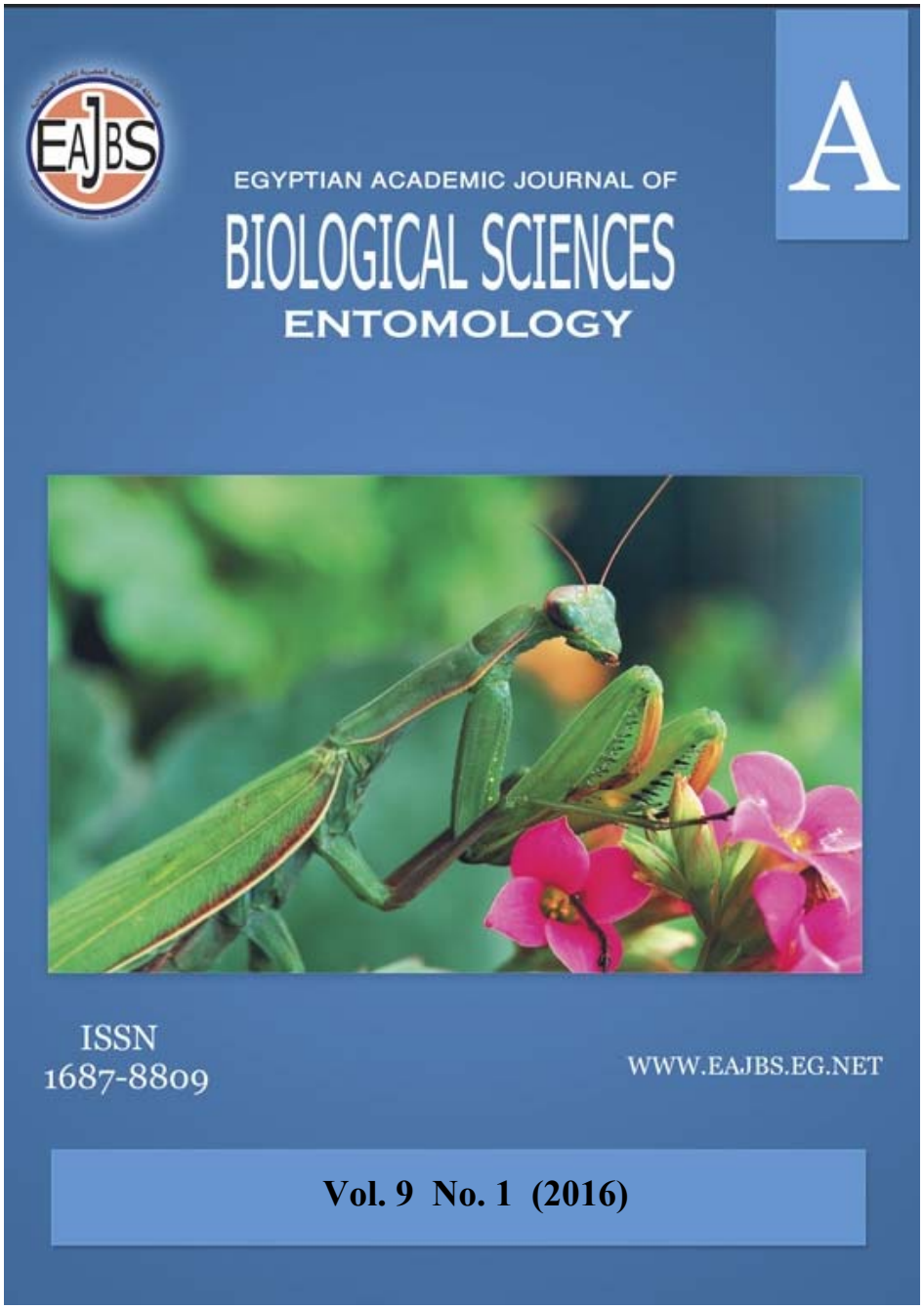

Egyptian Academic Journal of Biological Sciences is the official English language journal of the Egyptian Society for Biological Sciences, Department of Entomology, Faculty of Sciences Ain Shams University

Entomology Journal publishes original research papers and reviews from any entomological discipline or from directly allied fields in ecology, behavioral biology, physiology, biochemistry, development, genetics, systematics, morphology, evolution, control of insects, arachnids, and general entomology.

