University of Babylon
Faculty of pharmacy

Graduation research
Supervised by Dr. Aseel Fadhil Kareem
Submitted by:
Rusul Haitham Fadhil
Rawan Mahdi Kadhim
Ayat Alaa Abd Alhussuen
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Synthesis of different Antibiotic compounds From (Mefenamic Acid) derivative and study their Antimicrobial activity

شـــــكر و أهـــــداء

نحمد الله عز و جل الذي وفقنا في إتمام هذا البحث العلمي، و الذي ألهمنا الصحة و العافية و العزيمة فالحمد لله حمدا كثيرا نتقدم بجزيل الشكر و التقدير إلى الأستاذة الدكتورة المشرفة " أسيل فاضل " على كل ما قدمته لنا من توجيهات و معلومات قيمة ساهمت في إثراء موضوع دراستنا في جوانبها المختلفة، كما نتقدم بجزيل الشكر إلى أعضاء لجنة المناقشة الموقرة.

و نهدي هذا العمل المتواضع إلى: الوالدين الكريمين و إلى كل من لم يدخر جهدا في مساعدتي و إلى كل من ساهم في تلقيني ولو بحرف في حياتي الدراسية .

Abstract:

In this study mefenamic acid derivative used to prepare 5-membrane heterocyclic ring and examine their biological activity against one isolated streptococcus bacteria of one type (G+), by using three different concentration (10, 20, 30 mg.ml-1), which is highly effective in its biological activity because it's contain a five membrane heterocyclic ring in their structure therefore this have biological and pharmacological functions.

Keywords:

Mefenamic Acid derivative, 5- membrane heterocyclic ring, biological activity.

Introduction:

Heterocyclic compound is the class of cyclic organic compounds those having at least one hetero atom in the cyclic ring system. Plays a fundamental role in the medicinal chemistry and serves as a key template for the development of various therapeutic agents including broad spectrum antibacterial drugs. (1) According to statistics, more than 85% of all biologically-active chemical entities contain a heterocycle (2). One of effective heterocyclic compound is 5-membrane heterocyclic ring which is found in natural and unnatural products. This heterocyclic structure has diverse pharmacological activities such as antibacterial. Antifungal, anticancer and anticonvulsant (3). PYRROLIDINE: Also known as tetrahydropyrrole, It is a cyclic secondary amine (4). Has an Antibacterial , which has also been studied using some types of bacteria, some of its derivatives were found to have good antibacterial activity (5).

