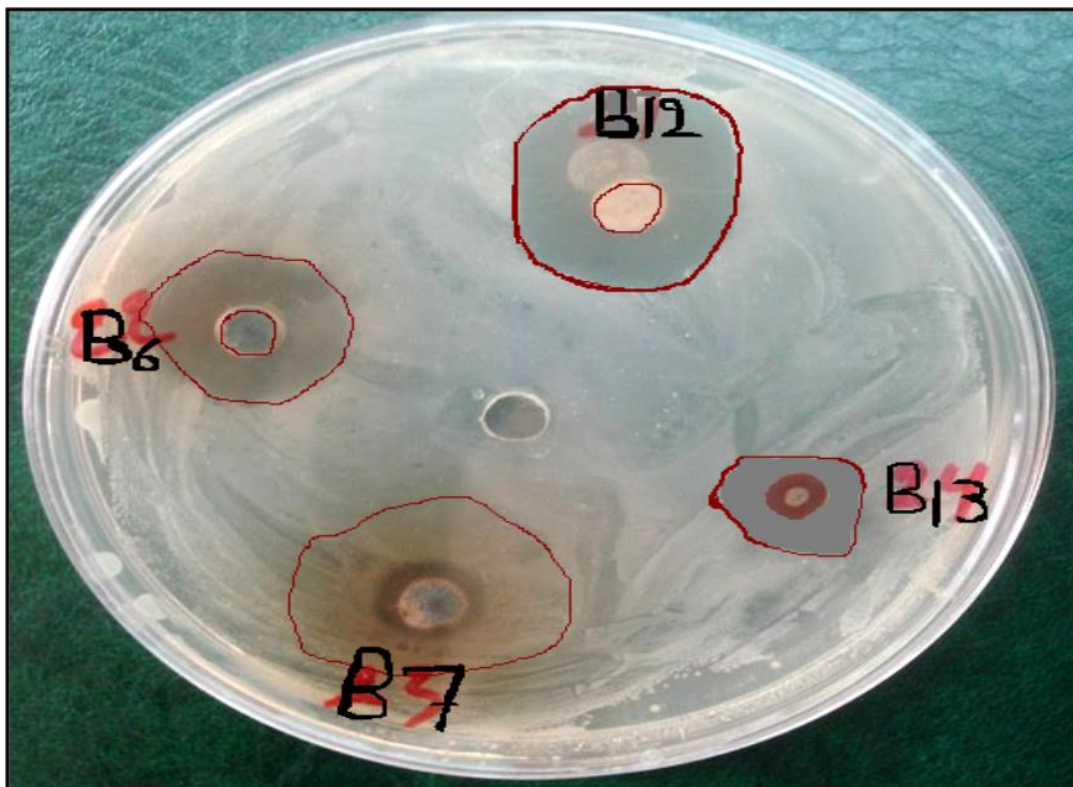


Photo (2): Antibacterial activity –*E-Coliin* Concentration(30 mg/ ml⁻¹)

Table (2): Antimicrobial Activity (fungi) of some Compounds in Three Concentrations (10 ,20 ,30 mg.ml⁻¹)

Anti Fungi (10 ,20 ,30) mg.ml ⁻¹		
Comp. No.	<i>A. niger</i> (10 ,20 ,30 mg.ml ⁻¹)	<i>P. crysogenum</i> (10 ,20 ,30 mg.ml ⁻¹)
B6	6	10
	10	10
	12	14
B7	14	14
	14	16
	16	16
B8	10	6
	14	6
	14	10
B10	10	8
	14	12
	16	12
B11	10	6
	12	10
	16	14
B12	12	8
	12	8
	18	14
B13	8	8
	8	8
	10	8

Cyclic compounds containing N-donor of seven membered ring have attracted a lot of interest due to their potent biological activities that have been widely studied because among others they have antifungal, antibacterial, anticancer and herbicidal applications . It is also because of their potential of chemical permutation. The biological activity of the Azo -Cycles depends to a large extent on the nature of hetero atoms in structure .

