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Effect and evaluation of boiled, cold and alcoholic plant extract on parasitic arthropods

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Abstract---The current research included the use of four concentrations (25, 50, 75, 100) for boiled and cold aqueous extracts of peganum harmala seeds and the use of ethyl alcohol concentrations (1.5, 3, 6) to know their effect on adults of the hard tick parasite Ixodidae in Najaf Governorate. Results: The concentration of 100 mg/ml of boiled and cold alcoholic and aqueous extract of the seeds of the plant caused paralysis of hard ticks within (12) (17) hours and their death within (18) hours (23) hours, respectively. While the concentration of (25) mg/ml of the boiled and cold extract of the seeds of the plant group C recorded the paralysis of the hard tick within (22) hours and its destruction within (28) hours. The paralysis of the parasite's movement did not occur during the same concentration of the cold extract of the seed of the ruminant plant. Also, the control group, which was used with distilled water only, did not suffer from paralysis or death. As for the concentration of the alcoholic extract of rue seed plant, the highest fatalities were recorded at a concentration of 6 mg / ml and the lowest at a concentration of 1.5 and for different periods of time. Therefore, we conclude that the use of plant extracts is of great importance in combating and controlling the external parasites represented by hard ticks, with the least material costs in addition to their lack of impact. on the environment.

Keywords---evaluation, boiled, cold, alcoholic, parasitic arthropods.

Introduction

Ticks (Ixodida), a species of insects that belongs to the family of soft ticks (Argasidae) and hard ticks (Ixodidae), and it follows the phylum Arthropoda, description of spiders (Arachnida),] Characteristics of Insect Formal ticks The tick has many morphological characteristics, most notably the following: Size The tick is characterized by its small size; They are the size of a grain of sand, with larva less than a millimeter long, nymphs the size of a pinhead and 1-2 mm long, and

adult ticks 2-10 mm long. Ticks are gray, brown, black, or reddish-brown or yellowish in color. The face of a tick consists of multiple parts that it uses to draw blood into its internal system. Body Shape Young ticks have an oval, teardrop-shaped body, and an adult's body is round and stocky. Legs and wings Ticks develop two legs when they are born, in addition to developing six legs after puberty; Thus, it has eight legs, and it does not have any wings or antennas. The ticks are universal in distribution and the most prominent families of ticks:

- Hard ticks (Ixodidae), so named because they contain the outer shell or the hard shield Scutum, which includes more than 600 species.
- Soft ticks (Argasidae), and the genera here does not contain a hard shield or an outer shell that includes 200 species.

Rue. It has a height of 60 cm, with lobed leaves, a distinctive aroma, large white flowers, and oval upper fruits, with small black seeds. The plant grows wild in most countries of the Arab world, especially in rocky areas in environments with relatively abundant rain, and it also grows in many countries. Rue seeds contain three alkaloids -:harmaline. In total, it is about 4% of the weight of dry seeds, and Hermelain represents two-thirds of this amount. The flowers and stems of the plant also contain pegarine alkaloids. The use of rue dates back to the era of the Greeks, when they used powdered seeds in the treatment of tapeworms, and the seeds are still used for this purpose in folk medicine, as well as in the production of milk in women, and sexual strengthening in men. Studies have proven that the alkaloids contained in the seeds of this plant are fatal to microorganisms, and that they affect tapeworms, and the alkaloid of Harlem activates the nervous system. The current study aimed to know the effect of the alcoholic and boiled and cold water extract of the plant on the vitality and mortality of adult hard ticks and their use as plant pesticides. Low cost and no impact on the natural environment.

The tick belongs to the order Acarina: Order, which includes three families: the hard tick family Ixodidae: the family, the soft tick Argasidae: the family, and the Nuttalliellidae family: the family. (Hoogstraal, 1985; Barker and Murrel, 2004) A global spread of ticks of the same type 311 and ticks are obligatory parasites that infect all higher vertebrates except for fish (1961, James and Herms). Ticks are of medical, veterinary and economic importance as they cause blood loss in animals and damage to skins. and Gupp Hoskins (1988, Gupp Hoskins), (as well as being a biotransmitter of many arthropod-borne viruses, Arbovirus, various Rikettsia, piroplasma, and some bacteria). The body of the tick consists of a ganthosoma comprising the basis capituli, the base of the sucking piercing mouth, a pair of canine feet and a pair of chelic Forceps feet, pedipalpi, and hypostome, which is serrated .The scientific classification of the hard tick parasite

Kingdom: Animali
Phyllum :Arthropoda
Sub phylum:Chelicerata
Class:Arachnida
Subclasss:Acari
Order:Ixodida
Family : Ixodida(hard ticks)

Peganum harmala

Rumula is a perennial herbaceous plant with a height of 60-100 cm, with lobed leaves, a distinctive aroma, large white flowers, and oval upper fruits, with small black seeds. The plant grows wild in most countries of the Arab world, especially in rocky areas in environments with relatively abundant rain. It also grows in many countries of the world. Scientifically, these different effects of harm are explained by the fact that it directly affects some receptors in the brain, and it is a herb made up of four alkaloids (or Different alkaloid compounds, namely: “Harmane”, “Harmalin”, “Al-Harman” and “Harmalol” have a direct effect on the nerve centers .In total, it is about 4% of the weight of dry seeds, and Hermelain represents two-thirds of this amount. The flowers and stems of the plant also contain pegerine alkaloids, and it has many names. In Iran it is called Espand, in African countries Harmel, and in America Mexican, and its common name is Syrian Rue (Chakvarty, 1976.((

Peganum Classification of
Kingdom :Plantae s
Order : Sapindales
Family : Nitrariaceae
Genus : Peganum
Species :. Harmala

The leaves are lingual, seated, alternate, many lobed and divided into narrow parts. When the paper is folded, it gives a strong repellent scent. It has single white flowers, with green veins, and a flowering season that starts from April to July. Studies have proven that the alkaloids contained in the seeds of this plant are fatal to microorganisms, and that they affect tapeworms, and the alkaloid of the Harleen activates the nervous system. Harmal is a well-known plant, which is of two types, white, which is the Arab, and red, which is the well-known slang and is called in Persian Esfand.

