

***Acrosternum heegeri* Fieber (Hemiptera: Pentatomidae)**

\*

( // : // : )

***Acrosternum heegeri***

.

pH (m m )  
± / / ± / / ± / (m m )  
/ ± / pH . / ± /

pH  
Z-Phe-Arg-pNA pH  
Z-Arg-Arg-pNA

( / ) DTT Z-Phe-Arg-pNA ( / ) DTT  
E-64 . Z-Arg-Arg-pNA

pH  
pH pH

***Acrosternum heegeri* :**

.

.(Abrishami, 1995)

(Sharma *et al.* 2000)

(Hori, 1970; Ferreira *et al.*,

.1999)

(Hashemi Rad, 1999,

.2004)

Pentatomidae

Lygaeidae

*Acrosternum* *Brachynema*

(*Lygaeus* (*Apodiphus amygdali*)

(Hashemi Rad, 1999) *panderus*)

(Franco *et al.*, 2002)

(*Acrosternum hegeeri*)

( )

(Lawrence & Koudal,

.2002)

)

(

(Talebi Jahromi *et al.*, 2001)

(Talebi Jahromi, 2006)

(*Peganum harmala*)

(*Salsola kali*)<sup>1</sup>

( ) ( )

) ( / / pH )  
 / pH ) ( / / pH  
 ( / pH ) ( /  
 ) ( / / pH )  
 pH ) ( / pH  
 .(Bignell & Anderson, 1980) ( / : )

)  
 . ( (Wagner, 1959)

± ( :  
 ±

pH

(1993) Cohen

**pH**

.(Cohen, 1993; Elpidina *et al.*, 2001)

( pH )

(Folin & Ciocalteu,

1927)

Z-Arg-Arg-pNA  
 Z-Phe-Arg-pNA

**pH**

pH

pH

m<sub>4</sub> m<sub>3</sub> m<sub>2</sub> m<sub>1</sub>

( / pH )

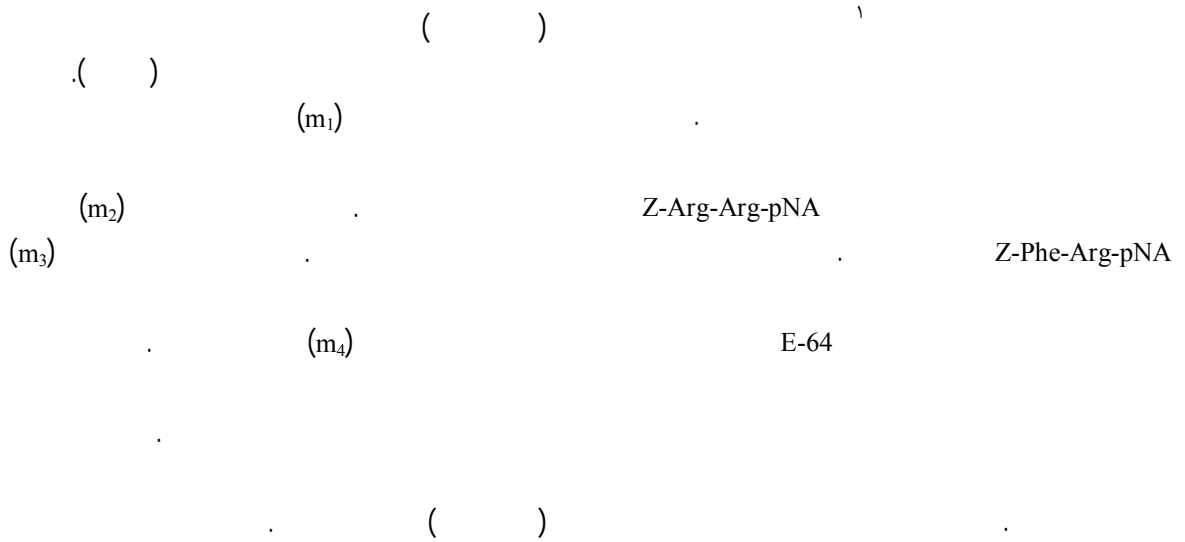
- 
1. Total proteolytic activity
  2. Carbobenzoxy-L-arginine-L-arginine-*p*-nitroanilide
  3. Carbobenzoxy-L-phenylalanin-L-arginine-*p*-nitroanilide

Sigmaplot STATGRAPHICS

pH

(Elx808

روده میانی



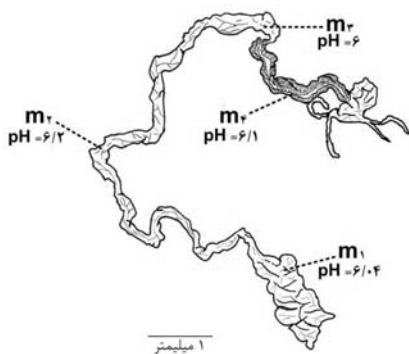
(2005) Gillot .(Kazzazi, 2006)

*Blissus leucopterus*

(Baker, 1991)

*Piezosternum* sp.