www.eajbs.eg.net

Citation: *Egypt. Acad. J. Biolog. Sci. (A. Entomology) Vol.9 (1)pp. 49-55(2016)*

Egypt. Acad. J. Biolog. Sci., 9(1): 49 – 55 (2016)

Egyptian Academic Journal of Biological Sciences
A. Entomology

ISSN 1687- 8809
www.eajbs.eg.net

Biological Aspects of the Cunaxid mite, *Pulaeus pseudominutus* When Fed on Different Diets at Different Temperatures

Abdein Mahmoud Khalil
Plant Protection Research Institute, Agricultural Research Center, Dokki, Giza, Egypt

ARTICLE INFO
Article History
Received: 15/1/2016
Accepted: 27/2/2016

Keywords:
Cunaxid mite
Pulaeus pseudominutus
Development
Diet
Temperature.

ABSTRACT

This study aimed to study the effect of different diets mainly free living nematode, *Rhabditella muscicola* and two different fungi (*Fusarium oxysporum* Schlecht and *Pythium spinosum* Sawada) on the different biological aspects of the cunaxid mite, *Pulaeus pseudominutus* at 20, 25, 30 and 35±2°C and relative humidity 75±5% R.H. in laboratory. The study indicated that the different biological aspects of *P. pseudominutus* was significantly affected by feeding on the different used diets at different temperatures. The males of mite individuals lasted lowest times in their development in comparison with those taken for females. The lower temperature 20ºC significantly increased the life periods of individuals in comparison with 35ºC. The lowest period of life cycle (9.17 days) was recorded when the male mites fed on *F. oxysporum* at 35ºC, while the longest period (25.77 days) was noticed when the female individuals reared on the same previously mentioned before diet at 20ºC. However, longevity period of the cunaxid mite was recorded the highest period when the females fed on *P. spinosum* at 20ºC (59.75 days) while the lowest longevity period recorded when the males fed on free living nematode but at 35ºC (26.09 days). On the other hand, the fungi *P.spinosum* increased the life span time for predatory mite females at 20ºC where the time taken was 59.75 days, but the lowest time was recorded when the male individuals fed on the free living nematode at 35ºC (26.09 days). From the obtained results also, it was noticed that the best diet for rearing the cunaxid mite, *P. pseudominutus* was free living nematode at 25ºC where it recorded the highest number of deposited eggs (73.2) but the least favourable one for feeding was the same food but at 35ºC (47.61.71 eggs).

INTRODUCTION

Mites belonging to the family Cunaxidae are well known predators of other harmful mites and small soft bodied insects, Smiley (1992). Very little is known about the biology of the *Pulaeus* Den Heyer. Schruft (1971) reported that *Cunaxoides oliveri* is a predator of grape wine mite *Clepitrimerus vitus.*

Walter and Kaplan (1991) found that *Coleoscirus simplex* colonizes greenhouse pot cultures of root knot nematodes (*Meloidogyne* spp.) in Florida where it feeds on vermiform nematodes and other soil arthropods. They also studied the feeding behaviour of Cunaxidae. Arbabi *et al*., (2002) reported the family Cunaxidae as in important predatory family from Sistan Baluchestan and Hormozgan provinces of Iran. Tagore and Putatunda (2003) reported that cunaxid mites were important predators in the ornamental plants in Haryana. De Oliveira and Daemon (2003) found that cunaxid mites are important component of fauna in the dust samples from the rural dwellings of Zona da Mata region Brazil. Very little is known about the biology of the *Pulaeus* species. The prey preference of a predator may be affected not only by characteristics of a prey item as food, but also by the microenvironment or architecture produced by a prey species (Furuichi *et al.,* 2005). The life cycles of only 6 of the nearly 260 described cunaxid species have been studied (Schruft, 1971; Zaher *et al*., 1975; Taha *et al*., 1988; Walter and Kaplan, 1991; Sathiamma, 1995; Arbabi and Singh, 2000; De Castro and De Moraes, 2010). These studies have shown the ability of cunaxids to prey upon mites of the Tetranychoidea and Eriophyoidea, as well as other small arthropods and nematodes. This is the report of *Pulaeus pseudominutus* (Shiba, 1978) in Egypt, where very little is known about its diversity and behaviour. Therefore, the present work was undertaken to introduce a detail study on the biological aspects of the cunaxid mite, *P. pseudominutus* when fed on different diets mainly free living nematode, *Rhabditella muscicola* Andrassy, 1986 and two different fungi (*Fusarium oxysporum* Schlecht and *Pythium spinosum* Sawada) under different laboratory conditions.

