RESEARCH ARTICLE

Synthesis and Diagnosis of Some Derivatives of 1,2,4- Triazole-3-Dicarboxylic Acid and Study their Biological Activity

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ABSTRACT

Newly prepared derivatives of Heterocyclic of dicarboxylic acid include 1, 2, 4-Triazoledicarboxylic acid. Thiocarbohydrazine (TCH) reacts with aliphatic and aromatic dicarboxylic acids, and when these resulting compounds interact with compounds containing a group of carbonyl they result in Schiff base, which are very important in the industrial and medical fields and the acids used (oxalic acid, succinic, terephthalic) to prepare the triazole, then the reaction with Para-chlorobenzendihaide. and some physical properties were measured for these products.

The biological activity of the prepared compounds has been studied, and it has been shown that they have different effects on the bacteria, compounds prepared with Fourier Transform Infrared Spectroscopy (FTIR), and hydrogen-1 Nuclear magnetic resonance (HNMR) technologies.

Keywords: Bacterial Schiff base, Dicarboxylic Acids, Thiocarbohydrazine, Triazole Derivatives.

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Conflict of interest: None

INTRODUCTION

Triazoles are Heterogeneous cyclic compounds with the general formula ($C_2 H_3 N_3$) with a five-membered ring containing two carbon atoms. There are isomers in which the locations of the nitrogen atoms differ. Triazole derivatives are used in medicine and industry, such as the pharmaceutical industry [1], and the Heterogeneous cyclic pentagonal rings are combined with other compounds to form compounds with pharmaceutical properties of various antibacterial properties. Such as the Triazole derivatives antibacterial and viruses.[2] Derivatives (1, 2, 4- amino 3 thio-triazole) are actively involved as anti-inflammatory, and their Strain derivatives are important in pest control[3,] and in recent years the interest has been in creating large Heterocyclic rings.[4] The compounds of these complexes have a wide range in the life-effectiveness of anti-bacteria and algae.[5] Derivatives of 1,2,4 triazol act as diuretics.[6]

MATERIAL AND METHODS:

Melting points were set in open capillary tubes in the Gallen Kamp device, and the infrared spectrum (Figures 1 to 5) was measured by a KBr disk with a 100 Pye-uinican device and the HNMR spectrum - Hitachi - perkin Element 60 MH_2 NMR. According to the transcranial magnetic stimulation (TMS) system, raw materials are sourced from Fluka or Aldrech.[7]

Preparation of Bis (3-thio-4-amino-1,2,4-Triazole-5-yl) Oxalic acid-co-p-chlorobezaldehyd (K1).

0.1 mole of oxalic acid is mixed with 0.2 mole of Thiocarbohydrazine for 30 minutes, then the result is added to 0.2 mole of Parachloro benzaldehyde with 30 mL of absolute ethanol and then escalate for two hours and cool the mixture and filter It is recycled in methanol, the resulting percentage of 54%, as shown in chart 1.[8]

Preparation of Bis (3-thio-4-amino-1,2,4-Triazole-5-yl) Succinic acid-co-p-chlorobezaldehyd (K2).

In addition to 0.2 mole of Thiocarbohydrazine, (0.1 mole) of succinic acid in a sandy bath for approximately 20 minutes is added with continuous stirring. The mixture is taken and ascended with 0.2 mole of Parachloro benzaldehyde with 30 mL of Absolute ethanol for three hours. The mixture is cooled, filtered, and recycled in the methanol resulting in 63%, as shown in chart 2.[9]

Preparation of 3-Bis (3-thio-4-amino-1,2,4-Triazole5-yl) Terephthalic acid-co-p-chlorobezaldehyd(K3).

0.1 mole of Terephthalic acid is added and added to (0.2) mole of Thiocarbohydrazine in a sandy bath with continuous stirring for 30 minutes then the mixture is taken and ascended with Parachloro benzaldehyde for an hour and a half with

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25 mL of absolute ethanol and filtered and then returned Its crystallization in methanol the resulting percentage 61%, as shown in Chart 3 (Table 1).[10]

RESULT AND DISCUSSION

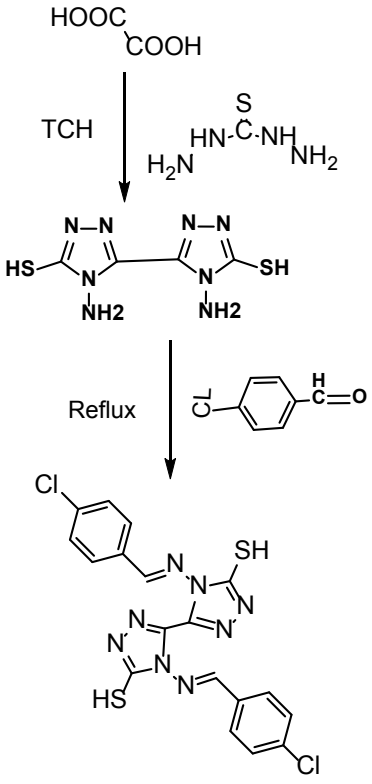
Dicarboxylic acids treated with thio-carbohydrazine form Triazole derivatives as in compound (K1) shown in Scheme 1 in which the 3467 peak belonging to the NH_2 group disappeared while the 1123-1311 peak that returned the C-N group and the remaining of the 2069 peak remained That belong to group S-H in compound (K2)[11].

