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### Leptin Improves Spatial Memory

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**Objectives:** The hippocampus has been implicated in many learning and memory functions including spatial memory. Leptin is a peptide hormone secreted by adipose tissue. Some studies have also suggested that leptin affect learning and memory. The present study is scheduled to investigate the effect of intraperitoneal (IP) injection of different doses of leptin on spatial memory formation. **Methods:** 60 male rats were divided into 6 groups in our experiments: (1) control, (2) sham, and (3), (4), (5), (6) intraperitoneal injection of 0.05, 0.1, 0.25 and 0.5 mg/kg doses of leptin respectively. All groups were trained in Morris water maze for two days. Learning parameters were compared between groups. **Results:** Our results showed there were significant differences between sham group and test groups in spatial learning. **Conclusion:** Together our findings suggest that intraperitoneally injection of leptin improved spatial memory in rat. Leptin shows its highest effect with medium doses.

**Key words:** Spatial Memory; Leptin; Morris Water Maze

. / / / / mg/kg

( ) ( ) ( ) ( ) ( ) ( ) :

/ / / / mg/kg

(P&lt;0.001)

(P&lt;0.001)

(P&lt;0.01)

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 mg/kg / mg/kg / mg/kg / mg/kg

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(One Way ANOVA)

( Tukey )

t-TEST

p < /

Excel

(SE)

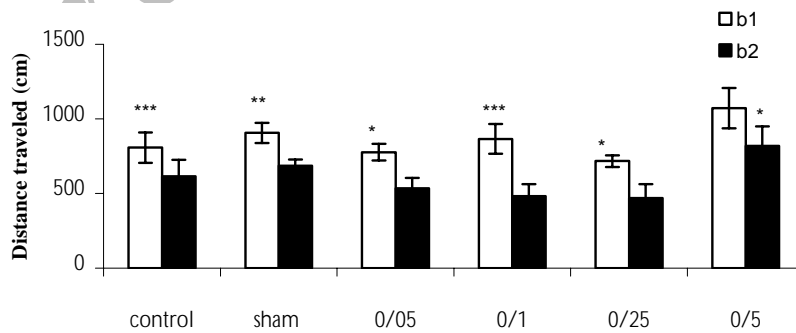
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(p= / ) / mg/kg (p= / ) / mg/kg

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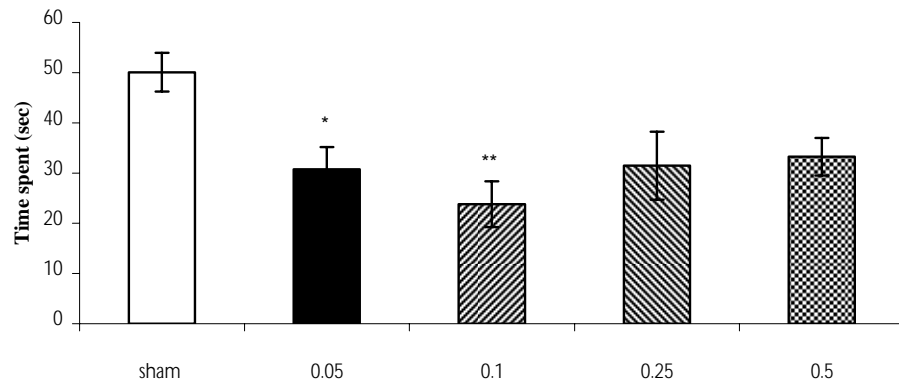


(b2)

