الاثر الطارد لبذرة النيم و مسحوق اوراق الكافور والاثر الجاذب للجزء الهوائى للحزا لخنفساء الفول الصغرى (غمدية الاجنحة : خنافس البقول)

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الخلاصة

أظهرت بدرة بذرة النيم خاصية طرد لخنفساء الفول الصغرى (*Bruchidius incarnatus* Boh.) وهى تزيد بازدياد التركيز و تنخفض بمرور الزمن ففى خلال 24 ساعة فان خاصية الطرد فى التركيزين٪ 2.5 و10% (وزن/وزن) 37% و87% على التوالى. بعد 72 ساعة كان الطرد 13% و52% فى التركيزين 2.5% و10% على التوالى. كانت خاصية الطرد فى مسحوق اوراق الكافور اقل مما هى عليه فى بدرة بذرة النيم اذ بلغت خلال 24 ساعة فى التركيزين 2.5% و10% (وزن/وزن) 11%و57% على التوالى. بعد 72 ساعة كان الطرد 5% و14% فى التركيزين 2.5% و10% على التوالى.

بينما للحزا خاصية جذب تزداد بازدياد التركيز و تنخفض بالزمن. ففى التركيزين 2.5% و10% كان الجذب 25% و43% بعد 24 ساعة و بعد 72 ساعة 4% و.28%

REPELLENCY OF NEEM SEED KERNELS, CAMPHOR LEAVES AND ATTRACTANCY OF EL-HAZA AERIAL PARTS TO *Bruchidius incarnatus* *(COLEOPTERA:BRUCHIDAE)*

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Abstract

Neem seed kernels powder (NSKP), camphor leaves powder and El-haza aerial parts were used to test the repellency and attractancy of *Bruchidius incarnatus*. The results revealed that NSKP showed repellency effect which increases with the increase in concentration and decreases with time. In 24 hours the repellency in the concentrations of 2.5% and 10% (w/w) was 37% and 87% respectively. After 72 hours the repellency was 13% and 52% in the concentrations of 2.5% and 10% respectively.

Camphor leaves powder repellency was less than that of NSKP. In 24 hours the repellency in the concentrations of 2.5% and 10% (w/w) was 11% and 57% respectively. After 72 hours the repellency was 5%and 14% respectively.

El-haza has an attractant effect which increases with increasing concentration and decreases with time. In the concentrations of 2.5% and 10% (w/w) the attractancy was 25% and 43% respectively after 24 hours. After 72 hours it was 4% and 28% in the concentrations of 2.5% and 10% respectively.

INTRODUCTION

Several plant materials were reported to have insecticidal properties. Neem is one of the most widely used material against several insect pest. Camphor is used for the control of many insect pests and was reported to have a repellent effect. Raina, (1); Elkifl and Metwalli (2); and Siddig, (3). Haplophyllum tuberculatum *(El-haza) is one of the promising plants for its insecticidal effect on* Bruchidius incarnatus, *which considered as a serious pest of* Vicia faba *Yahia, (4). Faba beans are the staple food for millions of people. Leguminous seeds have been widely recommended as a part of the dietary treatment of diabetics Hussien (5).*

Materials and Methods

The equipment used for detecting the repellency response of Bruchidius incarnatus *to camphor, aerial parts of El-Haza powders and neem seed kernel paste, similar to that described by Berndt (6), with some modifications as described. The choice test apparatus consist of circular styrofoam platform 30cm, diameter with a plastic rim 6 cm. high and*

painted from outside with a black polish. There were four holes of 4 cm diam. equidistantly spaced around the periphery of the platform. These holes were cut to fit 4 cm high plastic containers, which could be inserted and removed easily. A modification was made in the center of the platform where a hole was made to accommodate a plastic container 4 cm in diam. The plastic containers were lined internally with paper to make rough surface for the insects to get in or out easily. There were channels between the central container and each peripheral container. The lid of the apparatus closed the container in such away to allow the insects to move

freely from the central container to the peripheral ones through the channels.

Fifty newly emerged adult insects were placed in the central container and the apparatus was immediately closed. After 24 hours the four containers were removed from the apparatus and the insects in each container were counted, and then removed.The same procedure repeated for 48 and 72 hours. Attractancy / repellency effect of each treatment was calculated at the end of each count using Leonard and Ehrman (7) formula:

$$A = \frac{N_o - N_b}{N_t}$$

Where:
A: attractancy (+) or repellency (-)
N_o: number of insects in the test container
N_b: number of insects in the control container
N_t: the total number of insects in both containers

Results and Discussion

Neem seed kernels powder (NSKP) showed repellency effect throughout the 72 hours and the repellency increased with the increase in concentration. In 24 hours the repellency in the concentrations: 2.5%, 5% and 10% (w/w) was 37%, 62% and 87% respectively. Where as in 48 hours interval the repellency observed was 22%, 34% and 78% following the same trend that mentioned before. After 72 hours the repellency tested as 13%, 25% and 52% in the concentrations of 2.5%, 5% and 10% respectively, which was the lowest (Table 1).