MATERIALS AND METHODS

The cunaxid mite, *Pulaeus pseudominutus* was extracted from soil under maize and cotton plants in Qaluobia Governorate. The adults, 3 females and male, of the mites were placed in screening cells (2.5 cm in diameter), with a layer of mixture of Plaster of Paris and Charcoal (9:1) on its bottom to depth 5 mm and covered with slide cover and bind robber band. The cells were supplied with food and kept at 25ºC and about 75+5% R.H. Water drops were added when needed. For individual unit rearing, newly deposited eggs were transferred each to a rearing plastic cell. Each newly hatched larva was supplied with different tested food free living nematode *Rhabditella muscicola* and two different fungi (*Fusarium oxysporum* and *Pythium spinosum* and consumed food was replaced every 2-3 days interval with another new one till reaching maturity stage. The stock of the three different diets already obtained from Plant Pathology Research Institute, Agricultural Research Centre under laboratory conditions were conducted at 20, 25, 35 and 35ºC and relative humidity 75% R. H. All obtained data are presented as means $\pm$ S.D. of twenty replicates and all observations recorded by helping binocular microscope. The obtained data were subjected to one-way analysis of variance (ANOVA) and means were separated by Duncan's multiple range test (Duncan, 1955).

RESULTS AND DISCUSSION

Behaviour:

Life history of females and males of *Pulaeus pseudominutus* pass through one larval and thee nymphal stages (protonymph, deutonymph, and tritonymph) before

reaching adulthood. Active immature individuals usually enters a resting or quiescent stage before the following stage.

Mating:

Laboratory observations showed that adults of *P. pseudominutus* tended to mate immediately after their emergence. The male is able to copulate three females, but the females accepted one copulation. Just before mating, the male showed more activity by running around the female, and then it manipulated itself underneath the female, bending its opithosomal region upward and forward to meet that of female usually lasted about 5-7 minutes.

Oviposition:

Females of *P. pseudominutus* usually deposited their eggs singly after preoviposition period between 2.48-5.98 days. Newly laid eggs were creamy in color.

Hatching:

As incubation proceeds, the embryo of *P. pseudominutus* grows and limits itself to any of the egg sides, then a longitudinal slit occurs medially and hatching larvae crawls outside the egg shell.

Moulting:

During this study, it was noticed that before moulting, each immature stage of the cunaxid mite, *P. pseudominutus* enters into a quiescent stage during which, the mite stop feeding and moving. The individuals stretch their chelicerae, palps backwardly along the sides of the body. Immediately before moulting a dorsal transverse rupture occurs between the propodosoma and hysterosoma. The mite tries to disengage itself from the old skin by twisting movements and subsequently withdraws the forelegs and the anterior part of the body outside. Afterwards, the mite crawl forwardly trying to get rid of the posterior part of the exuvia. Colour of the newly emerged mites is usually orange, then changes gradually darker after feeding.

Incubation period:

The tabulated data in Table (1) indicated that the different temperatures and tested diets had significant affected on the incubation period of the cunaxid mite, *P. pseudominutus.* It was found that this period took 4.3, 4.8 and 4.44; 3.9, 3.7 and 3.85; 3.15, 3.18 and 3.10; 2.4, 2.5 and 2.51 days when the mite males fed on *Fusarium oxysporum, Pythium spinosum* and free living nematodes at 20, 25, 30 and 35ºC, respectively. However, this period in case of females lasted 4.5, 4.9 and 4.6; 4.15, 4.1 and 4.11; 3.6,3.7 and 3.9 ; 2.9, 2.88 and 2.77days at the same conditions, respectively. From the same table, it was observed that there was highly significant differences between the different mites fed on different diets at different temperatures, L.S.D. at 0.05 level = 0.0489 & 0.067 and 0.0178 & 0.019 for both temperature and diet effects for males and females, respectively.

