

## MICROBIAL TEST OF FORMAZAN COMPOUNDS AGAINST TYPES OF BACTERIA

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### ABSTRACT:

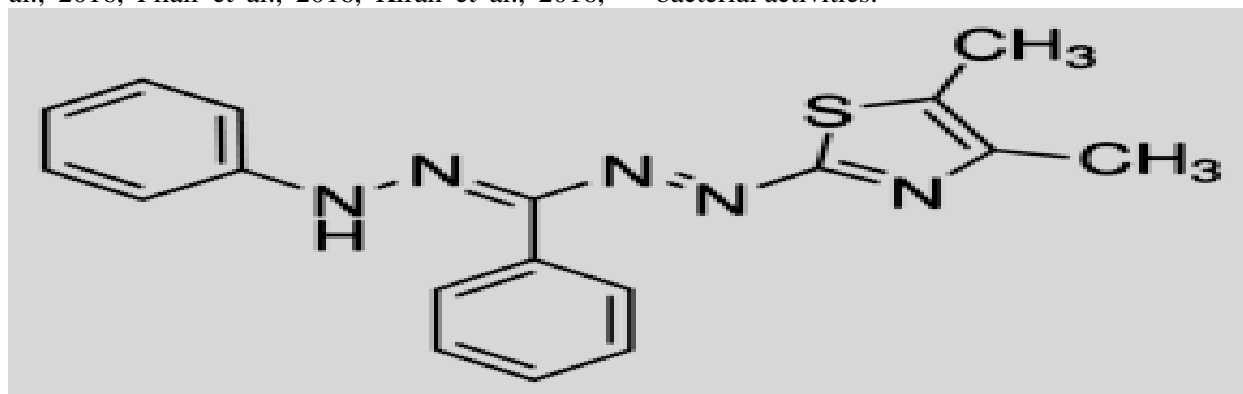
Formazane compounds have wide medical and pharmaceutical applications, for this reason the present paper to complete our work (first paper- in first reference), which involved studying of microbial behavior on types of bacteria and effect of formazan compounds (carban ion - imine-azo) against resistant of bacteria, effect of compounds on DNA and wall of bacteria cell by using diameter of inhibition (mm) as parameter of compounds activity, effect of types of substitution which linked with formazan compounds on bacteria.

**Keywords:** antibacterial, biological, assay, formazan, microbial, inhibition, azo-schiff.

### INTRODUCTION:

The nature structure of chemical compound study its properties. Formazan derivatives are an interesting type and class of organic compounds, which are found to be associated with diverse medical properties like antimicrobial (Nagham et al., 2017, Bram hananda et al., 2016, Subbiah et al., 2016), anti-inflammatory, antihypertensive, antidepressant, anti-viral and anticancer activities and other uses. The preparations and applications (Saher et al., 2016, Filali et al., 2016, Kiran et al., 2016,

Chao et al., 2005) of these compounds have received considerable attention in recent years. In addition, the formazan derivatives also act bioactive molecules which have high activity than imine compounds and azo compounds. The formazan compounds have been reported to exhibit versatile bioactivities (Srinivas et al., 2006, Woese et al., 1990, Aatesh et al., 1998), represented in insecticidal, fungicidal, anticancer and antibacterial activities.



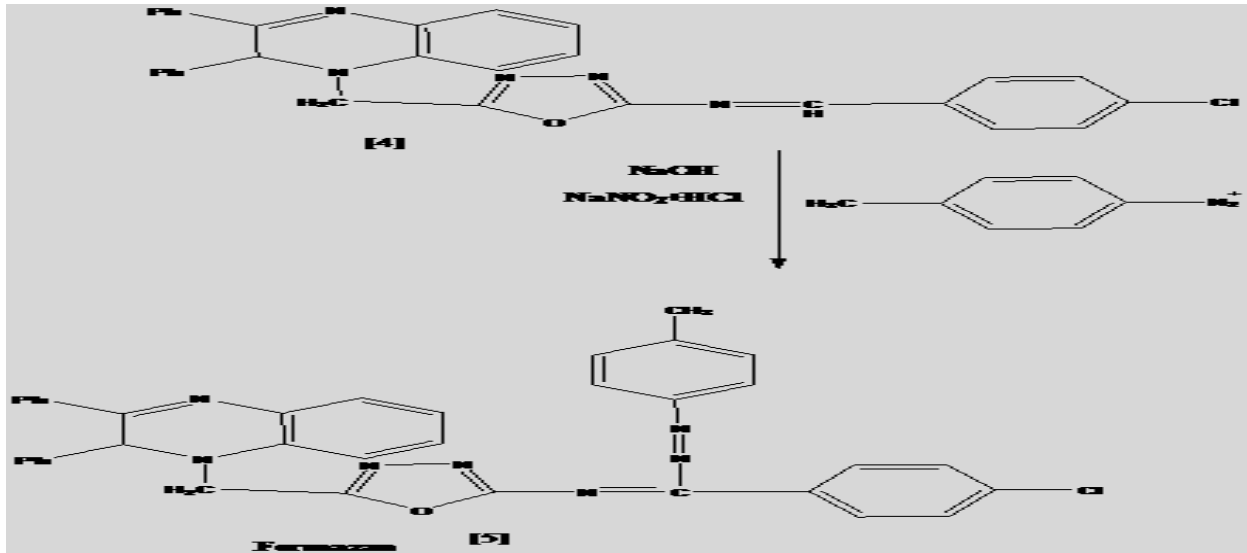
**Fig 1: Formazan derivative as Antibacterial**

