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Preparation of Oxime Derivatives and Studying the Biological Activity

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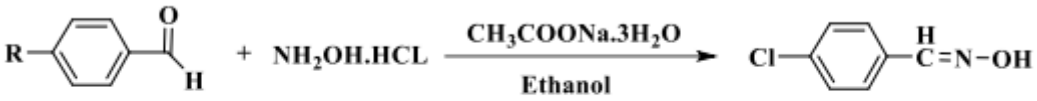
Abstract: Oximes are important compounds from a biological and industrial perspective, so they have been expanded In studies to prepare their derivatives, this research included the preparation of four compounds, which were completed It is studied and diagnosed using infrared spectroscopy (FT-IR) as well as identification Physical properties such as melting point and color. These compounds were prepared through a reaction Hydroxyamine hydrochloride with benzaldehyde derivatives in the presence of sodium acetate as

Shown in the diagram.

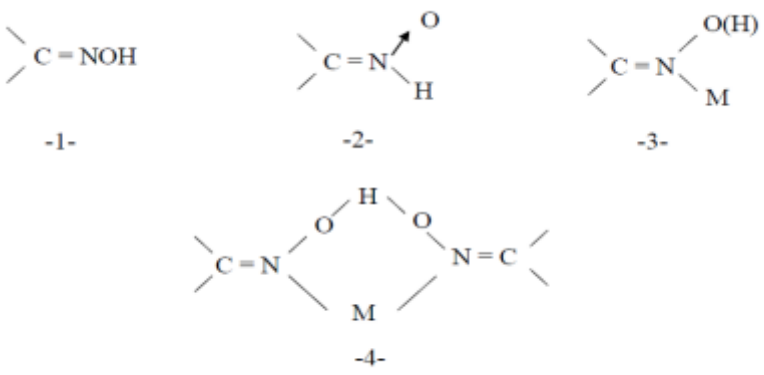


R= Cl, Br, $N(CH_3)_2$, NO_2

The biological effectiveness of the prepared compounds was evaluated against two types of bacteria, Pure Serum coli.E and positive for a gram of aureus.S, where the gram of each tanner compound is inhibited. Bacterial activity at different concentrations.

Introduction

Oximes are organic compounds whose name is derived from the Greek words oxyimine. imine-Oxy". It has a nitrogen atom carrying a pair of unshared electrons The functional or active group in oximes is the oximino group Group or the double bond between a carbon atom and a nitrogen atom linked to a group Hydroxyl (OH - N = C) and this active group is what determines the nature of the reactions Aloximes and their properties, as well as their enlightenment in determining the stereoforms of oximes. It has different spatial shapes (1):



-1- -2- -3- -4-

Oximes are generally known as -1-, while their predominant stereoscopic arrangement is even The year 1952 is the -2- arrangement, while the -3- and -4- structures are important in coordination chemistry. Cliquends are used, as the bond is either through an oxygen atom or through an atom

Nitrogen or the two atoms together. It is worth noting the presence of hydrogen bonds

Note that the oxime group is an amphiprotic group The nitrogen is a weak base, while the hydroxyl group is moderately acidic (2). Oxime was discovered in the 1980s, where oxime compounds were widely used Wide interest due to OH-NH (OH-NH) and its importance. This is due to the importance of the covalent bond present in it.This bond is used in the manufacture of polymers, including polyoxime (3), as well as in photography Optical by integrating its links into estar oxime (4). The importance of the oxime in biology and its biological activity stems from the presence of a group And a little essential N and its importance as inhibitors of enzymes. Neutral acids - OH-atoms Biosynthetic intermediates and many treatments including chelates as drugs (5).

Experimental Part

Devices used

The following devices were used for spectroscopic and analytical measurements of the prepared compounds

Measuring the melting point

The melting points of the prepared compounds were measured using an SMP point melting device

10 in the laboratories of the Chemistry Department/College of Science/University of Diyala

Spectrometry Infrared

The materials used were prepared in the form of KBr tablets and measurements were carried out using Laboratory Department of Perkin Elmer Spectrum 65 FT-IR Spectromter deviceChemistry / College of Science / University of Diyala

Thin Layer Chromatography

Thin layer chromatography (TLC) was performed using alumina plates.

