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## The effect of Intra hippocampal Injections of Dihydrotestosterone on Spatial Memory in intact Male Rats

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**Objective:** Dihydrotestosterone (DHT) is an endogenous hormone that is derived from testosterone in an enzymatic reaction mediated by 5-alpha reductase. The high density of androgen receptors and 5-alpha reductase enzyme have been found in the centers of learning and memory in hippocampus, and improvement in learning and memory followed by administration of DHT to gonadectomized male rats indicates androgens role in learning and memory. **Methods:** 80 male rats randomly divided into ten equal groups. Two Canules were implanted in CA1 of animals in all groups except control. After 1 week the experiments were started. Control group tested in Morris Water Maze. One group received 0.5  $\mu$ l saline 30 min and two other groups received 0.5  $\mu$ l DMSO 30 min and 24 hour before tests intrahippocampally. Doses of 5, 10, 20 Microgram DHT were solved in 0.5  $\mu$ l DMSO and in three groups were injected in CA1 30 min before test and in the other three groups 24 hours before it. **Results:** Our results showed that injection of DHT different doses 24 hours before tests had no meaningful effects on learning and memory retrieval in Morris Water Maze but injection of 10  $\mu$ g of it, 30 min before tests decreased swimming path significantly ( $p < 0.05$ ) and increased traveled distance percent in target quadrant ( $p < 0.05$ ). **Conclusion:** Results showed that DHT in dose of 10 microgram can improve acquisition and retrieval in intact male rats

**Key words:** Dihydrotestosterone, Acquisition, Retrieval, 5-alpha reductase, Morris Water Maze.

CA1

DMSO /  
DMSO

( P < / )

( P < / )

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(acquisition,

retrieval)

.()

: ± °C / .()

mg/kg

mg/kg .()

CA<sub>1</sub>

CA<sub>1</sub>

.()

/ .( ) / /

(Morris Water Maze)

± °C

.()

.()

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E<sub>2</sub>

(Escape latency)

.()

.()

Kolmogorov – Simmov

Tukey's test

$p < /$

Instat

CA<sub>1</sub>

Morris Water Maze(MWM  
(Dimethyl Sulfoxide) DMSO

MWM

DMSO

MWM

DMSO

DMSO

(DMSO)

CA<sub>1</sub>

( ) (P < / )

DMSO

(DMSO)  
MWM

DHT

DMSO

DHT  
DMSO

(P < / )

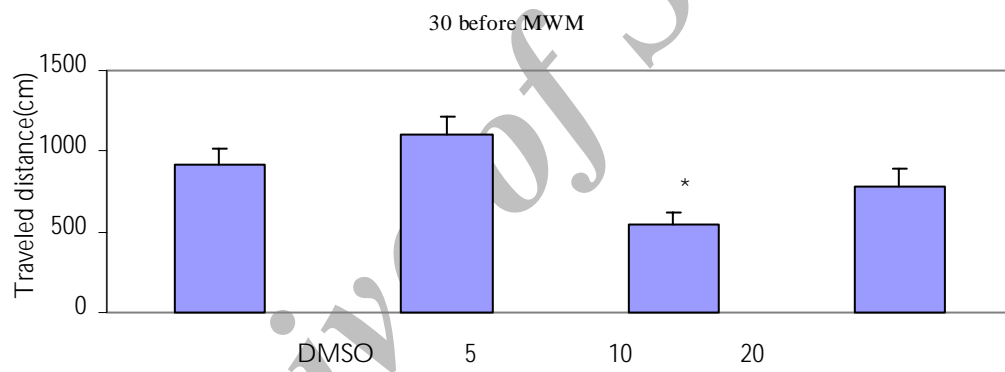
MWM

/  
( )

DMSO

DMSO

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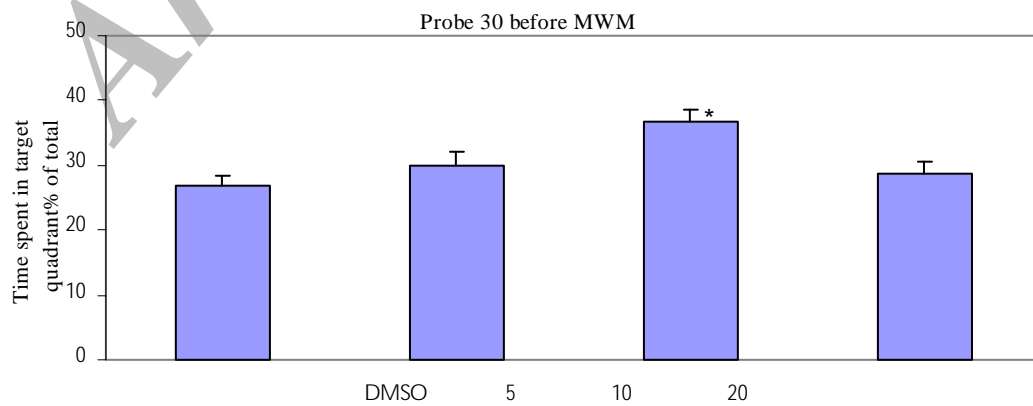


DMSO\*

DMSO

DHT

(P < / )

