

Indexed, Abstracted and Cited: [ISRA Journal Impact Factor](#), [International Impact Factor Services \(IIFS\)](#), [Directory of Research Journals Indexing \(DRJI\)](#), [International Institute of Organized Research and Scientific Indexing Services](#), [Cosmos Science Foundation \(South-East Asia\)](#), [International Innovative Journal Impact Factor](#), [Einstein Institute for Scientific Information {EISI}](#), [Directory of Open Access Scholarly Resources](#), [Science Indexing Library \(UAE\)](#), [Swedish Scientific Publication \(Sweden\)](#), [citefactor.org](#) [journals indexing](#), [Directory Indexing of International Research Journals](#)

World Journal of Biology and Medical Sciences

Published by Society for Advancement of Science®

ISSN 2349-0063 (Online/Electronic)

Volume 3, Issue- 2, 111-116, April to June, 2016

Journal Impact Factor: 4.197



WJBMS 3/02/25/2016

All rights reserved

A Double Blind Peer Reviewed Journal / Refereed Journal

www.sasjournals.com

wibmedsc@gmail.com / wjbms.lko@gmail.com

RESEARCH PAPER

Received: 28/03/2016

Revised: 15/04/2016

Accepted: 16/04/2016

Bio Studying of Various (Aromatic and Aliphatic) – Sulfur Compounds

Rasha Neama Husein

Ministry of Education, Iraq

ABSTRACT

This work deals with bio- studying of some sulfur compounds which prepared in previously studying in our paper, we studied biological activity for synthesized compounds in this work which we prepared them in our paper represented in sulfone and sulfide compounds which have a wide range of biological properties and due to its potent and significant pharmacological activities.

Keywords: Aliphatic, Aromatic, Pharmacological activities, Sulfone and Sulphide Compounds.

INTRODUCTION

Oxo – Sulfide compounds play an important role in biological system which have important biological properties and synthetic compounds which used in various studies and past papers, especially in medicinal chemistry with drugs and a grow chemical research and development.

Some of past papers on the synthesis and biological activities of the Sulfone compounds appeared particularly after the discovery of several broad spectrum anthelmintic compounds (Naghm and Rasha 2015, Kasim et al., 1999, Desai and Desai, 1993 and Gandhi and Kulkarani, 1999).

The biological activity of any compound depends on its molecular structure, the compounds containing the (sulfur, sulfone, sulfide, sulfoxide) - moiety exhibit a wide range of biological activities (Raman and Ravichandran, 2003 Pelczar, et al., 1998 and Haidne, 1990). From these classes of sulfur heterocycles, the synthesis of new derivatives of sulfone, sulfide have been attracting considerable attention because of various pharmaceutical properties like antioxidant, antifungal, anticancer, DNA-Inhibitory activity, HIV- Inhibitors and other applications in medicine field and synthetic chemistry field (Cleare, 1974, Singh, et al., 1985, Pandit, 1995, Seigel and Martin, 1982).

MATERIALS AND METHODS

All chemicals and instrumentals carried out in college of education, biological studying carried out in Bio – Lab in Biological Department.