(20X20) moistened with silica gel using a fluorescence indicator. TLC panels have been developed Method of quenching ultraviolet radiation in the laboratories of the Chemistry Department / College of Science / University of Diyala

Chemicals used

Table (1) shows the chemicals used in preparing the compounds

$NH_2OH.HCl$	Hydroxylamine hydrochloride	*1*
C_7H_5ClO	4-chlorobenzaldehyde	*2*
C_2H_6O	Ethanol	*3*
C_7H_5BrO	4-bromobenzaldehyde	*4*
$C_9H_{11}NO$	4-(dimethylamino)benzaldehyde	*5*
$C_7H_5NO_3$	4-nitrobenzaldehyde	*6*
$CH_3COONa.3H_2O$	sodium acetate hydrait	*7*

Synthetic method of compounds

Method of prepare the first compound

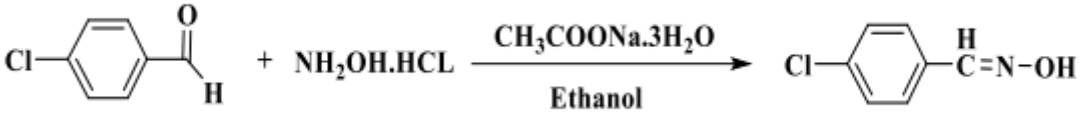


Figure (2) Equation for preparing the first compound

In a conical flask, 7.5 grams of sodium acetate were dissolved and 5 grams in 25ml of water and mix the contents of the beaker in a 5 g conical flask.

chlorobenzaldehyde and 25 ml of ethanol and mix the contents, then add drops

From the first beaker to the second beaker, shaking when adding each lump, then filter the sediment formed and leave it to dry. The resulting weight is 12.54 grams and its color is white

Method of prepare the second compound

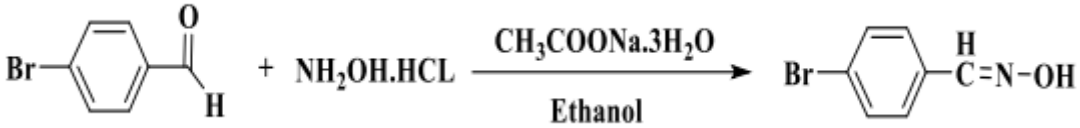


Figure (3) Equation for preparing the second compound

in a conical flask, 7.5 grams of sodium acetate were dissolved and 5 grams in 25 ml of water and mix the contents of the beaker in a 5 g conical flask. bromobenzaldehyde and 25 ml of ethanol, mix the contents and then add

Drops from the first beaker to the second beaker, shaking when adding each droplet. We filter The sediment formed and leave it to dry. The resulting weight is 7.03 grams and its color is white.

Method of prepare the third compound

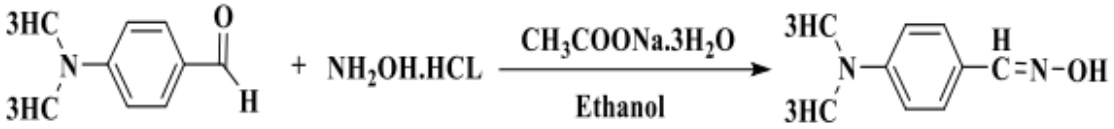


Figure (4) Equation for preparing the third compound

In a conical flask, 7.5 grams of sodium acetate were dissolved and 5 grams in 25ml of water and mix the contents of the beaker in a 5 g conical flask.

Benzaldehyde (dimethylamino) and 25 ml of ethanol and then mix the contents.

We add drops from the first beaker to the second beaker, shaking when adding each drop of sleep We filter the resulting sediment and leave it to dry. The resulting weight is 6.06 grams and its color is white

Method of prepare the fourth compound

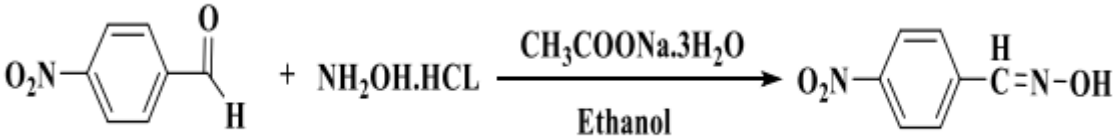


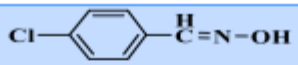
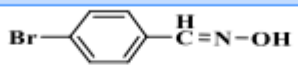
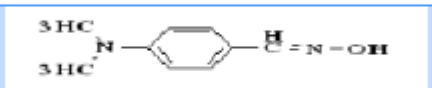
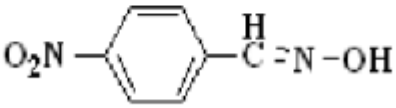
Figure (5): Equation for preparing the fourth compound