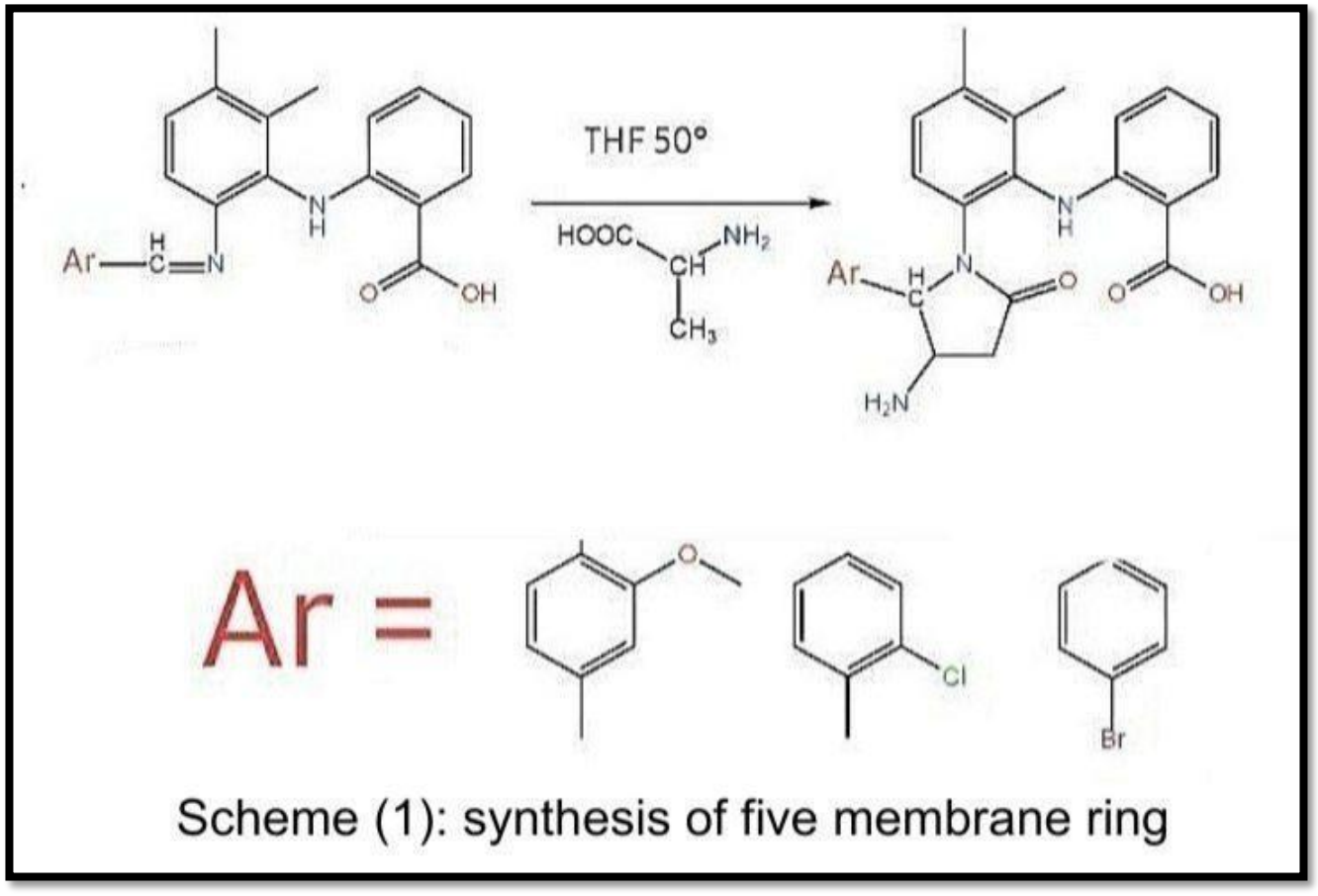
MEFENAMIC ACID: Is a NSAID (6)(7) and is known to be a derivative of Anthracitic Acid (8)(9), it is an analgesic (10), anti-inflammatory and antipyretic drug (11) widely utilized to treat Moderate and light pain and also utilized for treating rheumatoid arthritis, Osteoarthritis and muscular-skeletal condition (12).

SCHIFF BASES: Are the compounds carrying imine or azomethine (–C=N–) functional group. Schiff bases have gained importance in medicinal and pharmaceutical fields due to its variety of applications, antitumor, in the biological engineering and anticancer for activity (13)(14) Schiff bases are also used as catalysts, intermediates in organic synthesis (15). Which why it's synthesized in this study.