The 3437 group, belonged to NH_2 group and the appearance of 1383-1275 peak belonging to the C-N group disappeared, and the survival of the 2966 peak that belongs to the CH_2 group. It was also observed that the beam stays at 1383-1456 the curvature frequency that belongs to the C-H group while in the compound (K3),[12] which is illustrated in Scheme 3, showing the disappearance of the N-H peak and the emergence of the 1284 package to the CN group, as well as the appearance of the peaks from 779-881, which belong to the C-CL group, whereas in HNMR in all the compounds the disappearance of the singlet at a rate of 3.43 that belongs to N-H group as shown in Figures (6-7).[13]

Also, some physical properties and solubility of the prepared compounds were measured, as shown in Table 1 and 2.

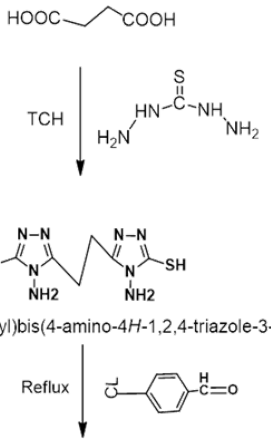
Bacterial Activity

Three bacteria have been isolated and are respectively:

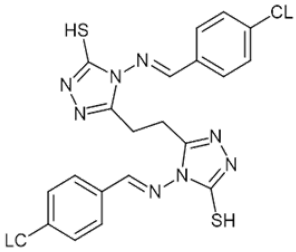


4,4'-bis((*E*)-(4-chlorobenzylidene)amino)-4*H*,4'*H*-[3,3'-bi(1,2,4-triazole)]-5,5'-dithiol

Scheme 1

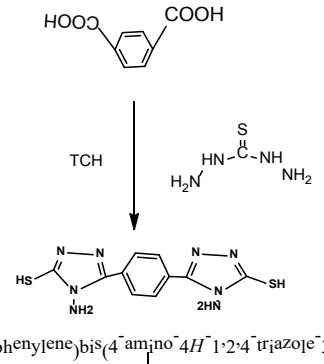


5,5'-(ethane-1,2-diyl)bis(4-amino-4*H*-1,2,4-triazole-3-thiol)

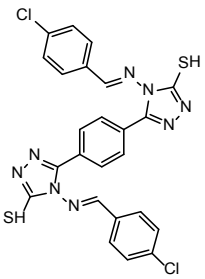


5,5'-(ethane-1,2-diyl)bis(4-((4-methychlorolbenzylidene)amino)-4*H*-1,2,4-triazole-3-thiol)

Scheme 2



5,5'-(1,4-phenylene)bis(4-amino-4*H*-1,2,4-triazole-3-thiol)



(*E*)-5,5'-(1,4-phenylene)bis(4-((*E*)-(4-chlorobenzylidene)amino)-4*H*-1,2,4-triazole-3-thiol)

Scheme (3)

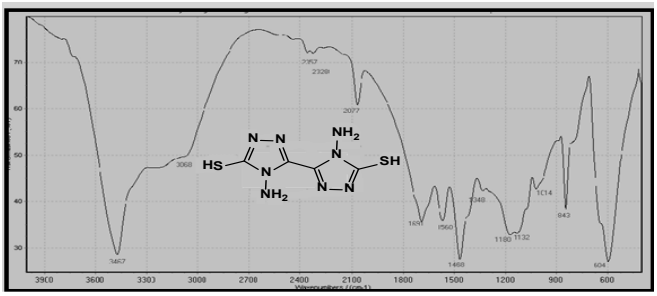


Figure 1: Infrared spectrum of Bis (3-thio-4-amino-1,2,4 Triazole 5-yl) Oxalic acid.