In a conical flask, 7.5 grams of sodium acetate were dissolved and 5 grams in 25ml of water and mix the contents of the beaker in a 5 g conical flask.

nitrobenzaldehyde and 25 ml of ethanol and mix the contents, then add drops

From the first beaker to the second beaker, shaking when adding each lump, then filter the sediment formed and leave it to dry. The weight of the product is 4.26 grams and its color is white

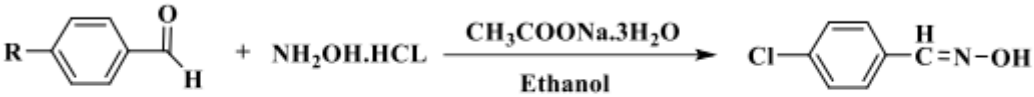
Table (2) : Name and structural formula of the prepared compounds

	**4-chlorobenzaldehyde oxime**	***1***
	**4-bromobenzaldehyde oxime**	***2***
	**4-(dimethylamino) benzaldehyde oxime**	***3***
	**4-nitrobenzaldehyde oxime**	***4***

Results

Various oxime compounds were prepared through the hydroxyamine reaction

Hydrochloride with benzaldehyde derivatives in the presence of sodium acetate.



R= Cl, Br, $N(CH_3)_2$, NO_2

The compounds were characterized through FTIR technology to determine the active groups in them Oxime chlorobenzaldehyde4- the first compound

