



NOVELTY EFFECT OF EXTRACT OF ALCOHOL FOR *MATRICARIA CHAMOMILLA* ON BACTERIAL GROWTH

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Abstract

The study were aim to evaluated then discovered a inhibitory effect for, extract, alcohol for *Matricaria chmomilla* on growth bacterial due to the extract plant contain active compound and compare between the diethyl ether and methanol (70%) for, extract, of *Matricaria chmomilla* to founded the strong inhibitory effect on bacterial growth.

In the present method was prepared the extract of *Matricaria chmomilla* by used 2 solvent diethyl ether and methanol, while the Bacterial strains which used for studies included *Staphylococcus aureus* (MRSA), *Escherichia Coli* ATCC, *Klebsiella pneumonia* ATCC, *Salmonella typhi* ATCC and the sensitivity test be present done in bacterial growth. The medium for bacterial was preparation by different method and test for antioxidant by disc diffusion test.

In present study, the result was suggested the very strong inhibitor for extract diethyl ether for *Matricaria chmomilla* on *Staphylococcus aureus* (20-30mm) and the extract was achieved 6.5% and good effect on *Escherichia Coli* and *Salmonella typhi* (15-20mm) while the weak effect inhibitor was achieved by methanol (70%) for *Matricaria chmomilla*.

A result in the paper were suggestion that the novel antioxidant effect for, extract, diethyl ether, for, *Matricaria chmomilla*, on bacterial growth and, the extract, were useful to, treatment, for infection, disease were, caused by bacterial.

Key words : Flower plant of *Matricaria chmomilla*, bacterial, methanol (70%), diethyl ether, media culture, biochemical test.

Introduction

The most important are medical plants to treat of bacterial infections because it has different antibacterial compounds and the medicine plant don't have side effects against human (Aljanaby and Aljanaby 2018). *Matricaria chmomilla* (*M. chmomilla*) is called *Matricaria recutita* as known as German Chamomile, the family of Chamomile belong to Asteraceae and is used as antibacterial in the world like in Europe and Asia (Mehmood *et al.*, 2015). The flower of *Matricaria chmomilla* is used in medical treatment different disease like gastrointestinal infection, antipyretic, cold and diarrhea (Issac 1989, Crellin, Philpott *et al.*, 1990). The enormous, number of therapeutic, and active, compounds is, present in *Matricaria chmomilla*. In fact the, active biological components of *M. recutita* including terpenoids and flavonoids, glycoside which are, assumed to be, responsible, in part for, such a wide range, of natural,

activities (Kazemi 2015). The present study is aim to evaluate the active inhibitor effect on positive and negative gram on bacterial growth and determine of active compound in the flower of *Matricaria chmomilla*.

Materials and Method

The parts of *Matricaria recutita* were grounded, then the powder was exposed to hydro distillation for three hour, in an glass Clevenger-type apparatus according to the method were recommended by the studies Pharmacological (Goudarzi *et al.*, 2011). The, extract, of *Matricaria chmomilla* were preparation by were weighted of 50 mg from plant and were dishevelment in 50 ml from solvent in, clean and, sterile, conical flask and were, added different solvent like, (70% methanol and Diethyl ether to the *Matricaria recutita* extract, then the conical flask were put in sterile beaker for 3 hour and filtration the extract plant by Whatman No. 1 to obtain the purity of, extract plant, and were put in incubator for 24 hour in 37c, then in oven instrument at 40c to

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concentrated extract plant, while the Bacterial strains which used for studies included *Staphylococcus aureus* (MRSA), *Escherichia coli* ATCC, *Klebsiella pneumoniae* ATCC, *Salmonella typhi* ATCC, and the sensitivity test be present in bacterial growth (Ibrahim, Yang *et al.*, 2011).

Prepare, of Culture, Media

The culture, media were prepared according to the manufacturer instruction, then sterilized by autoclave.

Blood Agar

A blood agar 40 gm of base was suspending in 1000 ml of a distilled water due to the media were prepared, and then were heated, to boiling and, sterilized in the autoclave, and, 10 % of, fresh, human, blood, was, added, after cooling, to 45°C, that poured in, sterilized Petri dish. It was applied for identification the colonial morphology, and hemolysin production.

Muller-Hinton Agar

The suspending 38gm of a Muller-Hinton agar were dissolve in 1000 ml of a distilled water due to the media were prepared, and then heated to boiling and sterilized via the autoclave, that poured in sterilized Petri dish. It was useful for demonstration of antibiotic susceptibility test of bacterial isolates.

MaCconkey Agar

In the manufacturer's instruction, the media were prepared and then heated to boiling and sterilized via the autoclave, that poured in sterilized Petri dish. It was applied for identify the colonial morphology and lactose fermentation.

Peptone Water

The suspending 8gm for a peptone water were dissolve in 1000 ml of a distilled water for the media were prepared due to the manufacturer's instruction, and then heated to boiling and sterilized via the autoclave, that poured in sterilized plane tube. It was useful to detect in dol production.

Tests for Antibacterial Activity

In the present study the microorganisms were used to measure antibacterial activity by four bacterial *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella pneumoniae* and *Salmonella typhi* human pathogenic bacteria.