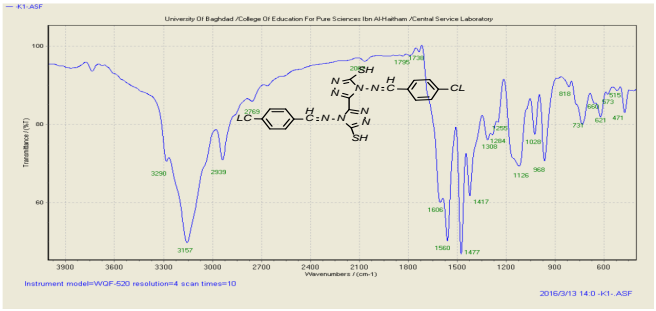


Figure 2: Infrared spectrum of the compound (K1)

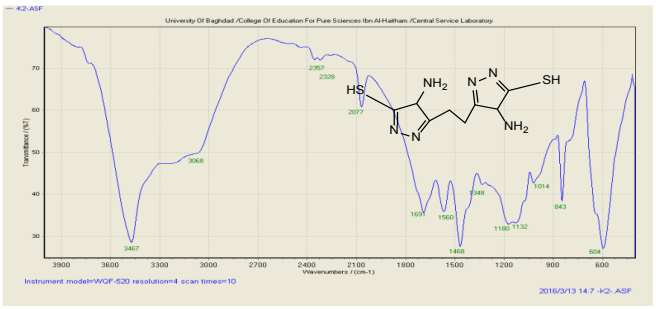


Figure 3: Infrared spectrum of Bis (3-thio-4-amino-1,2,4 Triazole 5-yl).

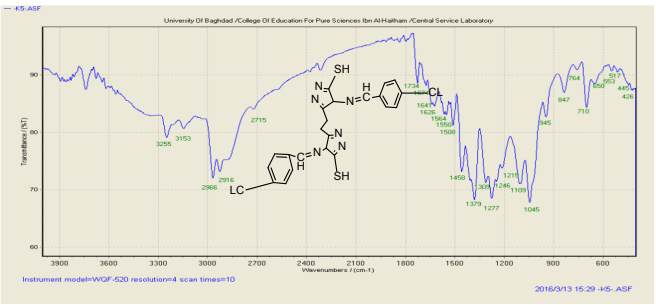


Figure 4: Shows the infrared spectrum of the compound (K2).

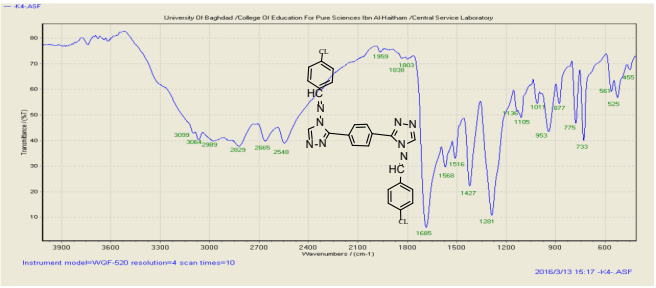


Figure 5: Infrared spectrum of the compound (K3).

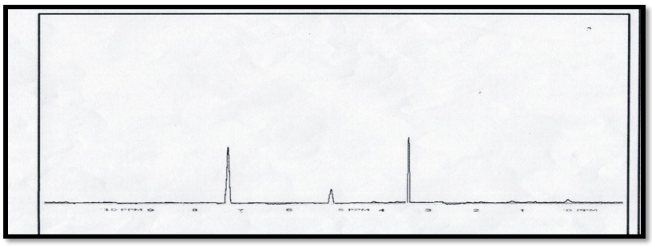


Figure 6: NMR spectrum showing peak of N-H for base compounds

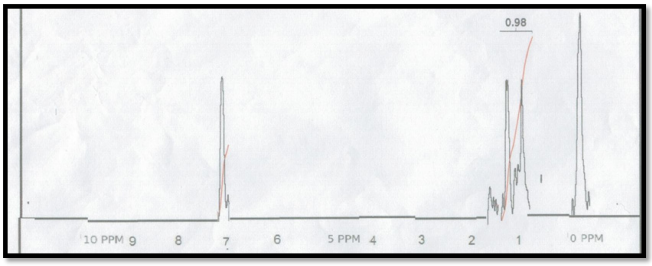


Figure 7: NMR spectrum showing the disappearance of the N-H peak of the prepared compounds.

Table 1: Physical Properties of Prepared Compounds.

Compound No	*Color*	*Boiling mp*
K1	Light brown	271-269
K2	Yellow	278- 276
K3	Yellow	300-298

Table 2: Solubility of Prepared Compounds with Different Solvents.

Compound No	*DMF*	*DMSO*	*Ethanol*
K1	Partially soluble	Soluble	Non-soluble
K2	Partially soluble	Soluble	Non-soluble
K3	Partially soluble	Soluble	Non-soluble

Table 3: The biological activity of the prepared compounds using different types of bacteria.

Concentration			*Insulation*	*No*
25	50	100	-	-
4.5	9.5	13.3	F1	1
2.5	5.5	10.6	F2	2
7.5	8	10.0	F3	3

1. Staphylo Coccus aureus(F1)
2. Bacillus Thuringiensis (F2)
3. Pseudomonas aelutellae (F3)

We use bacterial isolates for biological control. It was found through the results that the substance can be used in the treatment of biological bacteria, as shown in Table 3.

CONCLUSION

The prepared compounds can be used to manufacture some drugs against bacteria.

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