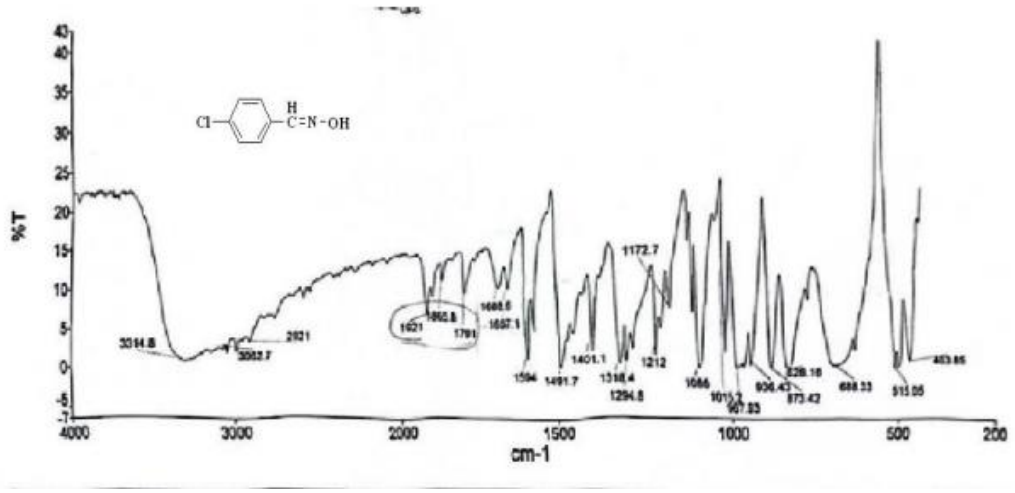


Figure (6) infrared spectrum of the first compound

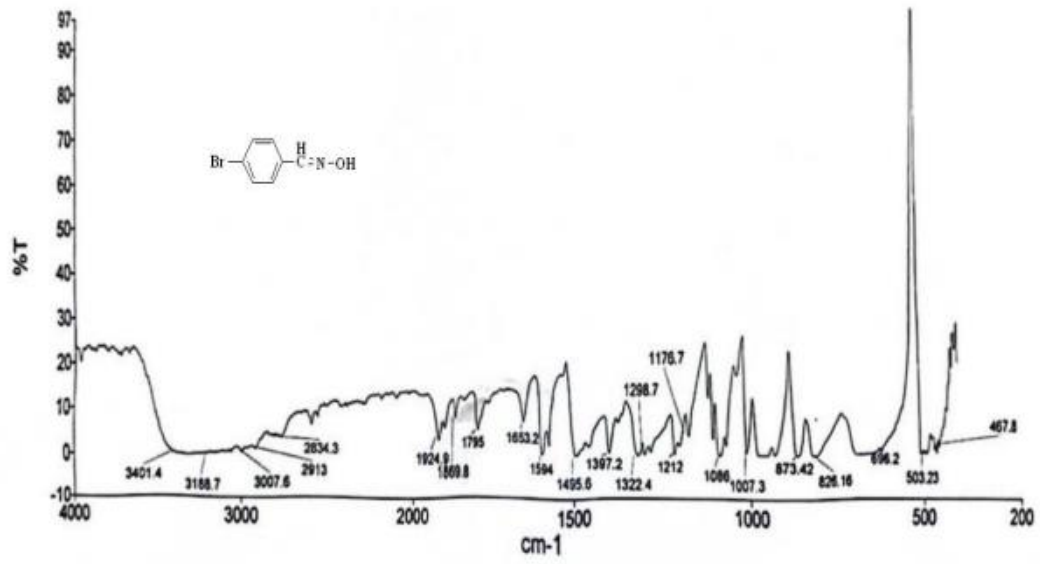


Figure (7) infrared spectrum of the second compound