.(Chapman, 1998)



(*Acrosternum heegeri*)

1. Dithiothreitol

pH  
 pH  
 pH  
 m m<sub>1</sub> pH  
 ± / / ± / / ± / m m  
 (p= / ) / ± /  
 pH / ± / pH

(Terra & Ferreira, 1994)

pH

pH

Cimicoidea Reduvioidea  
 (Houseman & Down, Pentatomoidea  
 pH .1979; Terra & Ferreira, 1994)

*Dysdercus peruvianus*

m<sub>2</sub> m<sub>1</sub> pH  
 / ± / / ± / / ± / m<sub>3</sub>  
 (Silva et al., 1995, 2001)

pH

pH

( pH)

pH

pH

( )

pH

pH

pH

pH (Terra & Ferreira, 1994)

( )  
 Mills

(1988)

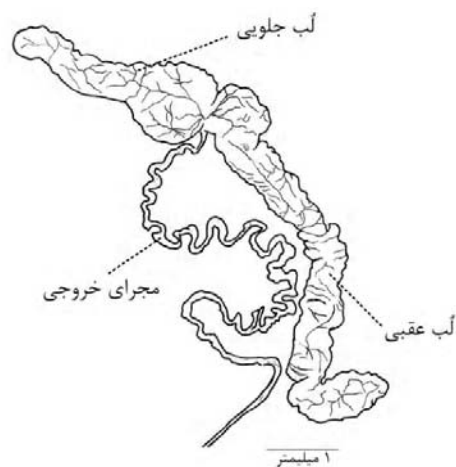
*Sphaerodema rustium*

(Ameen & Abedin, 1975)

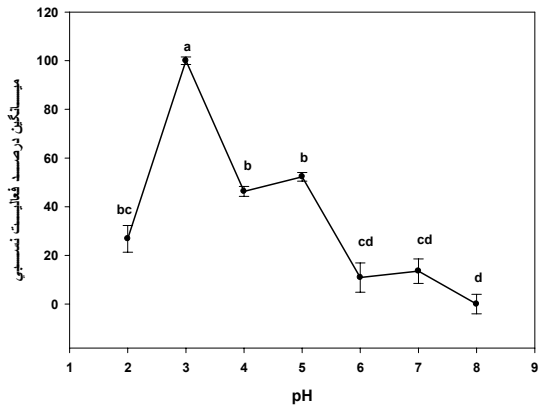
*Oncopeltus fasciatus*

*Lygus rugulipennis* (Chapman, 1998)

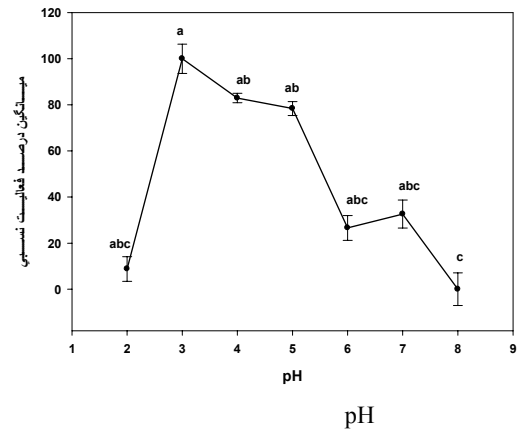
(Laurema, 1985)



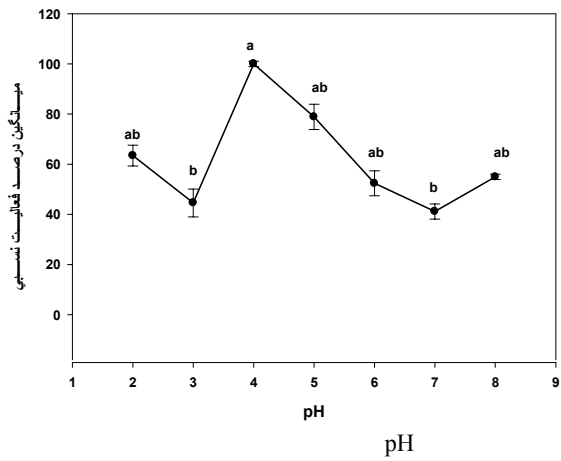
(*Acrosternum heegeri*)