Life cycle:

The influence of different diets on *P. pseudominutus* duration periods were shorter in case of male individuals than those of female individuals that recorded 22.8, 23.1 and 22.95; 17.5, 16.8 and 17.15; 14.2, 14.5 and 14.7; 9.17, 9.4 and 9.55 days when the mite males fed on *F. oxysporum, P. spinosum* and free living nematodes at 20, 25, 30 and 35ºC, respectively. On the other hand the females lasted 25.77, 25.3 and 25.66; 23.8, 23.55 and 23.2; 18.14, 18.6 and 18.7; 14.11, 14.5 and 14.6 days when fed on the same previously diets at the same tested temperatures mentioned before, respectively. The statistical analysis of current data revealed that there were very highly significant differences between the mite individuals when fed on the tested diets at the different temperatures, L.S.D. at 0.05 level = 0.046 and 0.043 for effect of diets and temperatures, in case of males, respectively and 0.148

and 0.167 in case of females individuals, respectively.

Longevity:

Table (1) shows the longevity of females and males of *P. pseudominutus* at different temperatures, for each diet separately. Under the present experimental conditions, longevity of females and males was maximal at 20ºC and reduced at higher temperature. During this period, the female lived longer at 20ºC (34.45 days) on *P. spinosum* when compared with 35ºC (20.07 days) when fed on the same prey. The longest period of male individuals was (28.14 days) when mites reared on free living nematodes at 20ºC, and shorted to reach (15.14.6 days) at 35ºC when fed on *P. spinosum*.

Table 1: Effect of different diets on the biological aspects of the predacious mite *Pulaeus pseudominutus* at different temperatures.

Biol.asp		20 °C			25 °C			30 °C			35 °C			L.S.D. at 0.05	
		A	B	C	A	B	C	A	B	C	A	B	C	Tem.	Diet
Inc.p.	♂	4.3 ±0.02	4.8 +0.04	4.44 +0.05	3.90 +0.02	3.70 +0.05	3.85 ±0.03	3.15 ±0.02	3.18 ±0.03	3.10 ±0.04	2.40 ±0.03	2.50 ±0.02	2.51 ±0.04	0.048	0.067
	♀	4.5 ±0.03	4.90 ±0.03	4.60 ±0.03	4.15 ±0.03	4.1 ±0.04	4.11 ±0.02	3.60 ±0.03	3.7 ±0.05	3.90 ±0.02	2.90 ±0.05	2.85 ±0.08	2.77 ±0.03	0.017	0.019
L. c	♂	22.88 ±0.08	23.1 ±0.02	22.91 ±0.03	17.5 ±0.01	16.8 ±0.01	17.15 ±0.09	14.2 ±0.01	14.5 ±0.01	147 +0.01	9.17 ±0.01	9.4 ±0.01	9.55 ±0.01	0.046	0.043
	♀	25.77 ±0.4	25.3 ±073	25.66 ±0.2	23.8 ±0.17	23.55 ±0.14	23.2 ±0.7	18.4 ±0.15	18.6 ±0.11	18.7 ±0.12	14.11 ±0.12	14.5 ±0.13	14.6 ±0.8	0.148	0.167
Long.	♂	26.5 ±0.72	24.3 ±0.75	28.14 ±0.14	23.17 ±0.13	21.3 +0.13	24.1 +0.15	19.45 ±0.14	20.14 +0.3	18.87 ±0.45	18.8 ±0.5	15.14 ±0.39	16.54 ±0.4	0.186	0.221
	♀	32.6 ±0.33	34.4 ±0.3	30.37 ±0.06	28.04 ±0.6	25.75 ±0.25	28.9 ±0.6	24.06 ±0.1	24.74 ±0.25	22.78 ±0.38	20.75 ±0.2	20.07 ±0.15	20.87 ±0.2	0.186	0.228
L.sp	♂	49.53 ±0.88	47.45 ±0.75	51.09 ±0.15	40.6 7+0.1	38.13 ±0.21	41.25 ±0.41	33.65 ±0.08	34.64 ±0.95	33..57 ±0.95	26.5 ±0.83	26.48 ±0.98	26.09 ±0.15	0242	0242
	♀	58.37 ±0.61	59.75 ±0.25	55.92 ±0.53	51.84 ±0.4	49.3 ±0.5	52.19. ±037	42.46 ±0.58	34.86 ±0.43	41.5 ±0.83	34.86 ±0.49	34.57 ±0.95	35.47 ±0.78	0.243	0.221

A= *Fusarium oxysporum* B= *Pythium spinosum* C= free living nematode

These results showed that the higher temperature shortened the *P. pseudominutus* longevity. The statistical analysis of obtained data in Table (1) showed that there were highly significant differences between individuals fed on different diets at different temperatures. L.S.D. at 0.05 level for male individuals was 0.186 and 0.221 for effect of temperatures and diets, respectively but recorded 0.186 and 0.228 for female individuals, respectively.