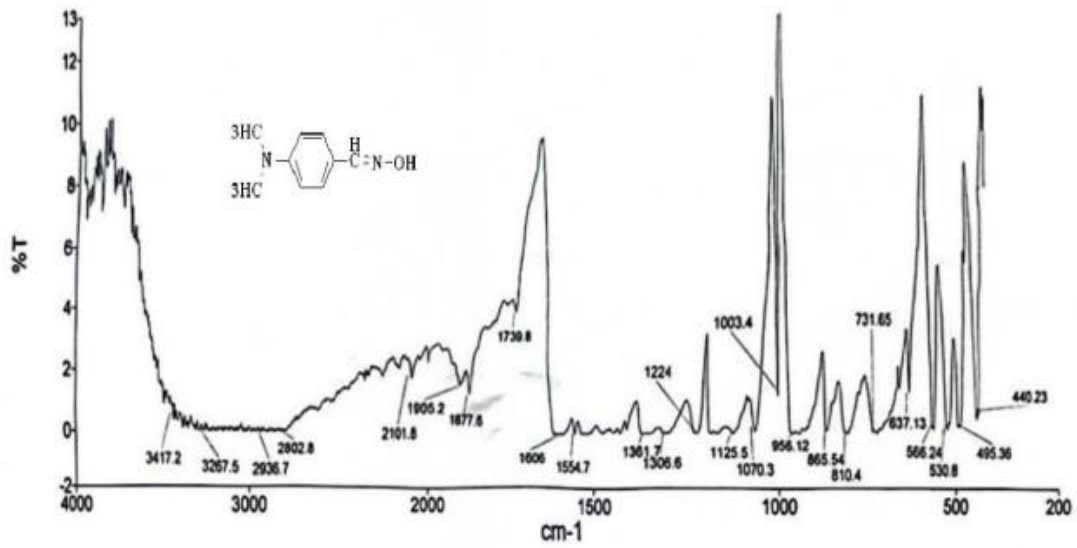


Figure (8) infrared spectrum of the third compound

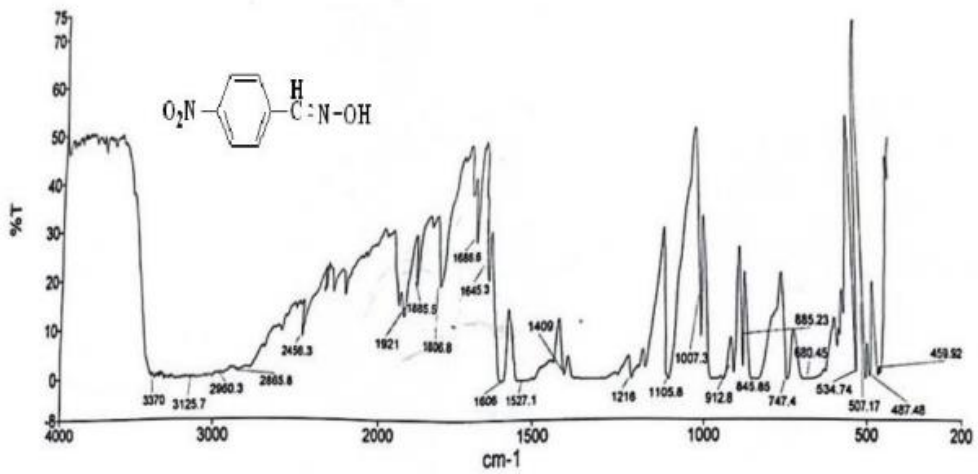
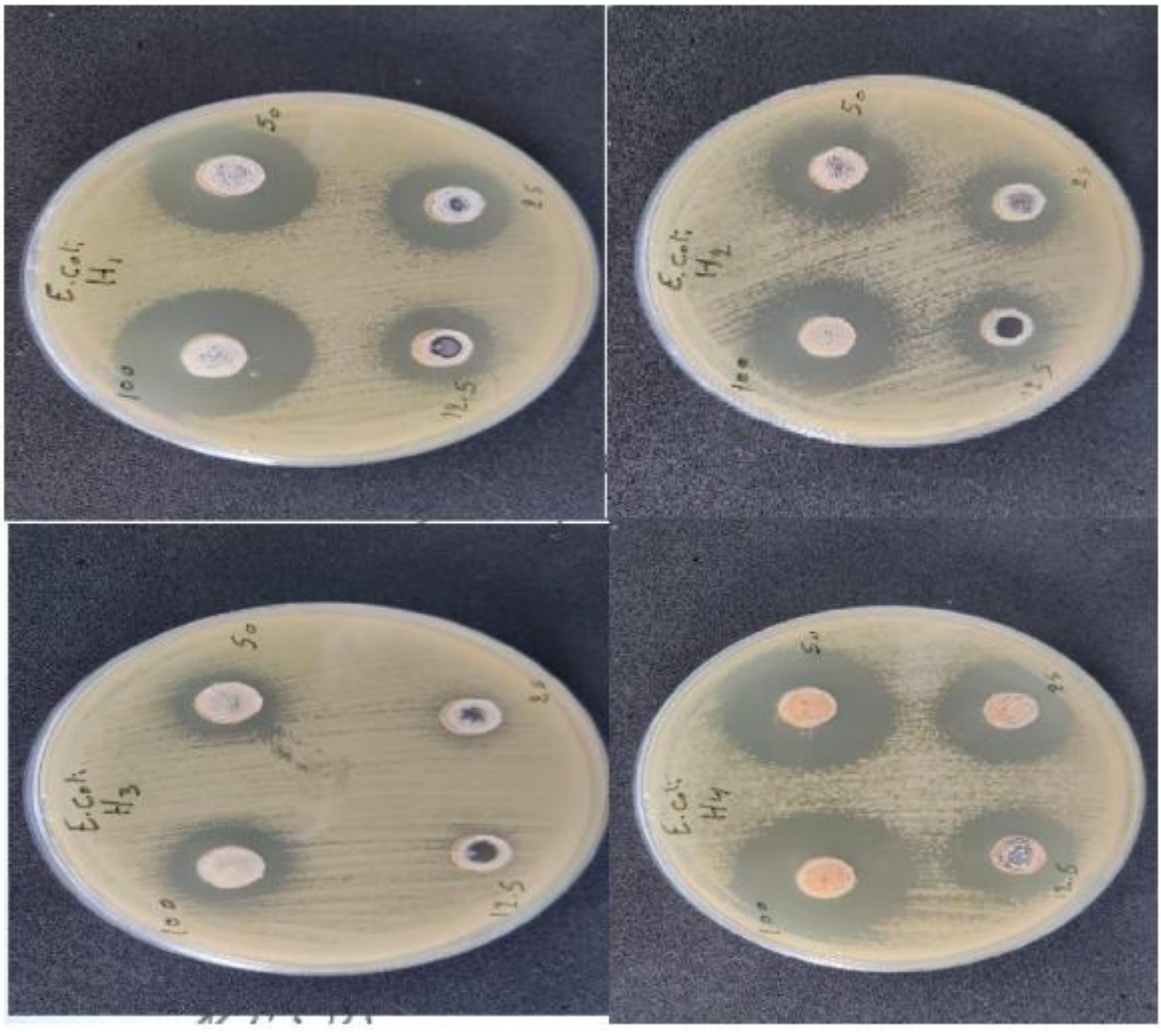