Disc-Diffusion Test

The disc, diffusion, method, applied, by, the compounds were, examined, by using 4 mm, filter, discs, then the Bacteria were, cultured, overnight, at 28°C, medium, and, that adjusted with sterile, saline to a

concentration of, 1.0×10^5 cfu/mL. The suspension was, additional to the top of, agar (6 mL) and was dissolved, in petri, dishes, (2 mL/agar plate), with, solid, peptone, agar. The filter discs, with essential, oils and main, constituents, (1.0 µg/mL) were, located, on agar plates, (one disc per agar, plate). After 24 hour of incubation at, 28°C for bacteria the, diameter of the growth, inhibition zones, was measurement. The Streptomycin were, useful for as a positive, control, then the 1 µl was applied, to the discs from, stock solution (1 mg/mL). Test were prepared, in duplicate; three, replications, were prepared,, for each oil and, for each component (Sokoviæ, Vukojevi *et al.*, 2009).

Biochemical test

Flavonoid test was discovered by alkaline test, Shinoda test, sterol test, glycosides test, while alkaloids test was done by Mayers test, tannins test was discovered by ferrous chloride test, terpenoid test and antioxidant test (JAYMAND and REZAEI 2002).

Results and Discussion

Effect of plant extract on Bacterial Growth

In this study the effect of Diethyl ether for *Matricaria chmomilla* was appeared active inhibitor effect (20-30mm) for growth *Staphylococcus aureus*

Table 1: The inhibitor effect of *Matricaria chmomilla* on bacterial growth by Disc-Diffusion method.

Bacterial	Methanol	Diethyl Ether
<i>Staphylococcus aureus</i>	+	++++
<i>Escherichia coli</i>	++	++
<i>Klebsiella pneumoniae</i>	+	++
<i>Salmonella typhi</i> .	++	++

The symbol (-) was represented no inhibitor, while (++) middle inhibitor (10-15mm), (+) weak inhibitor (7-10mm), (++++) strong effect inhibitor (20-30mm).

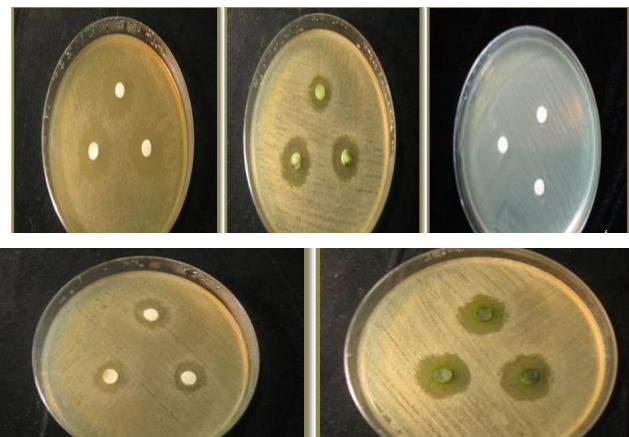


Fig. 1: The inhibitory effect of extract *Matricaria chmomilla* on growth bacterial.

Table 2: Chemical scanning for the extract of *Matricaria chmomilla*.

Plant	Flavonoid		Sterol	Glycoside	Alkaloids		Tannins		Steroid	Terpenoid
	Alkaline	Shinoda			Mayers	Wagners	FecI ₃	Gelatin		
<i>Matricaria chmomilla</i>	+	+	-	+	+	+	+	+	+	+

The symbol (+) was represented the active material founded, while (-) was not founded .

seen in table 1. While the weak inhibitor effect for growth *Escherichia coli*, *Klebsiella pneumonia*, *Salmonella typhi*.

The extract of diethyl ether for *Matricaria chmomilla* was showed very strong effect inhibitor (20-30mm), for growth *Staphylococcus aureus* in fig. (1-1) while the strong effect inhibitor (15-20 mm) for, growth *Escherichia coli*, *Klebsiella pneumonia* and *Salmonella typhi*, this result were agreement with Dulger and Gonuz (Dulger and Gonuz 2004).

1. Solvent effect for extract active plant on bacterial growth.
2. Diethyl ether extract effect on *Staphylococcus aureus*.
3. Diethyl ether extract effect on *Escherichia coli*
4. Methanol extract effect on *Escherichia coli*.
5. Diethyl ether extract effect on *Salmonella typhi*
6. Methanol extract effect on *Salmonella typhi*.

Scanning of chemical and alcoholic extractors for used medicinal plant by using different reagents

The extract, of *Matricaria chmomilla* was scan to discover active inhibitory effect on bacterial growth by color reaction or formed precipitation to distinguish the active material in The extract of *Matricaria chmomilla* as such in table 2.

In test of flavonoid for, extract of *Matricaria chmomilla* by alkaline test, is formed yellow, precipitation, that was indicator, the active flavonoid, was presented, and the test flavonoid is, conformed by shinoda test was formed red color, while the sterol test was not, formed red color for extract plant, another the Glycoside test was scan by formed red precipitation that indicator glycoside compound was presented, and the alkaloid, tannins, terpenoid and steroid compound was presented and was agreement with Essaw and Srour (Essawi and Srour 2000).

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