In the laboratory, bacteria are usually grown through using solid or liquid media. Solid growth media, such as agar plates, are used to isolate pure cultures of a bacterial strain (Montalbetti et al., 2005, Valeur et al., 2009, Nanjunda et al., 2006, Jin et al., 2006). However, liquid growth media are used when measurement of growth or large volumes of cells are required. Growth in stirred liquid media occurs as an even cell suspension, making the cultures easy to divide and transfer, although isolating single bacteria from liquid media is difficult. The use of specific media

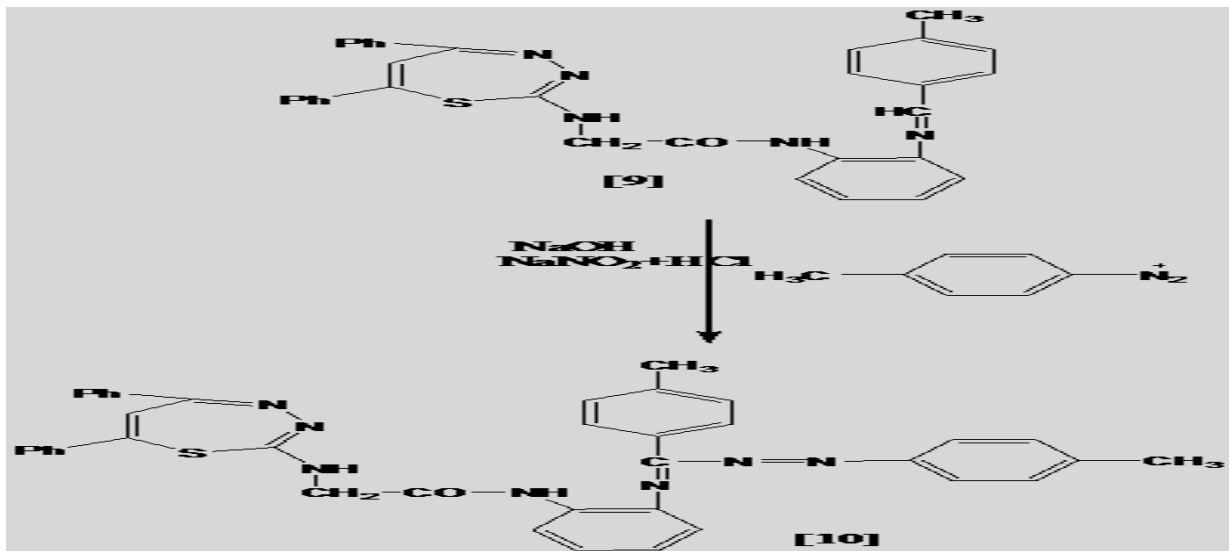
(media with specific nutrients added or deficient, or with antibiotics added) can help identify specific organism. the formazan (Aboraia et al., 2006, Nagham et al., 2017, 2016, Rappé et al., 2003) derivatives have wide spectrum in pharmaceutical with drugs field (Park et al., 2013, Habebe et al., 2010, Angela et al., 2010).

