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EVALUATION OF ANTI -BACTERIAL ACTIVITY OF *FOENICOLUM VULGARE (L.)MILL* EXTRACTS ON SOME SPECIES OF PATHOGENIC BACTERIA

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ABSTRACT

The inhibitory effects of five extracts (50 % aqueous ethanol, acetone, ethylacetate, chloerform and water) from *Foeniculum Vulgare (L.) Mill,* on the growth of Gram-positive bacteria (seven isolates) and Gram-negative bacteria (seven isolates) were by using the paper disc plate method (1). All the investigated extracts exhibited various degree of inhibition on all tested bacteria, except 50% aqueous ethanal extract which was unable to in hibit the growth of *Bacillas. subtilis* bacteria.

INTRODUCTION

Feonicalum Vulgare (L.) Mill (umbelliferae) is found in wild state of world, in many parts of Europe and Asia.[2] Also found in Iraq especially northern Iraq particurly in the region near Sulaimaniya and Mosul.

This plant have a wide pharmacological application, for complaints of chest, kidney and spleen.[3] The aim of this study is to exmine inhibitory effect of water, 50 % aqueous ethanol, acetone, ethylacetate and chloroform extracts of *Feoniculum Vulgare (L.) Mill* (umbelliferae) plant.

MATERIALS AND METHODS

Fennel seeds was collected from spices aromatics shops in Basrsh (Iraq). Unless other wise stated all Solvents used were of analytical grade and with out further purification.

Extraction of fennel seeds.

One hundred twenty five grams of ground seeds of fennel, were extracted with (250)ml of distilled water, 50% aqueous ethanol, acetone, ethylacetate and chloroform respectively. Then then

sterring at room temperature for (24) hours.[4] The solvents were removed by rotaroy evaporator under vaccum at 40C° to produce the extracts.[5]

Antibacterial activity

All extracts were tested for their antibacterial activity by agar diffusion technque.(1) The plates were incubated at (37C°)for (24) hours and zones of in hibition were measured in mm.[6]

RESULTS AND DISCUSSION

The inhibitory effects of five extracts (water, 50% aqueous ethanolethylacetate, acetone and chloroform) of fennel seeds against seven Gram positive and seven Gram negative microorganisms were studied. The data (Table 1) for inhibition zones of various bacterial isolates indicate that all these extracts showed promising antibacterial activity against both Gram positive and Gram negative micro organism , except the 50% aqueous ethanol seed extract, which showed no effect on the. *B.subtiliis* and *Cl. Perferigens* growth.[7]

Water seed extract was found to have high effect against Gram positive and Gram negative bacteria, than 50% aqueous ethanal extract, except the effect against *Staph. epidermides, Corynebacterium pyogenes* and *proteus sp.* 50% aqueous ethanol have little more effect than water extract.[8]

Comparison between the effects of extracts obtained by organic solvents, the results in table 1 showed that chloroform extract have the highest effect against the growth of most microorganisms under investigation except in case of *B.subilis, Ps. aeruginosa, E. coli* and *Cl. Perferingens* and this effect due to the presence of essential oils in the chloroform extract of fennel [9] reported that essential oils of thyme cinnaon were highly active against both Gram - positive and Gram negative bacteria.

The results obtained during this study also showed that water seed eatract had more inhibitory effects aginst the Gram negative bacteria, than the other extract except in case of *proteus sp.*[10]

The anti-bacterial activity against both groups Gram positive, negative bacteria and zones of inhibition showed in pictures from 1 up to 14 .

Table (1):- Primary screening of fennel extracts against some Gram-positive and Gram-negative bacteria

	Microoganism	Zone of inhibition for extracts (mm)				
	Gram – positive bacteria	I	II	III	IV	V
1	*Staph. aureas*	14	12	16	21	21
2	*Corynebacterium pyogenes*	13	14	12	8	16
3	*Staph. epidermides*	13	13	11	7	15
4	*Str. fecalis*	20	20	23	14	27
5	*Str. viridance*	22	10	8	14	19
6	*B. subtilis*	10	0	16	21	12
7	*Cl. Perfringens*	10	0	15	20	10
	Gram –negative bacteria					
8	*P. Aruginosa*	16	13	11	7	11
9	*E. Coli*	33	14	10	17	9
10	*Proteus sp.*	6	11	11	7	17
11	*Enterobacter sp.*	40	13	26	16	16
12	*Pusteurella multicida*	39	12	25	15	29
13	*Klebsilla sp.*	32	15	28	20	28
14	*Mycobacterium. pneumoniae*	30	13	25	21	29