Preoviposition, oviposition and postoviposition periods:

A general glance to the data in Table (2), revealed that *F. oxysporum* was the most favourable food for the mite, *P. spinosum* where it increased the oviposition at 20ºC (26.6 days), but the least favourable diet was recorded for the same fungus at 35ºC (15.3 days). Also, from the same table, it can be seen for all tested diets that the oviposition period of the mite increased at low temperature and decreased by increasing the temperature. However, it is clear from the results that the preoviposition and oviposition periods of the mite were slightly affected with different diets at the tested temperatures. The preoviposition period was lasted the longest period (3.95 days) when fed on *P. spinosum* at 20ºC and took the lowest period when fed on the same diet at 35ºC (2.11 days). Also, the postoviposition period had the same trend in preoviposition period where durated 4.03 on *F. oxysporum* at 20ºC and 2.41 days at 35ºC on free living nematodes, Table (2).

Table 2: Effect of different diets on the longevity and fecundity of the predacious mite *Pulaeus pseudominutus* female at different temperatures.

Biological aspect	20 °C			25 °C			30 °C			35 °C			L.S.D. at 0.05 level	
	A	B	C	A	B	C	A	B	C	A	B	C	Temp.	Diet
Preoviposition period	3.77 ±0.18	3.95 ±0.4	3.65 ±0.18	3.10 ±0.12	3.15 ±0.4	3.25 ±0.11	2.99 ±0.18	2.84 ±0.14	2.61 ±0.13	2.11 ±0.2	2.24 ±0.12	2.34 ±0.2	0.032	0.069
Oviposition period	24.8 ±1.32	26.6 ±0.6	23.17 ±0.84	21.1 ±0.7	19.3 ±0.51	22.14 ±0.1	18.17 ±0.6	19.2 ±0.75	17.23 ±0.6	16.14 ±0.9	15.1 ±0.44	16.12 ±0.1	0.117	0.223
Postoviposition period	4.03 ±0.72	3.9 ±0.7	3.55 ±0.4	3.8 ±0.5	3.3 ±0.13	3.6 ±0.5	2.9 ±0.23	2.75 ±0.62	2.94 ±0.25	2.5 ±0.2	2.55 ±0.12	2.41 ±0.7	0.153	0.153
Fecundity	53.7 ±1.55	52.3 ±1.2	52.7 ±1.2	71.12 ±1.7	72.82 ±1.5	73.2 ±1.6	64.2 ±1.13	65.2 ±1.15	64.6 ±133	49.6 ±185	51.15 ±1.11	47.6 ±186	0.372	0.529

A= *Fusarium oxysporum* B= *Pythium spinosum* C= free living nematode

Fecundity:

As shown in this experiment, females made no attempts to protect the eggs. Under the conditions used in this experiment, the number of *P. pseudominutus* eggs differed depending on whether the mites fed on any of the tested diets, Table (2). As shown by the obtained data the female of the *Pulaeus martini* deposited the highest rate of oviposition on free living nematodes (73.2 eggs) at 25ºC. On the other hand, the lowest number of deposited mite eggs was recorded at 35ºC (47.61 eggs) on the same diet. Statistical analysis of data showed that L.S.D. at 0.05 level = 0.487 and 0.548 for effect of temperature and diet, respectively. This results demonstrated that the temperature 25ºC. was the most favourable temperature for rearing the cunaxid mite, *P. pseudominutus* and these results were coincident with those obtained by Khalil *et al.* (2012) where they studied the life history of the cunaxid mite, *P. martini* when fed on the same previously mentioned diets where they found that the best diet for rearing *P. martini* was *F. oxysporum* at 25ºC where it recorded the highest number of obtained eggs (73.79) but the least favourable one for feeding was the fungus *P. spinosum* at 35ºC (48.71 eggs). Also, El-Khateeb (1998) mentioned that low temperature decreased female fecundity of the cunaxid mite, *Cunaxa setirostris* (Hermann). Also, Khalil *et al*. (2009) reared the cunaxid mite, *Coleoscirus baptos* on different fungi and mentioned that 25ºC was the most favorable temperature for rearing this mite where it deposited 95.6 eggs when fed on *Aspergillus niger*. The same results were observed but on different cunaxid species by Ghallab (2002) where she studied the biological aspects on three cunaxid species, *Coleoscirus simplex* (Ewing), *C. tuberculatus* Den Heyer and *Pulaeus subterraneus* Berlese when reared on the free living nematode, *Rhabditella muscicola* under laboratory conditions at 27±1ºC and 75-80% R.H. The author mentioned that the average life cycle of female was more longer than that of male being 12.8, 13.1 and 15.6 days, while those of male were 12, 11.7 and 13.4 days, respectively. The coleoscirine cunaxid mite *C. simplex* colonizes greenhouse pot cultures of root knot nematodes (*Meloidogyne* spp.) in Orlando, Florida, where it preyed on vermiform nematodes and soil arthropods, Walter and Kaplan (1991). This was the first report of nematophagy in a cunaxid mite. The authors added that the cunaxoidine *Pulaeus* sp. also fed on both arthropods and nematodes, but three species in the Cunaxidinae, *Dactyloscirus inermis*, *Dactyloscirus* sp. And *Cunaxa* sp. fed only on arthropods. Also, Yassin (2006) investigated the effect of three diets mainly Collembola (*Neanurodes* sp.), free living nematode, *R. muscicola* and acarid mite, *Tyrophagus putrescentiae* (Schrank) on the biological aspects of the cunaxid mite, *Cunaxa capreolus* Berlese. Collembola proved to be the suitable prey as results in more deposited eggs and longer life span and this might be due to the collembolan was the best prey where it contained the highest total

sugar and higher relative concentration of glucose contents.

REFERENCES

Arbabi M. and J. Singh (2000). Studies on biological aspects of predacious mite *Cunaxa setirostris* on *Tetranychus ludeni* at laboratory condition in Varanasi, India. J. Agric. Rural Dev., 2: 13–23.

Arbabi, M., N. Golmohammadzadeh-Khiaban and M. Askari (2002). Plant mite fauna of Sistan-Baluchestan and Hormozgan provinces. J. Entomol. Soc. Iran., 22(1):87-105.

De Castro, Tatiane M. M. G. and G. J. de Moraes (2010). Life cycle and behaviour of the predaceous mite *Cunaxatricha tarsospinosa* (Acari: Prostigmata: Cunaxidae). Exp. Appl. Acarol., 50:133–139.

De Oliveira, A. J. and E. Daemon (2003). Quantitative and qualitative assessment of mites (Acari) in the domiciliary dust in rural dwellings in the "Zona da Mata" region, Minas Gerais, Brazil. Revista Brasileira de Zoologia, 20(4): 675-679.

Duncan, D. B. (1955). Multiple range and multiple F-test. Biometrics,11: 1-42.

El-Khateeb, H.M.A. (1998). Life tables of some predacious mites and their importance in biological control. Ph. D. Thesis, Fac. Agric. Cairo Univ., 119 pp.

Furuichi, H., S. Yano, A. Takafuji and M. Osakabe (2005). Prey preference of the predatory mite, *Neoseiulus womersleyi* Schicha is determined by spider mite webs. J. Appl. Ent., 129(6): 336-339.

Ghallab, M. A. (2002). Ecological, ecological and morphological studies on some predacous mites (Suborder Actinedida). Ph.D. Thesis, Fac. Sci., Cairo Univ., 244 pp.

Khalil, A. M., E. M. A. Yassin, M.A.M. Abou Tayesh and S. A. Allam (2009). Effect of different diets on the development and fecundity of the cunaxid mite, *Coleoscirus baptos* (Chaudhri) (Acari: Cunaxidae). Minufia J. Agric. Res., 34(3): 1295-1303.

Khalil, A. M., E. M. A. Yassin and M. M. El-Sebaay (2012). life history of predaceous mite *Pulaeus martini* (Den Heyer), (Acari: Prostigmata: Cunaxidae) fed on different diets. Egypt. J. Agric. Res., 90(3): 1147-1156.

Sathiamma B. (1995). Biological suppression of the white spider mite *Oligonychus iseilemae* (Hirst) on coconut foliage. Entomon, 20: 237–243.