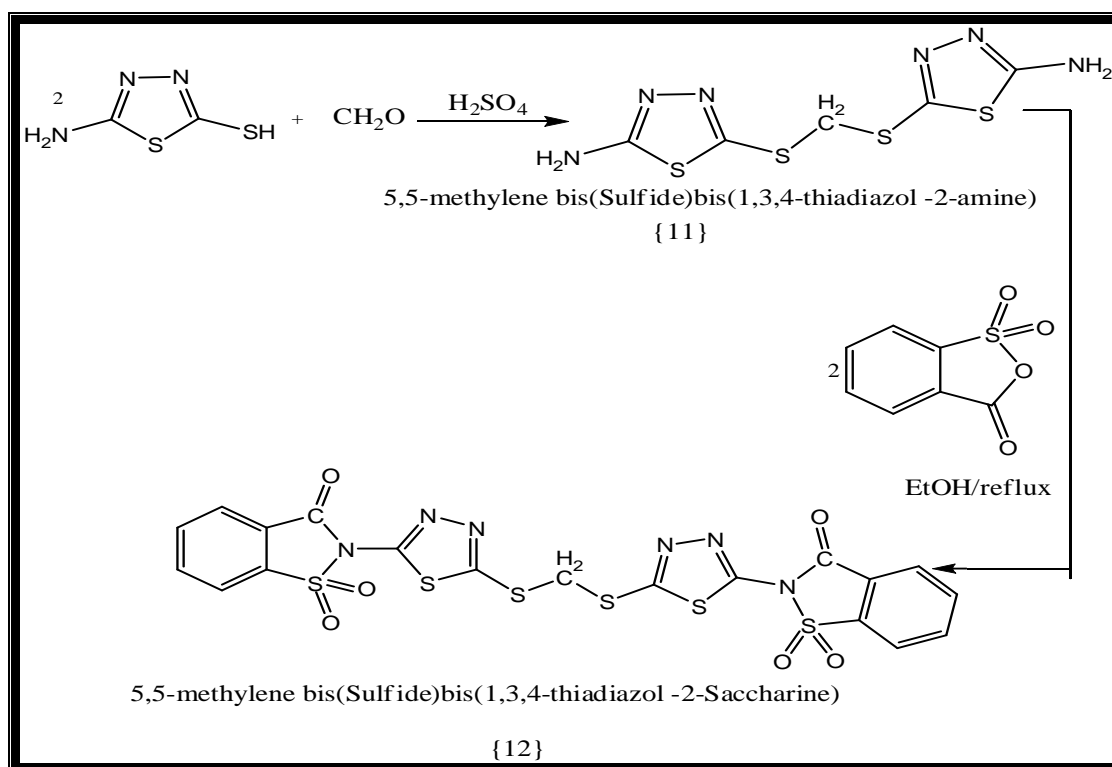
EXPERIMENTAL PROCEDURES

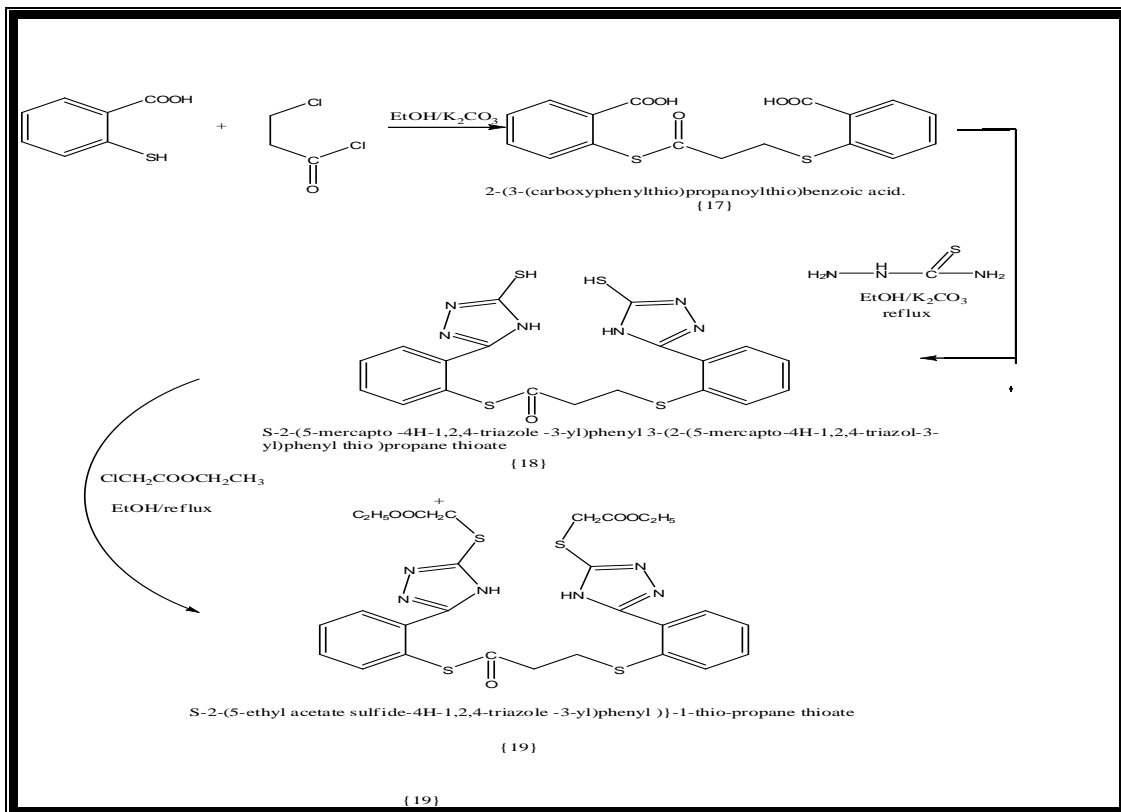
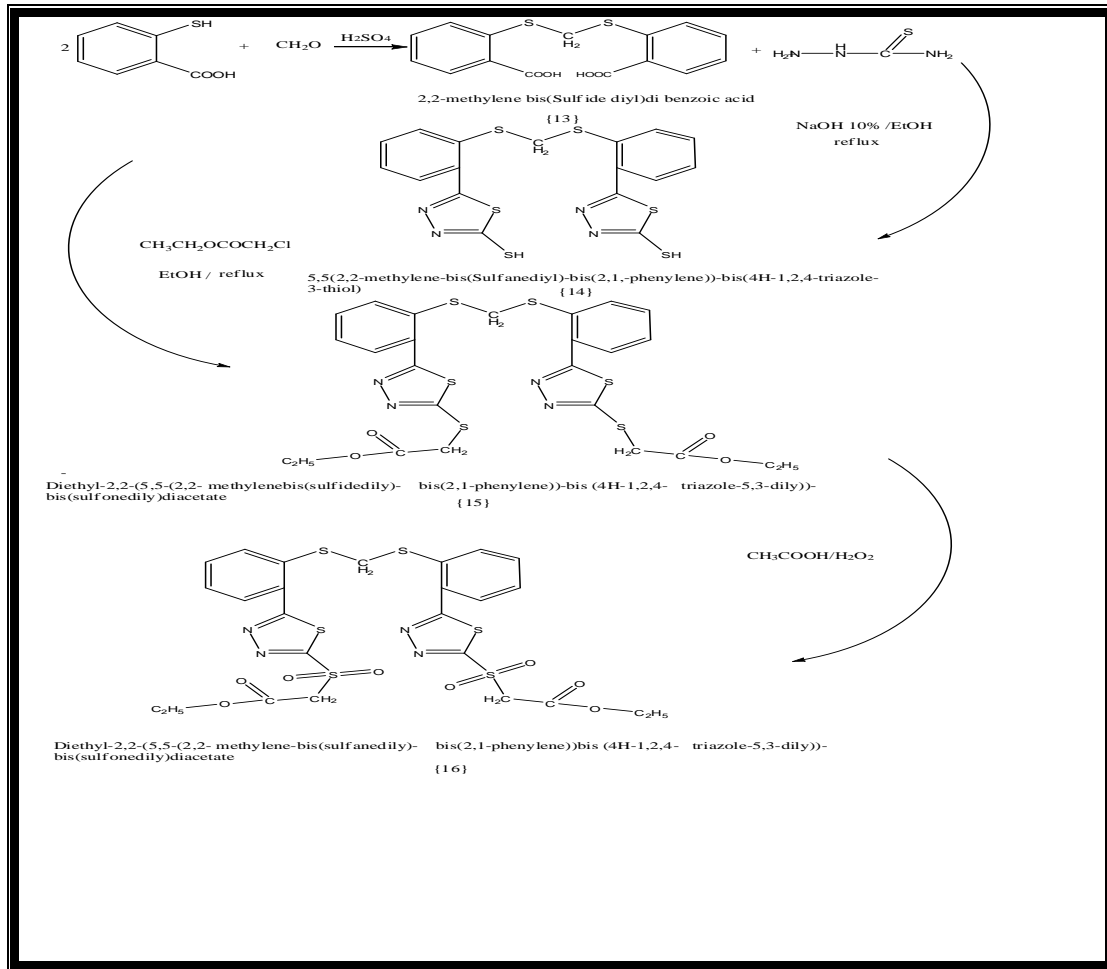
Antibacterial and Antifungal assay

The biological activities of synthesized compounds have been studied for their antibacterial and antifungal activities by agar via biological methods. The antibacterial and antifungal activities were done at 200 mg/ml concentrations in DMO solvent through using three types of bacteria (*Bacillus subtilis*, *Pseudomonas aeruginosa* and *Salmonella typhi*) and two types of fungi (*A. niger* and *P. chrysogenum*). These bacterial strains were incubated for 24 hr at 37°C and fungi strains incubated for two days at 37°C.

