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RESEARCH ARTICLE

Inhibition Activity of (Azo – Acetyl acetone) on Bacteria of Mouth

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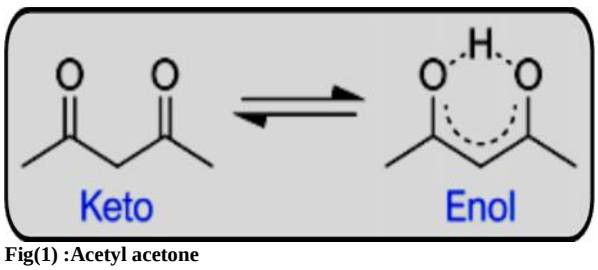
ABSTRACT:
Several compounds were synthesized in this studying via azotation reaction with acetyl acetone , which linked with more than one azo group ,they have wide spectrum from biological activity which act main part in bio-molecule like hemoglobin, vitamin B12 and some drugs, for this , all compounds in this work tested against types of mouth bacteria.

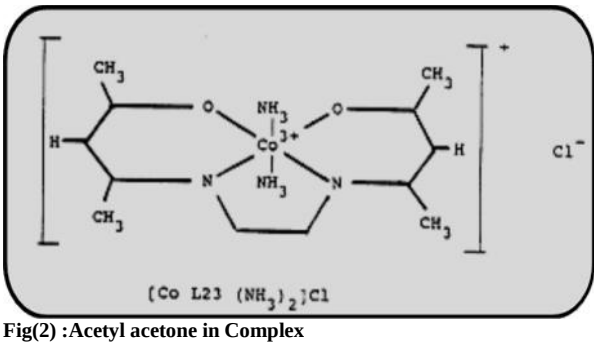
KEYWORDS: mouth, microb, azo, acetyl acetone.

INTRODUCTION:
Acetylacetone is an organic compound that exists in tautomeric forms that interconvert rapidly and are treated as a single compound in most applications, which named diketone compound , pentane-2,4-dione, the enol form forms a substantial component of the material[(1-3)] and is actually the favored form in many solvents. It is a colourless liquid that is a precursor to acetylacetonate (acac), a common bidentate ligand. It is also a building block for the synthesis of heterocyclic compounds [(3, 4)].



Fig(1) :Acetyl acetone

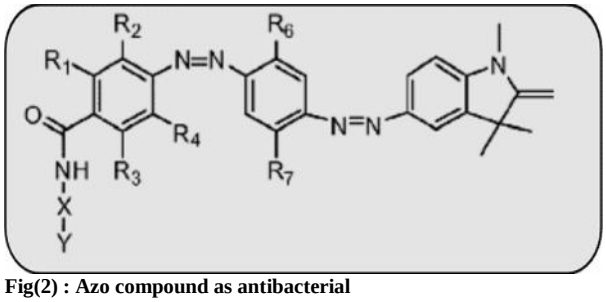
Acetyl acetone acts a ligand in coordination chemistry and complex with ions :



Fig(2) :Acetyl acetone in Complex

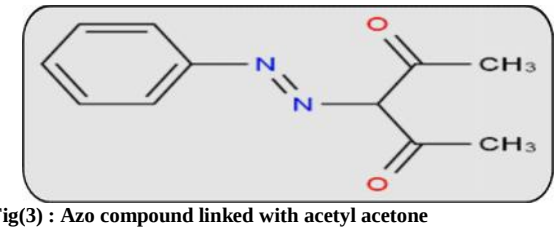
Azo compounds are a class of chemical compounds that contain the (-N=N-) group , it is present in many of the chemical compounds, so anil and azo group are very important to prepare a wide range of industrial compound[(4)], and got a special importance in the pharmaceutical industry because play an active role in biological system[(5)]. Some of them are used to treat different diseases like medicine of the thyroid gland and thyroid leukemia[(6)], Effective in stimulating the heart and lungs work, Effective against breast cancers[(7)], and anil

and azo compound showed biological active towards Bacteria and fungi , types of viruses , Effective towards bacteria Staphylococcus aureus and E. coli[8-10]., Azo are pervasive in nature and technology as structural materials. The anil and azo linkage is easily formed, confers structural rigidity, and resists hydrolysis.



Fig(2) : Azo compound as antibacterial

Acetyl acetone and azo linkages constitute a defining molecular.