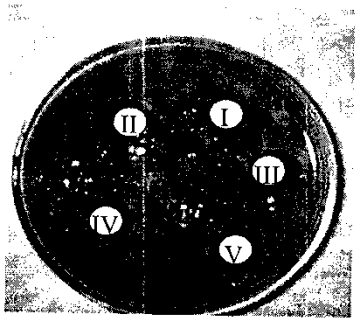
I = water

II = 50% aqueous ehanol extract

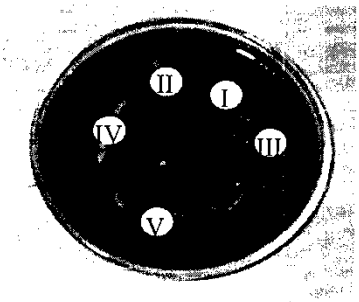
III = Ethylacetate extract

V = chloroform extract

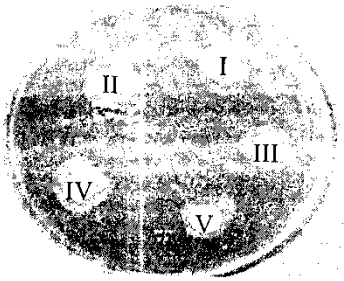
IV = Acetone extract



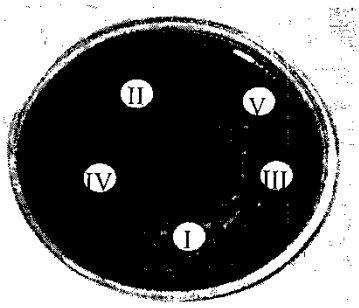
1) *Staph. aureas*



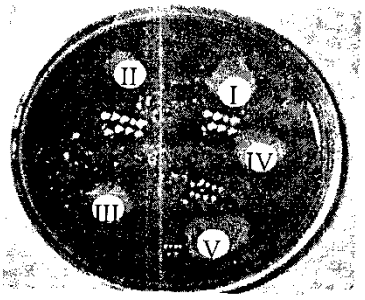
2) *Corynebacterium pyogenes*



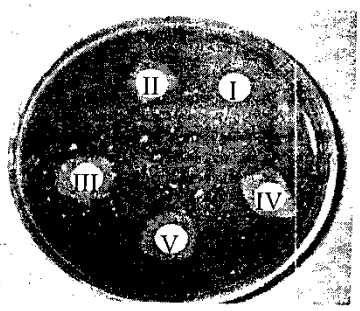
3) *Staph. epidermides*



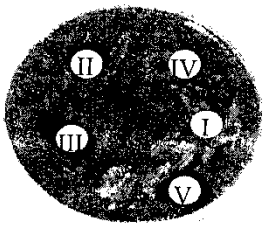
4) *Str. fecalis*



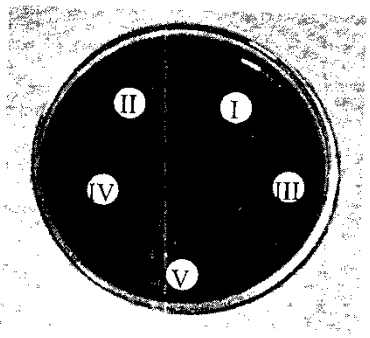
5) *Str. viridance*



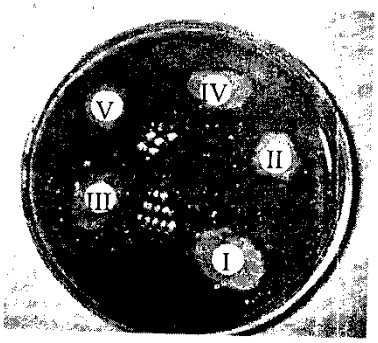
6) *B. subtilis*



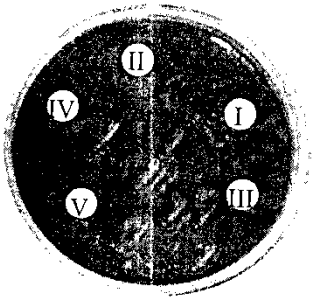
7) *Cl. Perfringens*



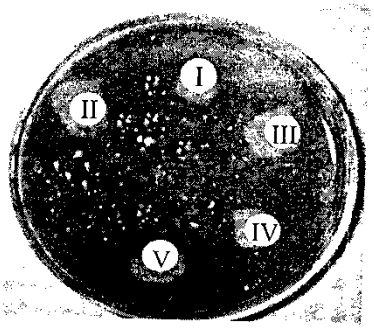
8) *Ps. aeruginosa*



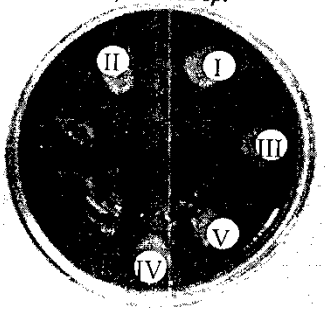
9) *E. Coli*



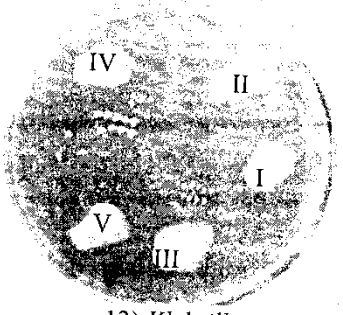
10) *Proteus sp.*



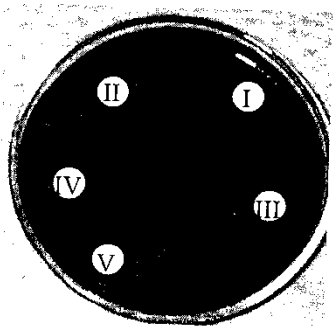
11) *Enterobacter sp.*



12) *Pusteurella multicida*



13) *Klebsilla sp.*



14) *Mycobacterium. pneumoniae*

تقيم فعالية مستخلص حبة الحلوة ضد بعض أنواع البكتيريا المرضية

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الخلاصة

تعتبر حبة الحلو من النباتات العشبية المتواجدة في بلدنا والتي تستخدم لمعالجة العديد من الأمراض كالتهاب الصدر وامتلاء البطن والاضطرابات المعوية وقد تضمنت الدراسة معالجة بعض مستخلصات بذور هذه النباتات على نمو بعض أنواع البكتريا المرضية.

ومن خلال هذه الدراسة تم الإثبات مختبراً على امتلاك المستخلص المائي، 50% من الكحول الاثيلي المائي والايثايل والكلوروفورم الفعالية المضادة لنمو بعض أنواع البكتريا المرضية الموجبة والسالبة لصبغة كرام حيث استخدمت أربعة عشر نوعاً من هذه البكتريا المرضية.

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