Synthesized Compounds in our Past Paper

In our previously, we synthesized 9 compounds, but we will study the biological activity for them in this work.





RESULTS AND DISCUSSION

In past paper of our work, we synthesized these oxo - sulfur compounds but now we will study of antimicrobial activity against three types of bacteria and two types of fungi .

Antimicrobial Assay

The antimicrobial results are listed at table (1). From results of antibacterial studies it was found to be potentially activity against all types of bacteria and fungi . While antifungal activity was listed in table (2). It is evident from the results that the biological activities of all compounds have high biological activity which inhibit the growth of bacteria and fungi.

Table 1. Antibacterial Activity of Compounds (Inhibition Zone in (mm) of Compounds [11– 19] in Concentration (200 mg.ml-1).

Comp. No.	<i>Pseudomonas aeruginosa</i>	<i>B. subtilis</i>	<i>Salmonella .typhi</i>
{11}	28	22	20
{12}	26	24	20
{13}	24	20	20
{14}	26	22	26
{15}	18	24	20
{16}	24	24	20
{17}	28	26	20
{18}	26	24	26
{19}	26	28	26

The synthesized compounds showed excellent activity against bacteria and fungi.

Table 2. Antifungal Activity of Compounds [11– 19] in Concentration (200 mg.ml-1).

Comp. No.	<i>A. niger</i>	<i>P. crysogenum</i>
{11}	24	22
{12}	28	24
{13}	20	22
{14}	16	14
{15}	18	16
{16}	24	18
{17}	26	20
{18}	22	20
{19}	22	22

The higher activity of compounds [14, 18 , 17, 19] may be due to the fact that, is an essential micronutrient during transcription and transformation of nuclei Acids which shown to inhibit cellular protein and RNA synthesis, they included some groups like sulfone with sulfur 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 (Seigel and Martin, 1982, Muruganandama, et al., 2013, Samadhiya and Halve, 2001, Wilson and Givold, 2001) 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 sulfur compounds. Hydrogen bonding and the antimetabolite action of the compound may be an important factor in antimicrobial activity.

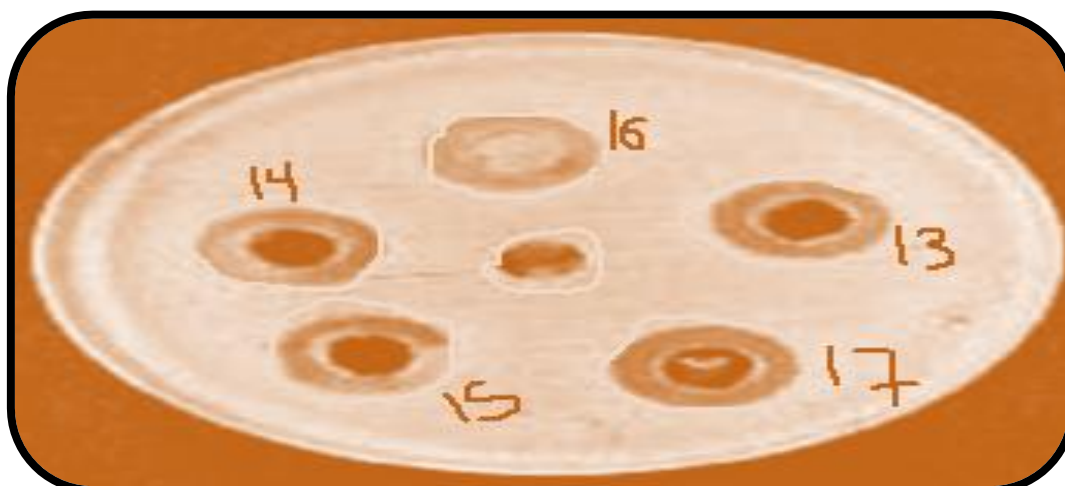


Plate 1. Antibacterial activity - *Salmonella typhi*.