Fig(3) : Azo compound linked with acetyl acetone

Azo linkages in a biochemical context are called bridge bonds when they occur in the main chain of azo. Many drugs are including azo drug, and in other applications[9-14] and uses in most fields[15-21]

Experimental and Materials:

All chemicals and instrumentals carried out in college of education, biological studying carried out in Bio – lab in biological department. Chemical Studying carried out in chemistry department.

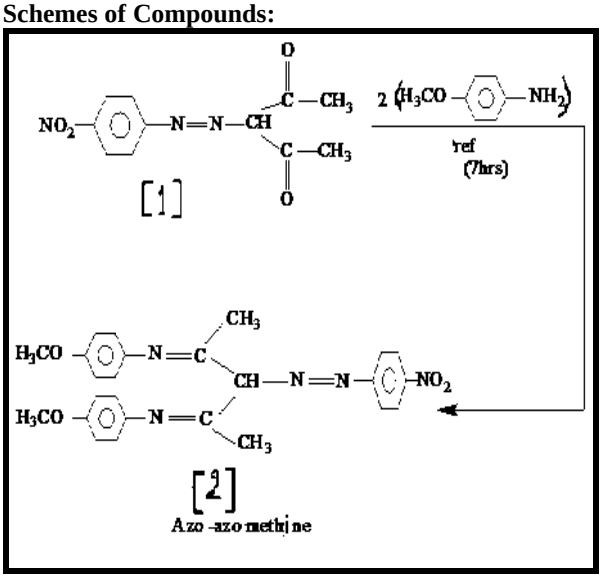
EXPERIMENTAL PROCEDURES:

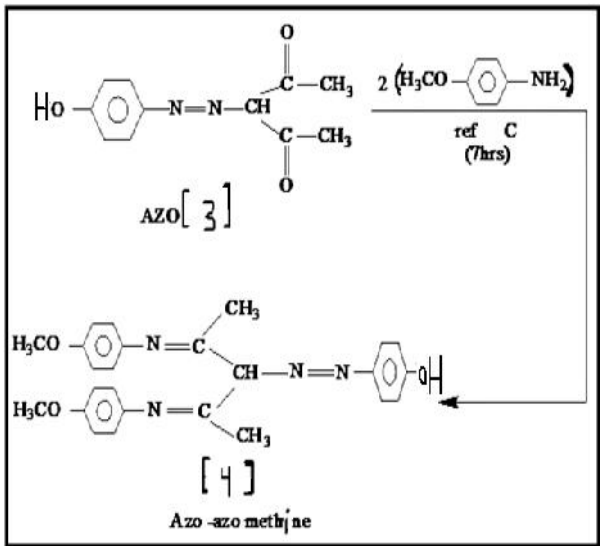
The biological activities of synthesized compounds have been studied for their antibacterial activities by agar via biological methods[16-19]. The antibacterial activities were done at (0.001 M) concentrations in (DMSO) solvent through using two types of bacteria (bacteria *Streptococcus Mutans*) and (bacteria *Streptococcus Salivarius*). These bacterial strains were incubated for 24 hr at 37^{o}C.

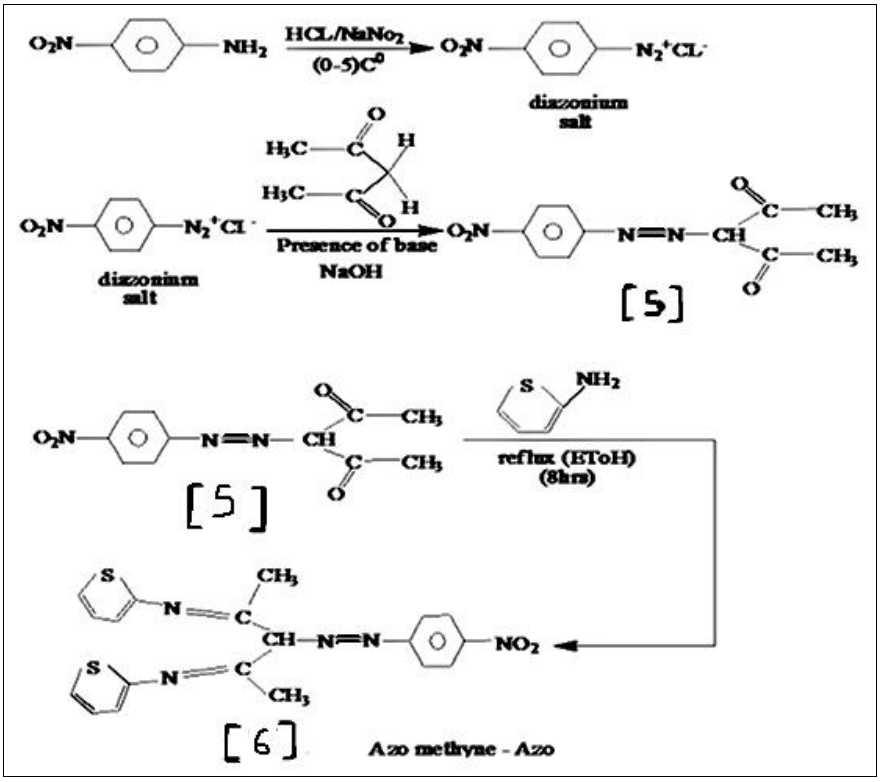
Synthesized Compounds In Schemes:

In our schemes, we synthesized compounds, but now we will study the biological activity for them in this work.

Schemes of Compounds:







RESULTS AND DISCUSSION

The formatted compounds [1- 6] tested for inhibition Activity against two types of mouth bacteria .

Assay of Inhibition Activity on Bacteria[1 , 9] :

The test of the sensitivity of the bacterial isolates were included work on two types of bacteria to measurement the biological activity of bacteria for (bacteria *Streptococcus Mutans*) and (bacteria *Streptococcus Salivarius*), and Table (1) shows the diameter of inhibition zone for vehicles chemical measured in mm towards the species bacterial. The antimicrobial results are listed at table (1). From results of antibacterial studies it was found to be potentially activity against towards four types of bacteria[16-25] ,which gave good indicators from the results that the biological activity of all compounds have high biological activity which inhibit the growth of bacteria .

Fig (4): Mouth Bacteria

The prepared compounds [1 , 2 , 3 , 4 ,5, 6] have higher activity than other compounds which due to presence of sulfur atoms in their structures[16-19] ,the mechanism of action for this compounds involved formation of hydrogen bonding with the active[22-25] centers of the cell constituents resulting in the interference with the normal cell process.

Table(1):Antibacterial Activity of Compounds (Inhibition Zone in (mm))as average of three Concentrations (5 ,10,15mg.ml^{-1})

Compounds	(Average of three Measurements) *Streptococcus Salivarius*	(Average of three Measurements) *Streptococcus Mutans*
[1]	6	6
[2]	16	14
[3]	10	12
[4]	18	18
[5]	14	12
[6]	18	20

The cleaning with fluoride apparently selects for the more desirable bacterial types, which are capable of rapidly colonizing the tooth surfaces. Because the frequent debridement neutralizes its ability to be selected[20-25] for by the low pH values that characterize an undisturbed plaque. Also, the 7% of fluoride paste has an immediate bacteriostatic effect on the plaque organisms.

Fig (5): Bacteria and decay of tooth

The results showed the Biological Activity for compounds (6 , 4 and 2) the effectiveness of anti-resistant bacteria is much higher than other vehicles in the inhibition of the positive and negative bacteria, gram growth. And also Because these compounds contain multiple episodes of thiophene and more than one azo group[(15-25)] in same compound, which gives vital to the effectiveness of many of the bacteria, and the following photos show the following:

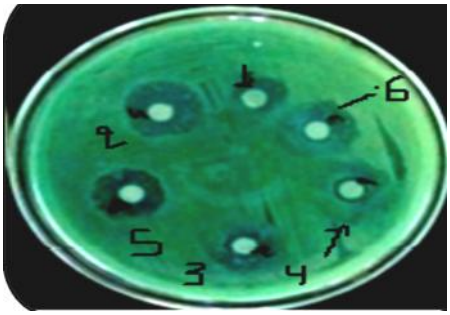


Photo (1): Antibacterial activity *Streptococcus Salivarius of Compounds*

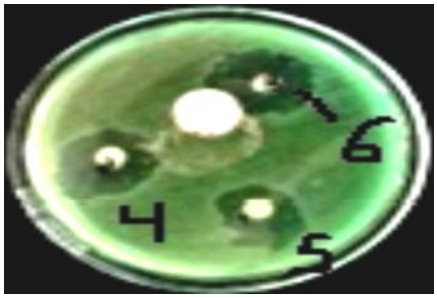


Photo (2): Antibacterial activity–*Streptococcus Mutans* of Compounds

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