Schruft, G. (1971). *Haleupalus oliveri* new species, A "Thorn-palped" mite on grape vines (*Vitis* spp.) Acari: Cunaxidae. Dutsch. Entomol. Z., 18(4-5): 379-382.

Smiley, R. L. (1992). The predatory mite family Cunaxidae (Acari) of the World with a New Classification. Indira Publishing House, Michigan USA 356 pp.

Tagore, A. and B. N. Putatunda (2003). Mites associated with some ornamental plants at Hisar, Haryana. Pest Manag. Econ. Zool., 11(1): 37-44.

Taha, H. A., M.E. El-Naggar, M. M. Abou-El-Nagga and S.M. Soliman (1988). Effect of different prey species on the development and fecundity of the predaceous mite, *Neocunaxoides andrei* Baker & Hovmann. (Acari: Cunaxidae). Agric. Res. Rev., 66: 129–135.

Walter, D. E. and D. T. Kaplan (1991). Observations on *Coleoscirus simplex* (Acarina: Prostigmata), a predatory mite that colonizes greenhouse cultures of rootknot nematode (*Meloidogyne* spp.), and a review of feeding behaviour in Cunaxidae. Exp. Appl. Acarol., 12 (1-2): 47-59.

Yassin, E. M. A. (2006). Notes on the biological behaviour of the predacious mite *Cunaxa capreolus* Berlese (Acari: Prostigmata: Cunaxidae). Ann. Agric. Sci.,

Moshtohor, 44(4-5): 1843-1853.

Zaher, M. A., Z. R. Soliman and S.M. El-Bishlawy (1975). Feeding habits of the predaceous mite, *Cunaxa capreolus* (Acarina: Cunaxidae). Entomophaga, 20: 209–212.

ARABIC SUMMERY

دورة حياة الاكاروس المفترس *Pulaeus pseudominutus* (أكاري : ذات الثغر الامامى: كوناكسيدى) عند التغذية على أغذية ودرجات حرارة مختلفة

عابدين محمود خليل

معهد بحوث وقاية النباتات – مركز البحوث الزراعية - الدقي – الجيزة - مصر

تهدف هذه الدراسة الى دراسة المظاهر البيولوجية المختلفة للاكاروس *Pulaeus pseudominutus* والمنتمى لعائلة Cunaxidae وذلك عند تغذيته على مصادر غذائية مختلفة وهى النيماتودا الحرة المعيشة *Rhabditella muscicola* ونوعين من الفطريات وهما *Fusarium oxysporum* و *Pithium spinosum* وذلك عند درجات حرارة 20 و 25 و 30 و 35 م° ورطوبة نسبية مقدارها 75 %. حيث دلت النتائج المتحصل عليها أن المظاهر البيولوجية المختلفة لهذا الاكاروس قد تأثرت بصورة واضحة عند التغذية على الأغذية المختلفة عند درجات الحرارة المختلفة. ولقد وجد أن الأفراد الذكور لهذا الاكاروس أخذت مدة تطور اقل مقارنة بالأفراد الإناث وان درجة الحرارة 20 م° زادت بشكل واضح فى مدة حياة الأفراد مقارنة بدرجة الحرارة 35م° والتى قللت من طول هذه الفترات. ولقد استغرقت دورة الحياة Life cycle للاكاروس فترة مقدارها 9.7 يوما عند تغذية الأفراد الذكور على الفطر *F. oxysporum* عند درجة الحرارة 35 م° بينما طالت هذه الفترة مسجلة زمناً مقداره 25.77 يوماً عند تغذية الإناث على نفس الفطر ولكن عند 20 م°. من ناحية أخرى فقد سجلت أعلى فترة حياة للأفراد البالغة Longevity للإناث عند تغذيتها على الفطر *P. spinosum* عند 20 م° (34.45 يوما) بينما قلت هذه الفترة ووصلت لأقل معدل لها مسجلة زمناً مقداره 15.14 يوما عند تغذية الأفراد الذكور على نفس الفطر ولكن عند 35 م°. ومن النتائج المتحصل عليها فى هذه الدراسة أيضا أتضح أن أفضل غذاء لتغذية هذا الاكاروس هو الفطر *P. spinosum* عند 20 م° حيث وضعت الأفراد الإناث عددا مقدراه 59.75 بيضة مقارنة بنفس الفطر والذى قلل من عدد البيض الموضوع و سجل 34.57 بيضة ولكن عند 35 م°.