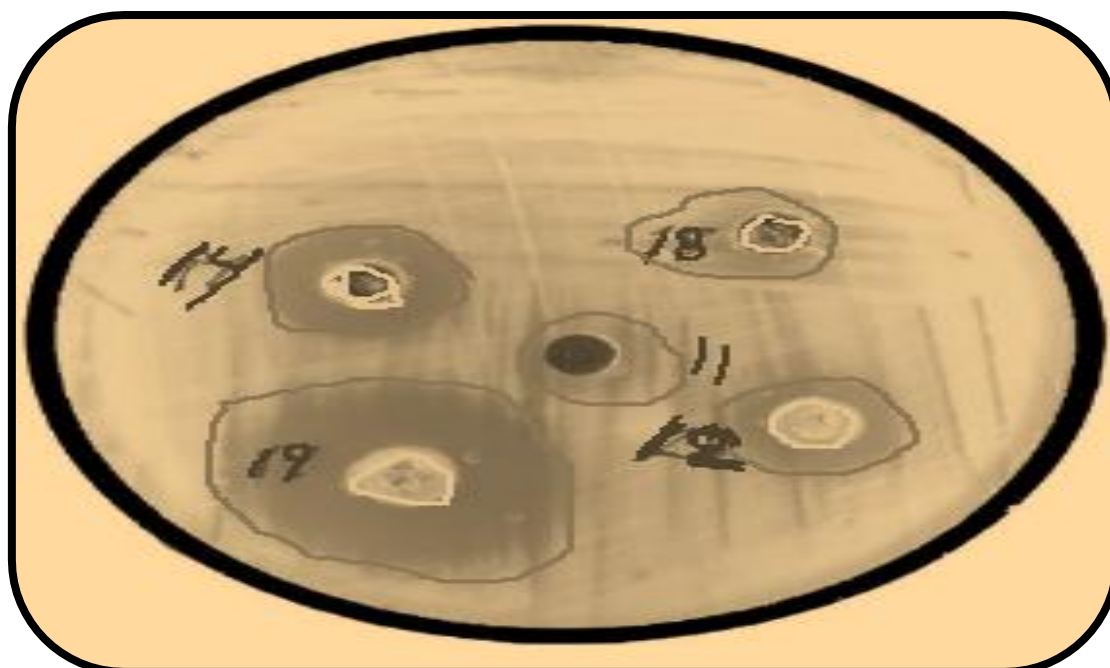


Plate 2. Antibacterial activity – *B. subtilis*.

ACKNOWLEDGEMENTS

I would like to appreciate Dr. Nagham Aljamali and Dr. Samer Aljaberi for provide all measurements in this work.

REFERENCES

- Nagham Aljamali and Rasha Neama (2015).** *International Journal of Biological Research and Development*. 5(1).
- Kasim, A. N. M., Venkappayya, D. and Prabhu, G. V. (1999).** *J.Indian Chem. Soc.*, 76, 67.
- Desai, P. S. and Desai, K. R. (1993).** *J. Indian Chem. Soc.*, 70, 177.
- Gandhi, J. B. and Kulkarani, N. D. (1999).** *Polyhedron*, 18, 1735.
- Raman, N. and Ravichandran, S. (2003).** *Asian J. Chem.*, 15, 255.
- Pelczar, M. J., Chan, E. C. S. and Krieg, R. N. (1998).** *Microbiology*, 5th edn., (New York).
- Haidne, L. Coord (1990).** *Chem. Rev.*, 99, 253.
- Cleare, M. J. Coord. (1974).** *Chem. Rev.*, 12, 349.
- Singh, B., Singh, R. N. and Aggarwal, R. C. (1985).** *Polyhedron*, 4, 401.
- Pandit, L. (1995).** *J. Indian Council Chem.*, 11, 57.
- Seigel, H. and Martin, R. B. (1982).** *Chem. Rev.*, 82, 385.
- Muruganandama, L., K. Balasubramaniana, K. Krishnakumarb and G. Venkatesa Prabhu (2013).** *Int. J. Chem. Sci. Appl.*, Vol 4, Issue 1, pp 56-67.
- Samadhiya, S. and A. Halve (2001).** *Oriental Journal Chemistry*, 17(1), 119-122.
- Wilson, C.O. and O. Givold (2001).** Text book of organic Medicinal and Pharmaceutical Chemistry, 5th Ed.

Corresponding author: Dr. Rasha Neama Husein, Assistant Lecturer, Ministry of Education, Iraq.

Email: dr.nagham_mj@yahoo.com