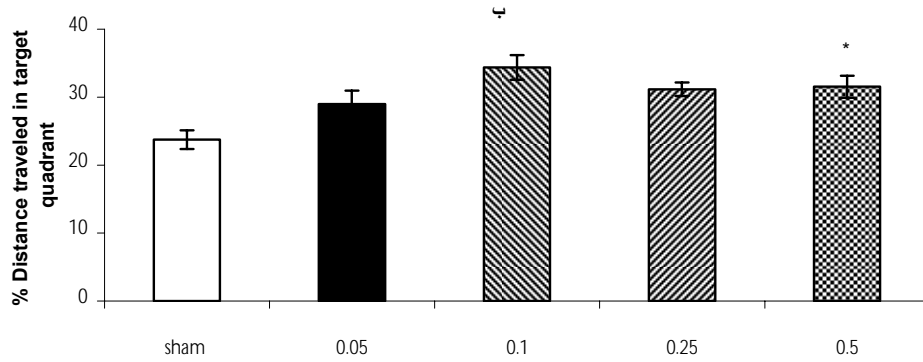
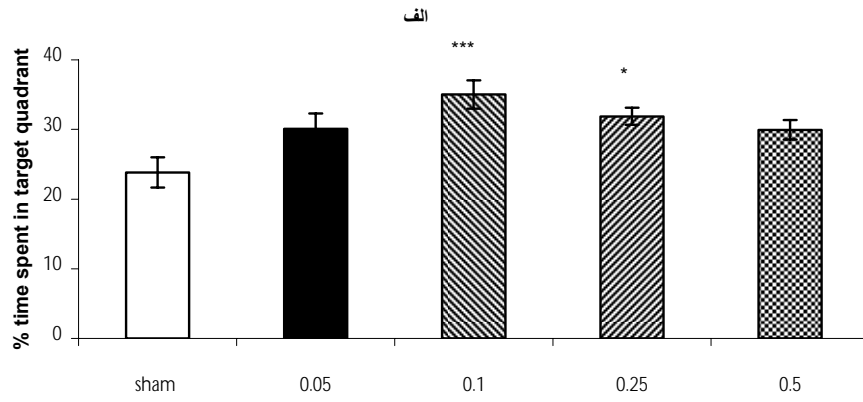
(b1)

( \* P < / \*\* P < / \*\*\* P < / ) .

( ± )



( \* P < / \*\* P < / \*\*\* P < / ) . ( ± )

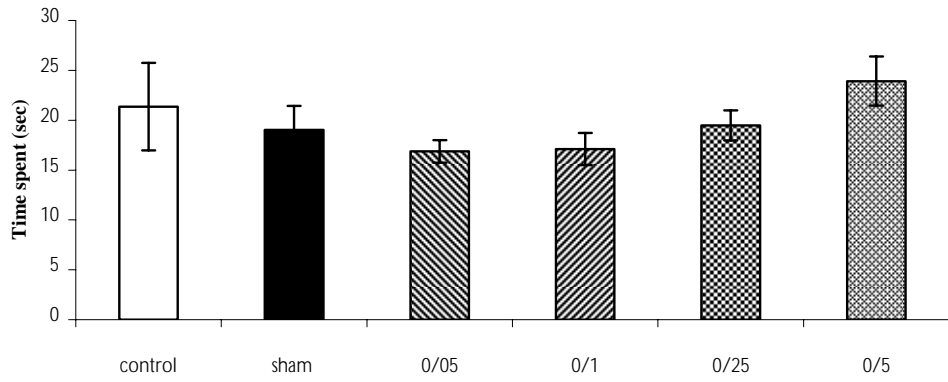


( ) ( )  
 ( \* P < / \*\* P < / \*\*\* P < / ) . ( ± )

(p= / ) / mg/kg  
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( )  
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Oomura / mg/kg  
 ( )  
 (LTP) ( )  
 CA1 (LTD) ( )  
 CA1 CaMK II ( )  
 LTP ( )  
 LTP ( ) ( )  
 1.0µM ( ) CA1 ( )  
 LTP Harlan Sprague-Dawley ( )

. ( )  
 SAM-P8  
 . ( )  
 JAK (ObRb) LTD LTP  
 JAK-2 JAK-1 (Zucker db/db )  
 SOCS-3 ( ) STAT  
 . ( ) ( ) LTP LTD  
 LTP STP  
 NMDA . ( )  
 Src MAPK IP3  
 NMDA  
 Src . ( ) / mg/kg ( / mg/kg)  
 NMDA ( ) NR2B ( ) NR2A / mg/kg ( /  
 / mg/kg  
 Src LTP LTP  
 . ( ) NMDA U LTP  
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 CA1 AMPA . ( )  
 . ( )  
 AMPA / mg/kg  
 ( ) (Aversive) ( )  
 ( )  
 AMPA  
 . ( )

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