Camphor leaves powder had a repellency effect but less than that of NSKP. In 24 hours the concentrations of 2.5%, 5% and 10% showed a repellency of 11%, 38% and 57% respectively. In 48 hours the repellency was 8%, 22% and 29%, decreasing from the 24th hour in the concentrations 2.5%, 5% and 10% respectively, Table (2). There were significant differences between the repellency ratios during the first 24 hours.

The present study revealed that there was an attractant effect in El-haza aerial parts powder to B. incarnatus. *The highest attractancy was 43%, in 10% concentration and the lowest was 25% in 2.5%concentration in 24 hours. The attractancy decreased with decreasing concentration and with time. In 24 hours the attractancy was 25%, 34% and 43% in the concentrations of 2.5%, 5% and 10% respectively. In 48 interval hours attractancy were as 12%, 20% and 33% in 2.5%, 5% and 10% concentration respectively. The third day attractancy was 4%, 14% and 28% respectively in 2.5%, 5% and 10%, which was the lowest (Table 3).*

NSKP and camphor leaves powder repellency action to B. incarnatus *is useful in preventing faba bean from easy infestation. El-haza aerial parts attractancy is useful in other aspects as a trap for easy detection of this pest in the store. Although El-haza is found to be attractant to* B. incarnatus *but it has a paralytic effect in a confined condition Yahia (4). NSKP was a good repellent as shown in Table (1), this observation is in a agreement with Ignatawicz and Wesolowske (8), Saxena (9), Jilani* et al. *(10), Mohiuddin* et al. *(11), Schumutterer (12), Akbar* et al. *(13) and Zahoor* et al. *(14).*

The study showed that, Eucalyptus *leaves powder repelled* B. incarnatus, *and this finding is similar with Sharaby (15) who found that,* Eucalyptus *leaves have more repellent effect than guava leaves to* Sitophllus oryzae *and* S. granarius. *Also Sarac and Tunc (16) found that* Eucalyptus camaldulensis *is repellent to* S. oryzae.

Table (1): Average repellency ratio shown by Neem seed kernel powder (NSKP) against B. incarnatus.

Concentrations	Average ratio / Time (hours)		
	24 hrs	48 hrs	72 hrs
2.5 %	(-) 0.37^{c}	(-) 0.22^{b}	(-) 0.13^{bc}
5%	(-) 0.62^{b}	(-) 0.34^{b}	(-) 0.25^{b}
10%	(-) 0.87^{a}	(-) 0.78^{a}	(-) 0.52^{a}
Control	0.00^{d}	0.00^{c}	0.00^{c}

Means followed by the same letter in each column are not significantly different (P=0.05) according to Duncan's Multiple Test.
* Data multiplied by (– 1) prior analysis
(-) = Repellent effect.

Table (2): Average repellency ratio shown by Camphor leaves powder against *Bruchidius incarnatus*.

Concentrations	Average ratio / Time (hours)		
	24 hrs	48 hrs	72 hrs
2.5%	(-) 0.11^{c}	(-) 0.08^{b}	(-)0.05^{ab}
5%	(-) 0.38^{b}	(-) 0.22^{a}	(-) 0.09^{ab}
10%	(-) 0.57^{a}	(-) 0.29^{a}	(-) 0.14^{a}
Control	0.00^{d}	0.00^{b}	0.00^{b}

Means followed by the same letter in each column are not significantly different (P=0.05) according to Duncan's Multiple Test.
* Data multiplied by (– 1) prior analysis
(-) = Repellent effect.

Table (3): Average attractant ratio shown by El.haza aerial aerial part powder against *Bruchidins. incarnatus*.

Concentrations	Average ratio / Time (hours)		
	24 hrs	48 hrs	72 hrs
2.5%	(+) 0.25^{c}	(+) 0.12^{c}	(+) 0.04^{c}
5%	(+) 0.34^{b}	(+) 0.20^{b}	(+) 0.14^{b}
10%	(+) 0.43^{a}	(+) 0.33^{a}	(+) 0.28^{a}
Control	0.00^{d}	0.00^{d}	0.00^{c}

Means followed by the same letter in each column are not significantly different (P = 0.01) according to Duncan's Multiple Test.
* Data multiplied by (– 1) prior analysis
(+) = Attractant effect.

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