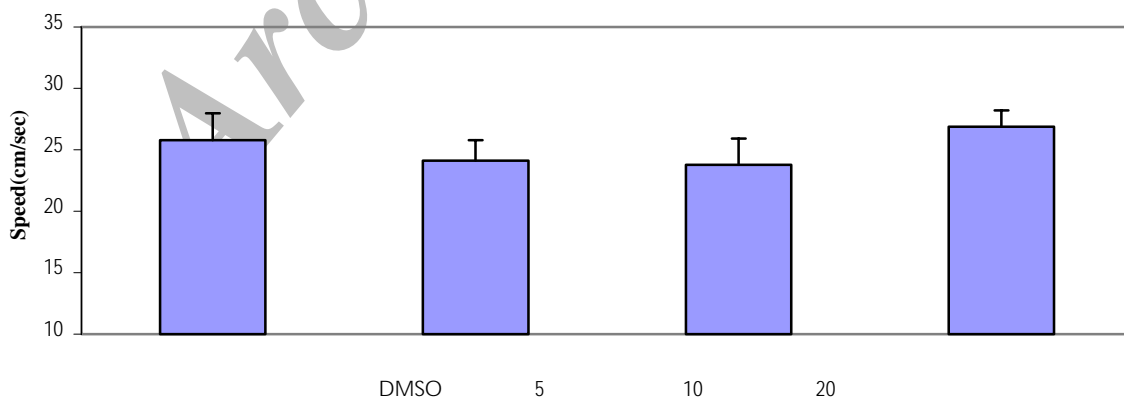
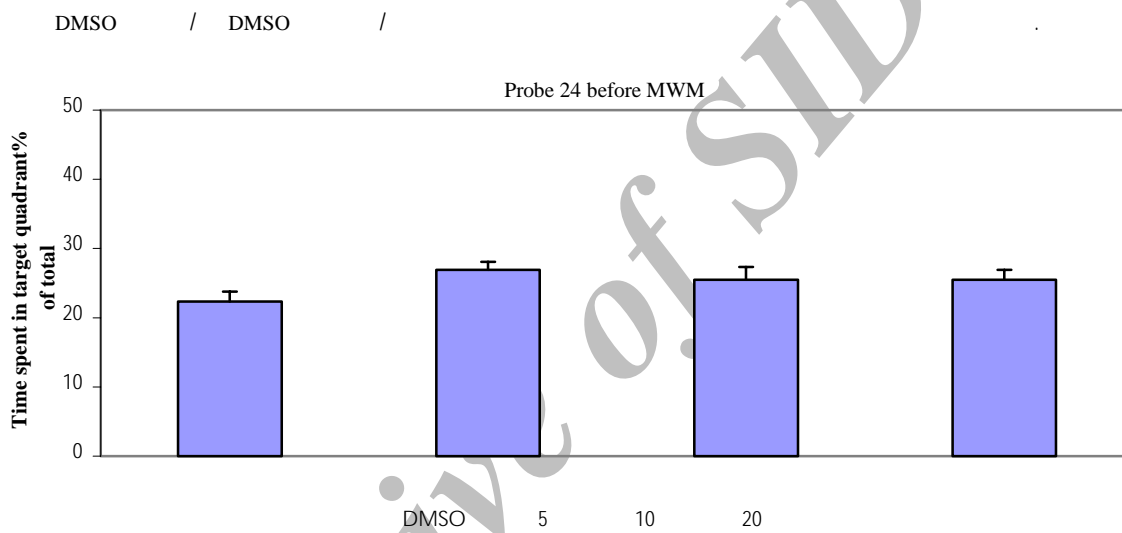
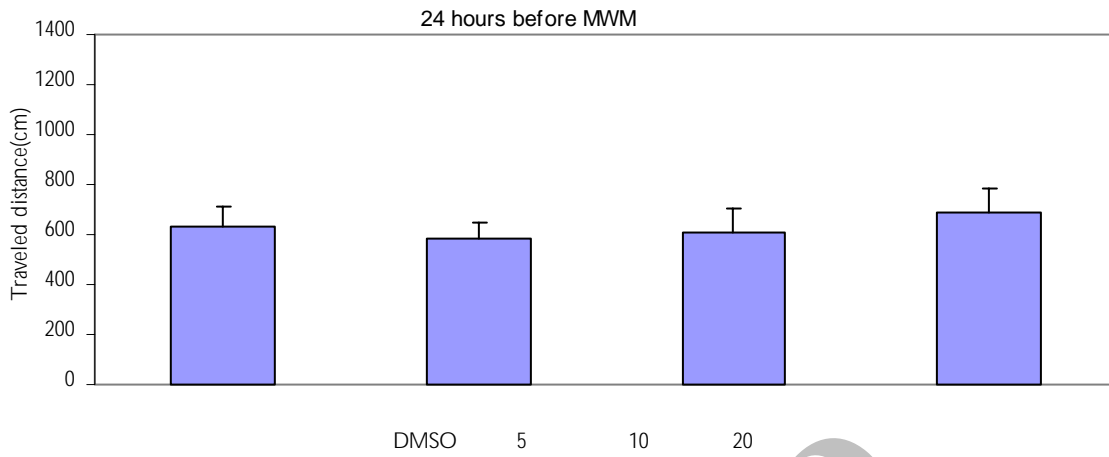


/ )DMSO\*

DMSO

DHT

(P <



DHT

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5

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DHT

DHT

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NMDA

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CA<sub>1</sub>

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