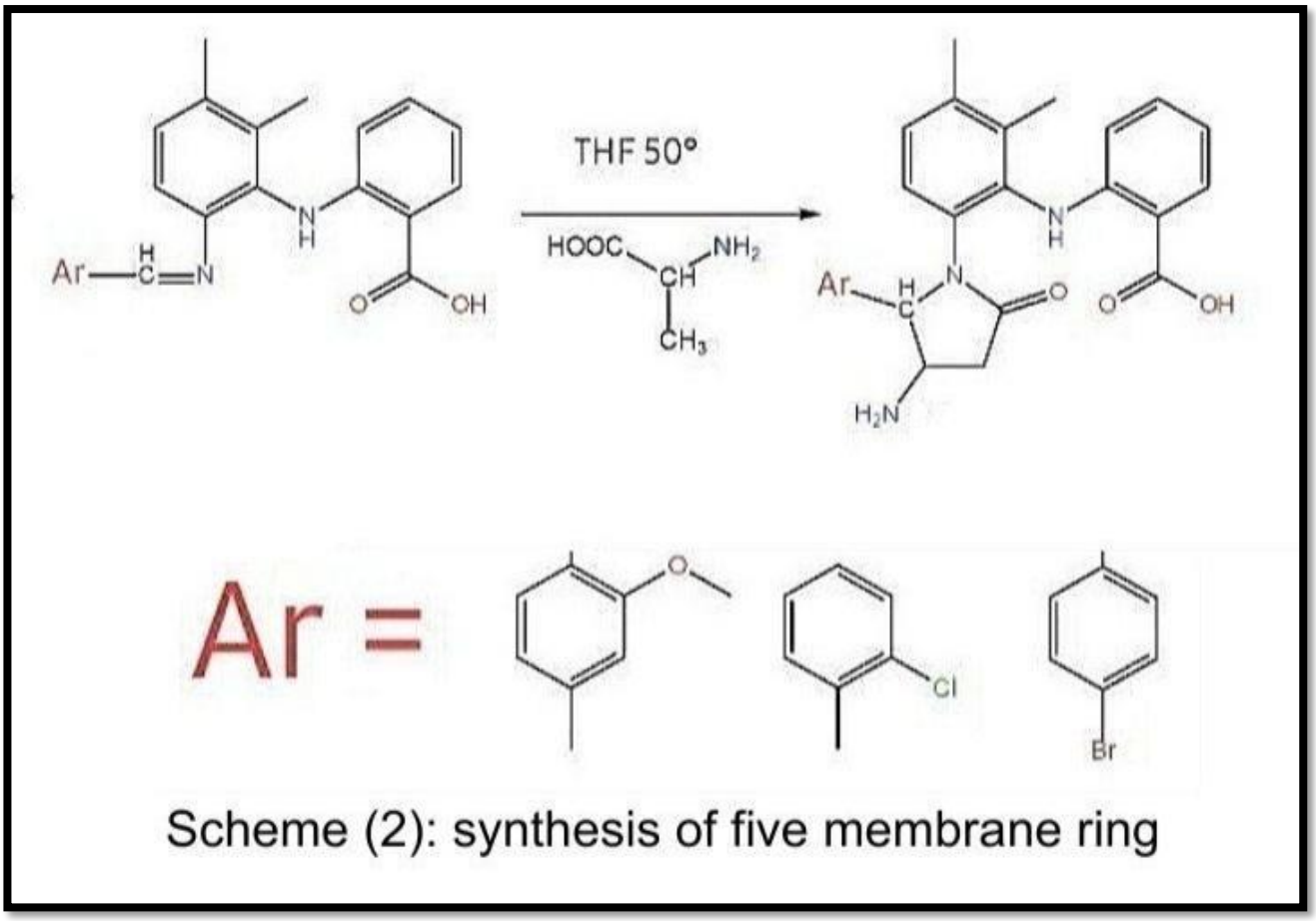
Material and methods:

CHEMICAL STUDY:

1. 0.03 mg of mefenamic acid and 20 ml of ethanol was mixed in a conical flask and was stirred and heated for 15 min.
2. 2 Drops Geranylgeranoic acid of was added and The solution was stirred with heat in the distillation flask for 6 hr
3. In the end of this step shiff base is synthesized, which illustrated in scheme (1)
4. aldehyde was added to the solution in the distillation flask then stirred with heat for 12 hr.
5. Tetrahydrofuran (TFH) solution was to the solution in the distillation flask then stirred with (50°) for 16 hr.
6. In the end of this step five membrane ring is synthesized. Which illustrated in scheme (2).
7.



Scheme (1): synthesis of five membrane ring



Scheme (2): synthesis of five membrane ring

Biological study:-

The chemical materials such as A gar for bacteria and some instrumentals carried out in In Bio-lab in collage of science department of biology, biological activity carried out in college of medicine.

