

## **The Acaricidal Effect Study of Many Volatile Oils of Some Medicinal Plants Against Hyalomma Ticks.**

**دراسة التأثير القاتل لعدد من الزيوت الطيارة المستخلصة من بعض النباتات الطبية ضد طفيلي القراد جنس Hyalomma.**

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### **Abstract**

Volatile oils of medicinal plants such as thyme(*Thymus vulgare.L*) , anise(*Pimpinella anisum L*) and sage(*salvia officinalis*) plant have anti microbial activity and used for treatment many diseases caused by different microorganisms.

The aim of this study is evaluation and investigation the effect of volatile oil of anise, sage, and thyme plant against Hyalomma ticks.

The treatments of this study were included six treatments are control (ivermectin), anise oil, salvia oil, thyme oil, mixture of volatile oil of these plant and cream which contain volatile oils of these plants.

The result were showed active effect of salvia oil, mixture oils and volatile oils cream, compared with control during all time of experiment, the highest value of main acaricidal effect was obtained at volatile oils cream during (48) and (72) hours, after treatment or application, also the salvia oil and mixture volatile oils were gave highest value with significant differences from control during all experiment time.

The results showed no significant differences at anise and thyme oil and haven't effect activity against hyalomma during experiment.

The value or main acaricidal percentage at mixture and volatiles cream are during (72) hours after application are (100, 100) respectively.

### **الخلاصة**

تمتلك الزيوت الطيارة المستخلصة من نباتات المريمة والينسون والزعتر فعالية مايكروبيولوجية ضد الكثير من مسببات المرضية، مما يشجع استخدامها في علاج الكثير من الحالات المرضية. وقد هدفت هذه الدراسة إلى تقييم التأثير القاتل للزيوت الطيارة المستخلصة من هذه النباتات ضد قراد جنس Hyalomma، شملت هذه الدراسة ستة معاملات هي معاملات السيطرة (Ivermectin)، زيت الينسون، زيت الزعتر، زيت المريمة، خليط من زيت المريمة، الزعتر، والينسون بالإضافة إلى كريم يحتوي على الزيوت الثلاثة أعلاه، ولثلاثة فترات زمنية هي: 24، 48، 72 ساعة بعد العلاج. أشارت نتائج الدراسة إلى فعالية كل من زيت المريمة وخليط الزيوت وكريم الزيوت الثلاثة ضد قراد جنس Hyalomma، وقد اختلفت معنويًا عن معاملة السيطرة Ivermectin خلال الفترات الثلاثة (24، 48، 72 ساعة)، إن أعلى قيمة للتأثير القاتل كانت عند المعاملة بكريم الزيوت الثلاثة، وكانت (100%) مقارنة مع معاملة السيطرة، ولم يكن هناك اختلاف معنوي للمعاملات بزيت الينسون وزيت الزعتر.

## **Introduction**

The medicinal plants such as sage, anise, and thyme plants were used in traditional medicine to treatment different diseases caused by different microorganism (1).

The activity of crude extract of these plant such as leaves, fruits, and roots belong to many different active compounds in this plants (2), the leaves infusion of sage (*salvia officinalis*) its used as gargle for treatment tonsillitis, mouth abscess (3), of the volatile oil of sage have anti microbial activity and used for different skin diseases such as: eczema (4). The infusion of thyme plant used for children diarrhea, dysentery, bronchitis (5), beside the thyme oil have high activity against wide spectrum of fungi and bacteria (6).

The infusion of anise fruits used to treatment digestive systems disease such as flatulent in children and intestinal worms (7).

The oils obtained from leave of thyme and sage are used as flavouring agent and preservative for sweets, soaps, etc... and local application on certain rheumatic pains (8), other studies of other medicinal plants were carried out to investigation the acricidal effect against *Boophilus* genus such as used for aqueous and ethanolic extract to evaluate the acricidal percentage and these results refered to possibility to use the eucaliptuse in *Boophilus* control (9).

In Iraq, the study in this field is limited and the important of this parasite (*hyalomma*) extract effect on animal production, lead to conducted this study to:

- 1- Determine the acricidal effect of sage, anise, thyme oils on *hyalomma* in sheeps.
- 2- Determine the dosage and time application of treatment.