### MATERIALS AND METHODS

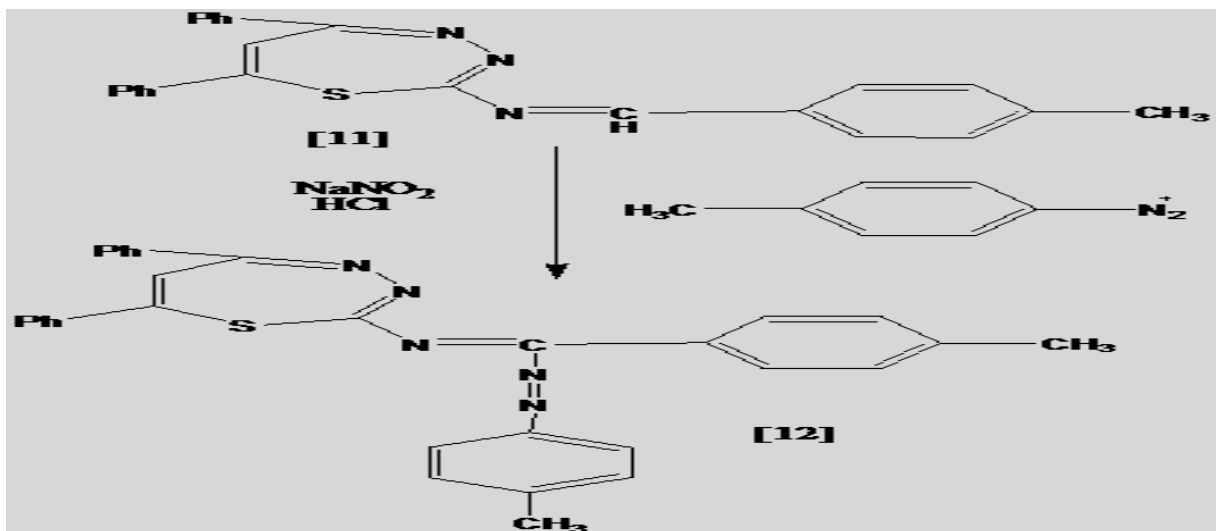
**MATERIALS:** The Synthesized Compounds which prepared in our first paper (Nagham et al., 2017) screened against types of bacteria, the compounds in schemes:



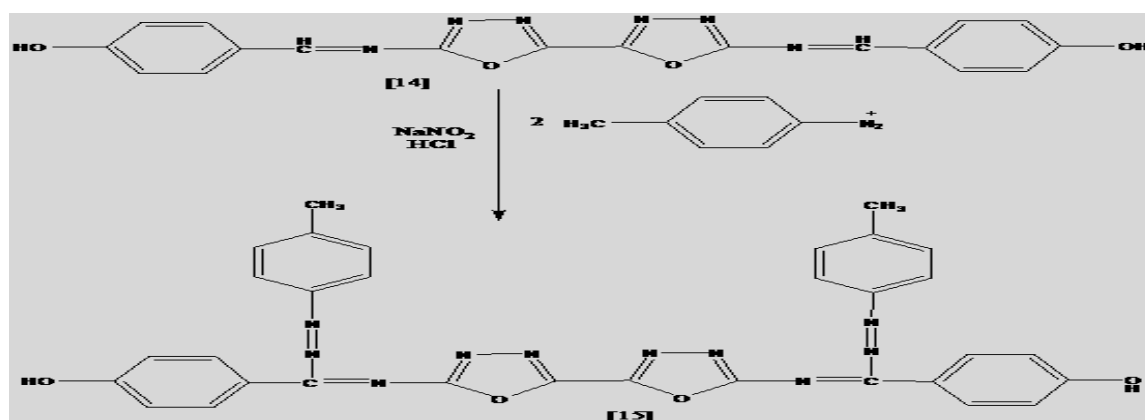
Scheme.1: Synthesized Compounds (4, 5)



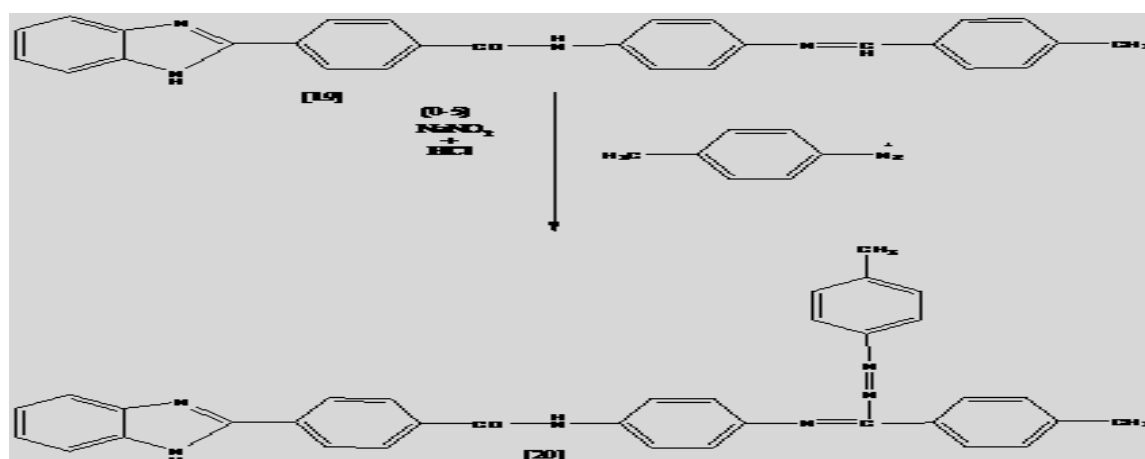
Scheme.2: Synthesized Compounds (9, 10)