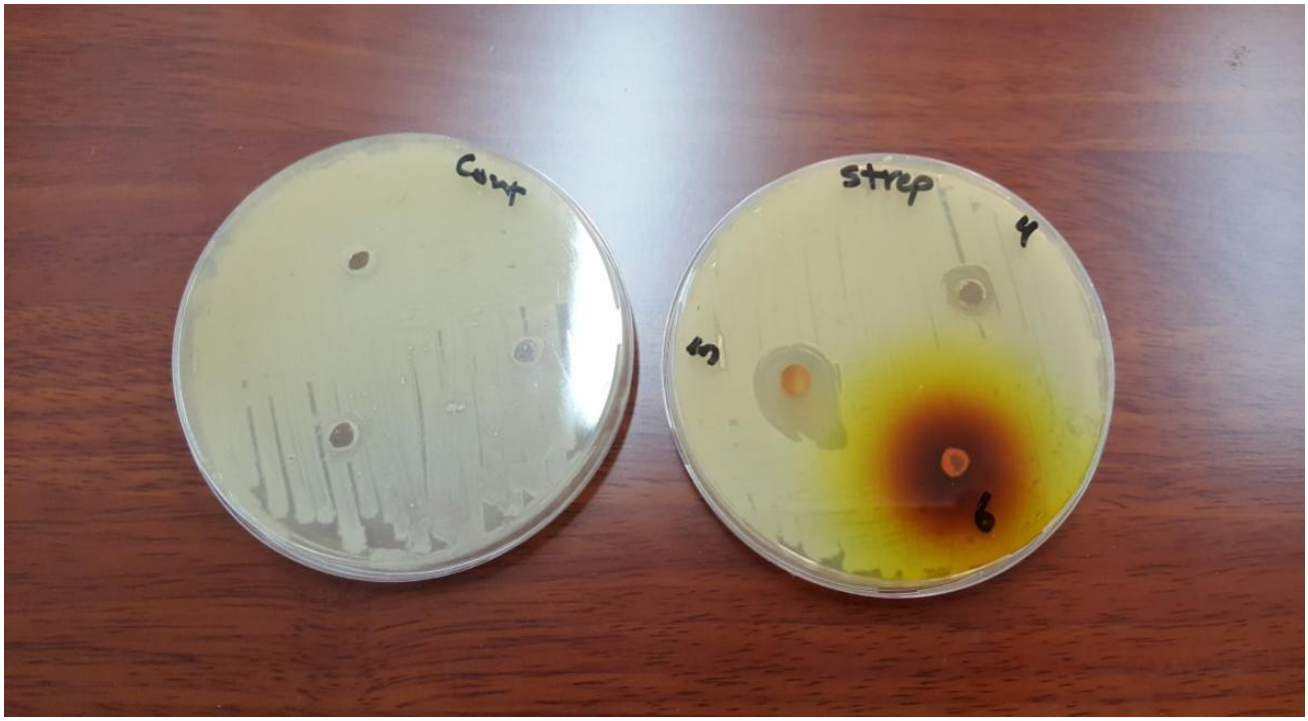
Solvent that used in our study is DMSO (Dimethyl Sulfoxide) an organosulfur compound. It is a colorless liquid and is a powerful solvent. It dissolves both polar and non-polar compounds.(16).

30, 20, 10 mg/ml was prepared by dissolving the prepared compound in DMSO solvent.

The biological activities of prepared compound have been tested for antibacterial activity by agar with biological methods[12], it was tested at three conc. (10, 20, 30 mg.ml-1) dissolved in (DMSO) as a solvent by using one types of bacteria (streptococcus). These its strains incubated for 24hr at 37Co.

Results and Discussion :

Conc. (mg.ml-1)	Streptococcus inhibition zone (mm)
10	14
20	15
30	20



According to studying the biological activity for prepared compound to (anti bacteria) in the tablet, which this results appear it was found biological activity against (G+) bacteria. from the results the biological activity is ok of this compound has high that biological activity which inhibit the growth of bacteria.

Mefenamic acid is an aminobenzoic acid that is anthranilic acid in which one of the hydrogens attached to the nitrogen is replaced by a 2,3-dimethylphenyl group.

Our research project will focus on the synthesis and characterization of a different breed of antibiotics – anthranilic acid (mefenamic acid) derivatives To obtain the desired compound we have to add Schiff Bases [2ArCOH] And then

synthesis five membrane ring which will have biological activity Then we tested the biological activity on streptococcus bacteria

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