## **Material and Methods**

### **Volatile oil extraction**

Volatile oils of medicinal plants were used in this study were extracted by steam distillation method (10), the leaves of sage, thyme, and anise fruits were obtained from local market and classified by national herbarium of agriculture ministry of Iraq and this study was carried out during April to May (2011) at Veterinary Medicine College of Kerbala University. Ticks were classified in Veterinary Medicine College of Kerbala University.

### **Application of treatments**

After divided the animals (sheep) into six groups by using Completely Randomized Design (C.R.D) with three replications, the treatments were included control (Ivermectin), (Anise Oil), (Thyme oil), (salvia oil), (Anise oil + Thyme oil + salvia oil), (anise + thyme + sage oil) and volatile oils cream. The data were obtained after (24, 48 and 72 hours) from treatments or applications. The data recorded were subjected to analysis of variance and least significant difference (L.S.D) at (0.05) level implemented to compare the means of characters studied. (plate 1)



Group(1)



Group (2)



Group (3)



Group (4)



Group (5)



Group (6)

**Results and Discussions**

Result of application after (24 hours) showed the different percentage of acaricidal effect (Table 1) (plate 2).



Treatment with Ivermectin (1)



Treatment with anise oil(2)



Treatment with Thyme oil(3)



Treatment with Salvia oil (4)



Treatment with mixture of oils (5) Treatment with Cream of volatile oil (6)

The (volatile oils of sage), and mixture (thyme + anise + sage oil) and volatile oils cream were gave significantly effect and differ from control. The values of acaricidal percentage were reached to (40, 90, 50 %) of sage oil, mixture oils and cram respectively. There are no significant differences between anise and thyme oil and gave least acaricidal percentages were reached to (5 %) during first period (24 hours) after treatment or application.

After (48 hours) from application the results showed the significant effect (acaricidal) percentage at sage oils, mixture oil and cream treatments, and the value of acaricidal percentage were reached to (60, 90, 100 %) at these treatments respectively.

There are no significantly differences between anise and thyme oil and gave least value of acaricidal percentage and reached to (6 % , 5 %) of both treatments respectively.

The results of this study after (72 hours) as period after application or treatment showed increasing the acaricidal percentage at sage oil, mixture oils and cream with significant differences from control.

The highest values of activity against hyalomma genus were obtained at oils mixture and cream and reached to (100 %) of both treatments.

**Table (1) mean of acaricidal percentage against hyalomma after (24, 48 and 72 hours) from applications**

Treatments	Medicinal Plants	After 24 hours (%)	After 48 hours (%)	After 72 hours (%)
T 1 (control)	Ivermectin	20 a	30 a	50 a
T 2	Anise oil	5 b	6 b	7 b
T 3	Thyme oil	5 b	5 b	6 b
T 4	Salvia oil	40 c	60 c	70 c
T 5	Mixture of oils	90 d	90 d	100 d
T 6	Cream of volatile oils	50 e	100 e	100 e
L.S.D. 0.05		4.41	6.6	9.42

There are no significant differences between anise and thyme oil during third period (72 hours).

The control treatment (Ivermectin) was given (20, 30, and 50 %) as acaricidal percentage during first, second, and third periods respectively. The more activity was obtained at volatile oils mixture and volatile oils cream may belong to different active compounds of these volatile oils (11).

The sage, thyme, and anise oil have a long history as medicine and still continues in the evolution, they act as anti-oxidant, anti-bacterial, anti-cancer, and anti-fungal activities (12).

These antimicrobial properties of these volatile oils may increase the activity against different parasites such as hyalomma. The more activity of volatile oils cream of all plants that were used in this study agrees with a gel and cream of these volatile oils in other studies that have polyphenolic content demonstrated wound healing capacity (13).

From this study one can conclude that the volatile oils of these medicinal plants contain phenolic compounds that are useful for the treatment of several infections and inflammatory disorders due to parasites and other microorganisms. These results suggest the possibility of using these volatile oils in pharmaceuticals as cream, ointment, skin solution, lotion, powder, mouthwash, gargles, aqueous extract for intestinal worms. Further studies and investigation were needed.

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