Scheme.3: Synthesized Compounds (11, 12)



Scheme.4: Synthesized Compounds (14, 15)



Scheme. 5: Synthesized Compounds (19, 20)

## PROCEDURES

The biological assay of prepared compounds has been studied for their antibacterial activities by agar through biological procedures (Nagham et al., 2017). The antimicrobial activities were done at three concentrations 50, 100 and 150mg/ml in DMSO solvent through using two types of bacteria *Staphylococcus aureu* and *K. Pneumona*. These bacterial strains were incubated for 24 hrs at 37°C.

## RESULTS AND DISCUSSION

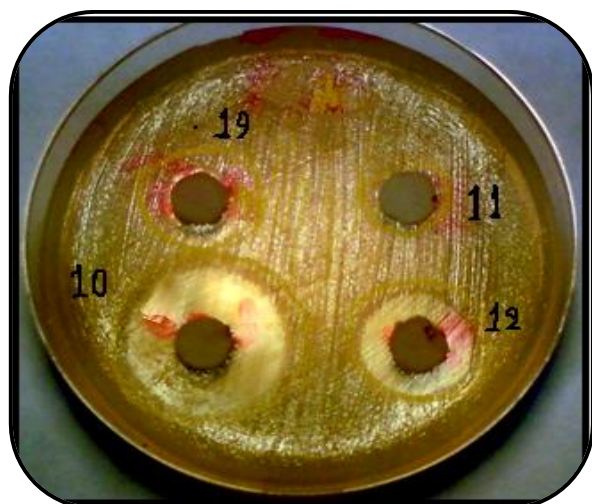
In past paper of our work (Nagham et al., 2017), we synthesized formazan compounds but in this studying, we will study activity against two types of bacteria.

**Bio-Tests:** The test of the sensitivity of the bacterial isolates were positive for gram, which included work on two types of bacteria to measure the biological activity (Wright et al 2007, Nagham et al., 2015, Hegazi et al., 2014) of certain compounds which bacteria positive for the dye Cram (bacteria *Staphylococcus aureu*) and negative gram (bacteria *K. Pneumona*), and Table 1 shows the diameter of inhibition zone for vehicles chemical measured in mm towards the species bacterial.

**Table 1:** Biological Activity (Inhibition Zone in mm of Compounds in Concentration 150mg/ml.

Comp. No.	(G +) <i>Staphylococcus Aureus</i>	(G -) <i>K. Pneumona</i>
4 Schiff Base	8	6
9 Schiff Base	14	12
11 Schiff Base	8	4
14 Schiff Base	8	6
19 Schiff Base	12	8
5 Formazan	16	14
10 Formazan	22	18
12 Formazan	14	12
15 Formazan	16	12
20 Formazan	18	16

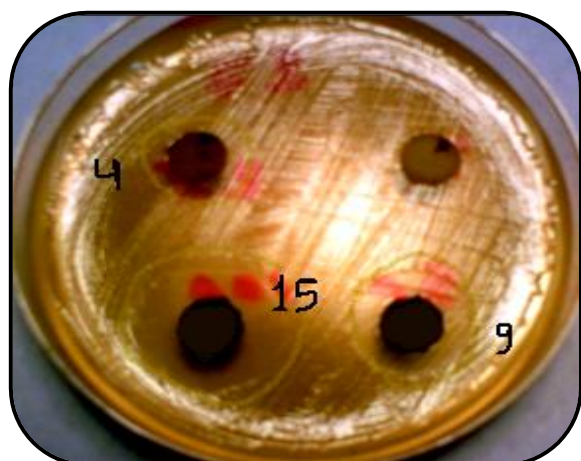
The results gave data of inhibition for the two-types of bacteria on our compounds, the Activity for formazan compounds (5, 10, 12, 15, 20) the effectiveness of anti-resistant bacteria is much higher than Schiff bases (4, 9, 11, 14, 19) in the inhibition of the positive and negative bacteria, gram growth. And also due to formazan compounds included (azo and imine groups) in same compounds, the following photos show the following:



**Photo 1:** The inhibition of the compounds (10,11,12, 19) on *Staphylococcus Aureu*



**Photo 2:** The inhibition of compounds (5, 14,20) on *Staphylococcus Aureu*



**Photo 3:** The inhibition of the compounds (4,9,15) on *Staphylococcus Aureu*

### Conclusions:

The results appeared that data of inhibition of the two types of bacteria on our synthesized compounds for formazan compounds (5, 10, 12, 15, 20) bacteria is much higher than Schiff bases (4, 9, 11, 14, 19) in activity.

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