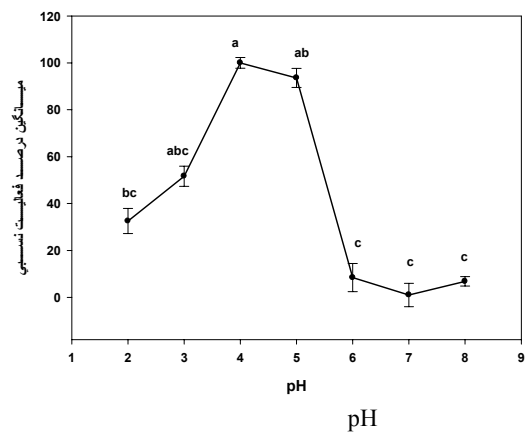
( )



( )



( )



( )

Z-Phe-Arg-pNA

( / )

Z-Arg-Arg-pNA

Z-Phe- Z-Arg-Arg pNA

( )

Arg-pNA

Z-Arg- ( ) Z-Phe-Arg-pNA  
 ( ) Arg-pNA  
 (DTT)

Z-Phe-Arg-pNA  
 ( )

/ DTT  
 DTT

Z-Arg-Arg-pNA  
 ( )  
 / DTT

Z-Phe-Arg-MCA Z-Arg-Arg-MCA  
*Callosobruchus maculatus*  
*Zabrotes subfasciatus*

*C. maculatus*

(Silva & Terra, *Z. subfasciatus*  
 .2001)

*Adalia bipunctata*  
 Z-Phe-Arg-pNA  
 .(Walker *et al.*, 1998)

(Wilhite *et al.*,  
 .2000)

( / )  
 .( $p < /$  )

DTT Z-Arg- Arg- pNA

) Z-Phe-Arg-pNA

( ) Z-Arg-Arg-pNA

(Thie & Houseman, 1990)

*Rodnius prolixus*

.(Houseman & Down, 1979)

*Diabrotica virgifera*

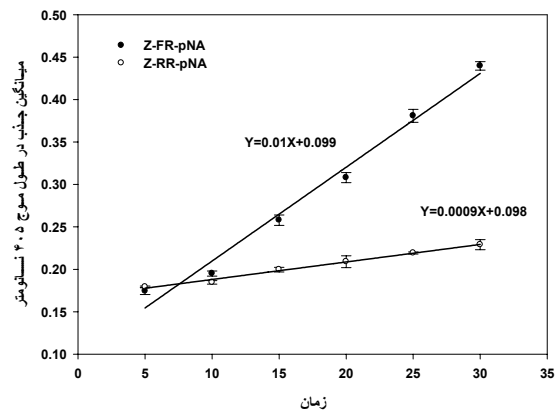
(Koiwa *et al.*,

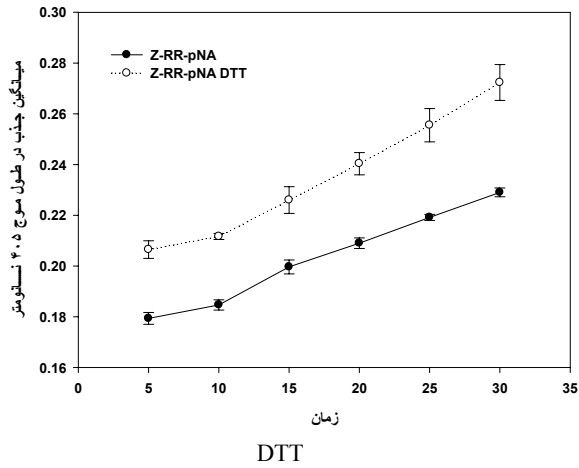
*Dysdercus peruvianus* .2000)

.(Silva *et al.*, 1995)

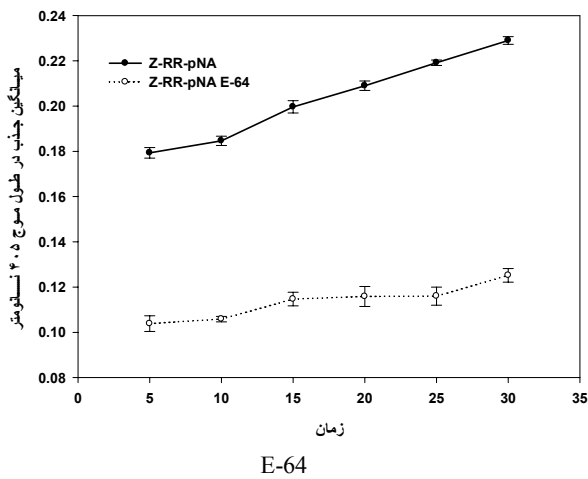
( )