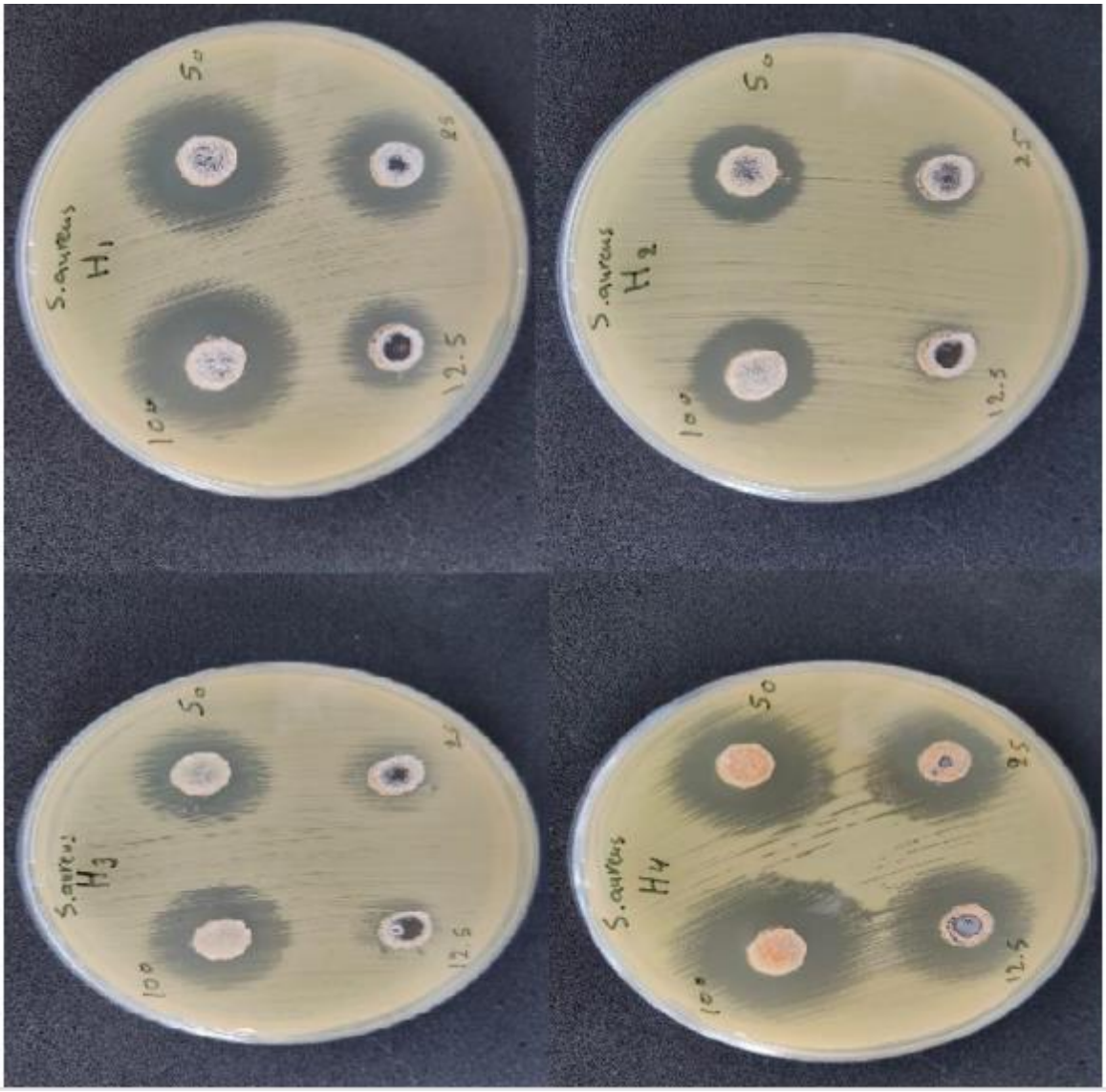
Figure (9) infrared spectrum of the fourth compound

The biological effectiveness of the prepared compounds was measured against two types of bacteria, Seralleba vulgaris coli.E and positive for a gram of aureus.S, where the gram of each tanner compound is inhibited. Bacterial activity at different concentrations as shown in the table

Table (3) Antibacterial activity of compounds

Microorganism	*S. aureus*				*E. coli*			
Tested materials	100	75	50	25	100	75	50	25
1	27mm	25mm	22mm	18mm	29mm	25mm	23mm	20mm
2	20mm	18mm	15mm	10mm	25mm	23mm	21mm	20mm
3	24mm	22mm	13mm	11mm	19mm	15mm	12mm	10mm
4	30mm	25mm	25mm	26mm	30mm	29mm	26mm	24mm





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