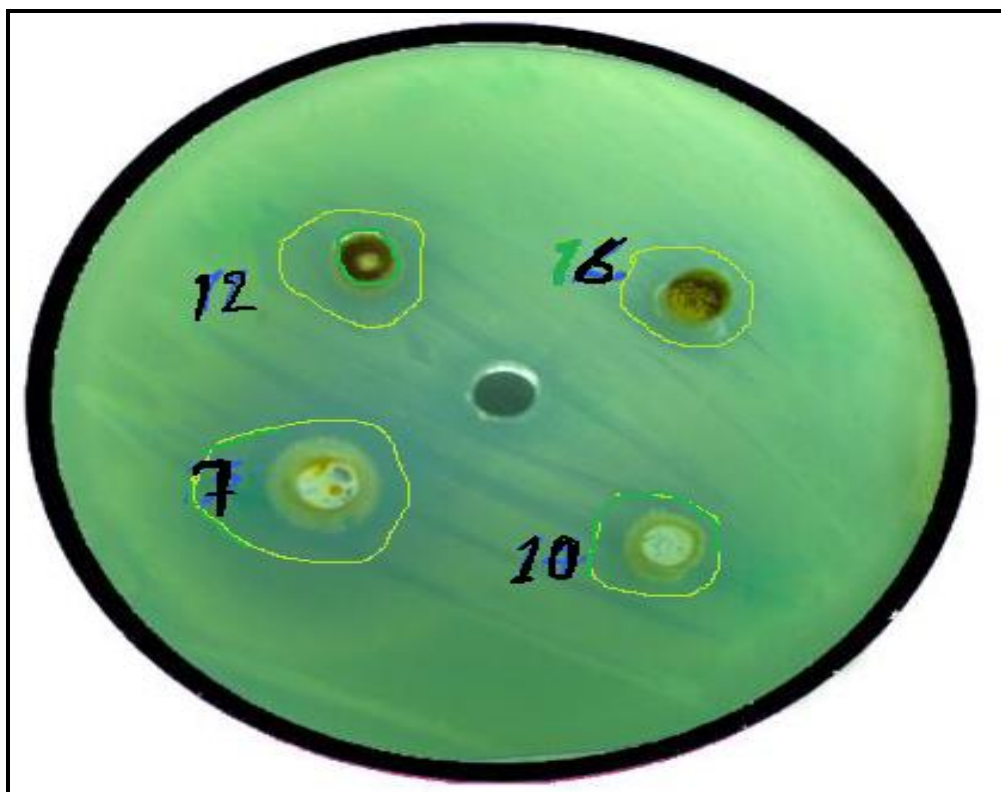


Photo (3): Anti Fungal activity –*P. crysoenumin* Concentration(30 mg/ ml⁻¹)

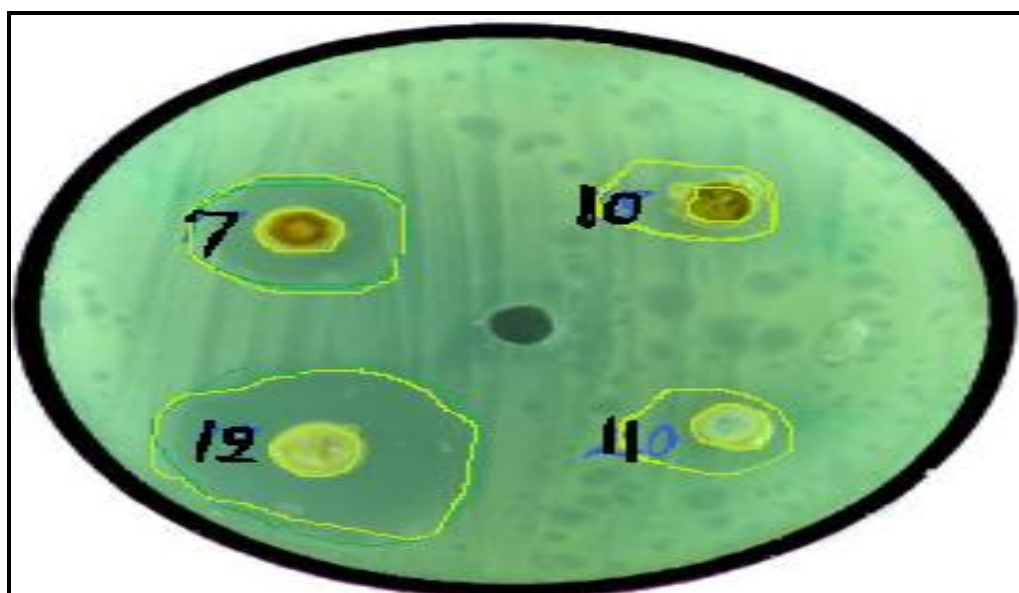


Photo (4): Anti Fungal activity –*A. niger* in Concentration(30 mg/ ml⁻¹)



CONCLUSION

The biological activity of compounds were determined by measuring the diameter of the empty region around the well (Inhibition zone). From the data obtained, it is found clearly that All compounds have the highest activity against bacteria than fungi.

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