Materials and working methods
Sample collection

Collection of tick samples: Tick parasites were collected from the parasite-bearing livestock found in the Mashkhab butchery in sterile and clean plastic cans with several holes for air entry and brought to the Life Sciences Laboratory / College of Education for Girls / University of Kufa, and they were diagnosed based on the sources and the assistance of Assistant Professor Dr. Thaer Taha. Mahmoud Al-Rubaie, professor of insects in the department .Harmal plant sample collection : The seeds of the harem plant were obtained from the local market and by packaging and pure quality, then the seeds were ground by an electric mill of German origin and kept in a sterile glass container. The name of the sample was recorded and preserved until use in the extraction process.

Preparation of plant extracts
Prepare cold water extract

Extraction was carried out according to Al-Mansour method (1996), in which the seeds of the harem plant were crushed, from which (10) g of dry powder was taken and mixed with (100) ml of cold distilled water using an electric mixer, then left for 24 hours at room temperature, then the mixture was filtered using gauze to get rid of From plankton, then centrifuged at a speed of 3000 rpm for 10 minutes, then filtered with filter papers to obtain a clear extract, and kept in the refrigerator until use .Preparation of boiled water extract: Prepared in the same way as cold water extract, but cold water was replaced with boiled distilled water. The control group was treated with distilled water and different concentrations were prepared.

Preparation of the alcoholic extract of the seeds of the rue plant

The rue seeds were ground with an electric grinder, 10 g of powder was taken, 100 ml of ethyl alcohol was added at a concentration of (70)%, and the mixture was mixed in a glass beaker with a capacity of (100) ml, and left at laboratory temperature and in a dark place, then stirred the mixture using a shaker. Then the mixture was filtered by a centrifugal device (5000) r/min, then the sample was dried by a rotary evaporator at a temperature of 38°C. Then the samples were kept in a glass container in the refrigerator at degree (4) until use. Gavanj etal, 2014. ((|

Study Dishes

Four Petri dishes containing /2 of ticks were distributed in each dish for three concentrations of the cold aqueous plant extract and similar dishes for the boiled extract with control groups treated only with cold/boiled distilled water, and the concentrations were (100, 50, 25) mg/ml. .

Results and Discussion

Table 1
Concentrations used for the alcoholic and cold and boiled aqueous extract of the seeds of the harem plant

قيمة التركيز ملغم /مل	اسم المجموعة

100	كحول A1 A2 (A3
50	B1 B2 (B3
25	C1 C2 (C3
مجموعة السيطرة غير المعاملة	D1 D2 (D3

The number (1) represents cold aqueous extract, (2) boiled aqueous extract, and (3) alcoholic extract

Table 2
Shows the time required for immobilization and death of the hard tick parasite treated with cold aqueous rue seed extract

وقت هلاك القراد (ساعة)	وقت شلل الحركة (ساعة)	المجموعة
23	17	A1
34	26	B1
لم يحصل تغير	لم يحصل تغير	C1
لم يحصل تغير	لم يحصل تغير	D1

Table 3
Shows the time required for immobilization and death of the hard tick parasite treated with boiled water rue seed extract

وقت هلاك القراد(ساعة)	وقت شلل الحركة (ساعة)	المجموعة
18	12	A1
21	16	B1
28	22	C1
لم يحصل تغير	لم يحصل تغير	D1

Table 4
The effect of the alcoholic extract of the rue seed plant on the percentage of adult ticks to death

120دقيقة	60دقيقة	30دقيقة	15دقيقة	التركيز (ملغم/مل)
0	0	0	0	السيطرة
60.3	50.8	43.7	31.2	1.5
86.4	74.6	54.2	42.7	3
99.8	94.1	69.4	50.3	6
9.1	8.2	7.3	5.3	P<0.05

Discussion

The results of the current study showed that the cold aqueous extract of the seeds of the rue plant had a clear effect on the hard tick parasite, as group A1 gave paralysis in tick movement in 17 hours, while the ticks were killed for the same group after 23 hours, and in comparison with the remaining groups, the group recorded B1 paralysis of the movement of the tick parasite after 26 hours and death of ticks after 34 hours, while the last group C1 did not record any changes in movement and none of them died, which was similar to the results of the control group D1. The cold and boiled aqueous extract also has alkaloids. The

results are in agreement with Sweden (1995), which prevented the cotton worm from laying its eggs on it as well as the house fly. Also, most of the rue compounds contain peganine alkaloids such as Alkaloides, which are in it in large quantities and the alkaloids have effects on target tissues such as their effect on tissues Nervousness, which leads to paralysis and thus rapid killing (Metspalu et al, 2001 .As for the boiled aqueous extract of Harmel, as well as the alcoholic extract of the seeds of the plant, which are highly effective against the tick parasite, where the concentration A1 recorded the highest effect in terms of paralysis and death.

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