.(Wilhite *et al.*, 2000)

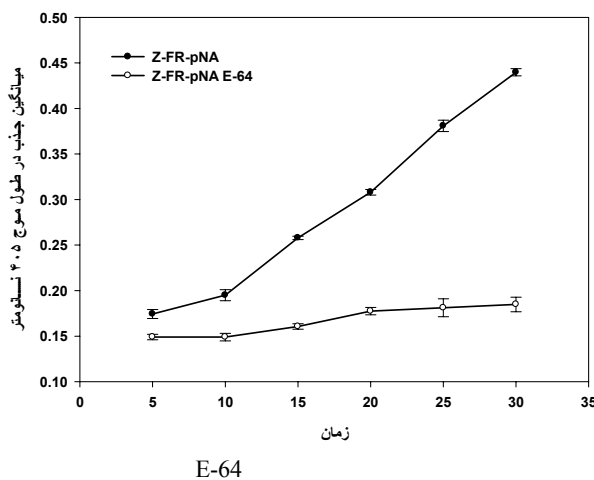




Z-Arg-Arg-pNA



Z-Arg-Arg-pNA



Z-Phe-Arg-pNA

E-64  
)  
(  
(  
E-64  
( )  
Z-Phe-Arg-pNA  
E-64  
)  
Z-Arg-Arg-pNA  
(  
E-64  
*Lygus lineolaris*  
(Zhu et al., 2003)

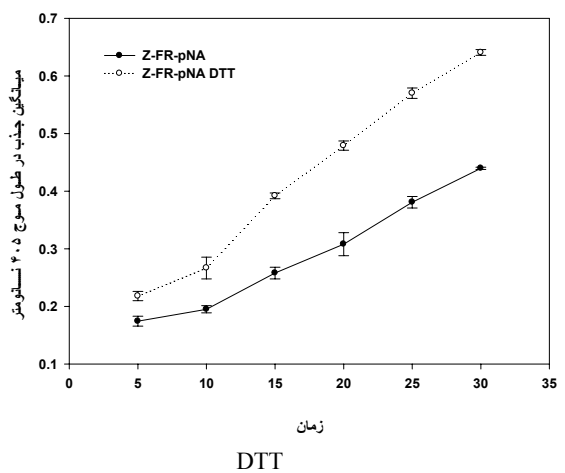
*Perillus bioculatus*

pH  
E-64

(Overny et al., 1998)  
*Perillus*

E-64  
(Novillo et al.,

1997)



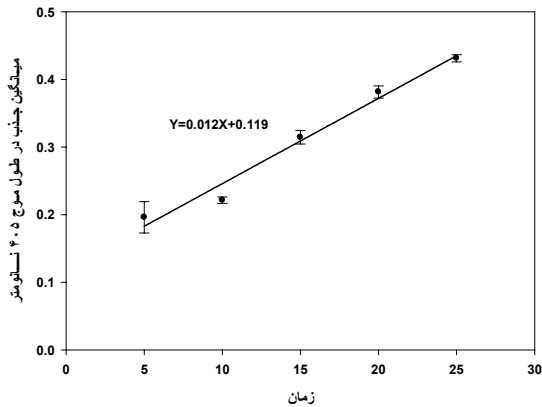
Z-Phe-Arg-pNA



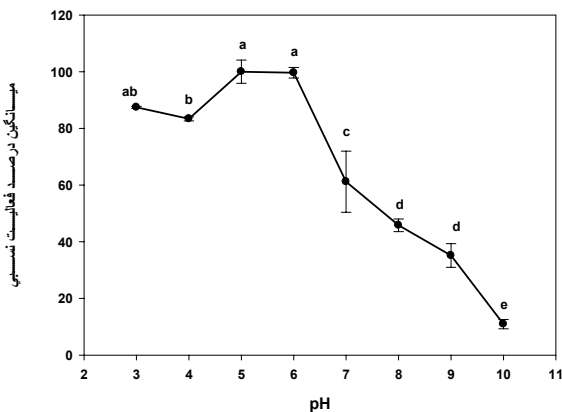
pH (Miles, 1969)

*Eurygaster integriceps*

(Kazzazi, 2006)



pH  
pH  
pH  
pH  
(Dixon & Webb, 1979)



pH  
pH  
pH  
pH  
pH  
pH  
(Hori, 1971; Zeng & Cohen, 2000; Swart et al., 2006)

*Pneropsophus aequinoctialis*

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