

Mus musculus

تمارة وليد جهاد

هدى يونس العطار

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الملخص

40 *Mus musculus*

(p < 0.05)

(p < 0.05)

:

(AST)

(ALT)

(ALP)

(GGT)

(4)

/

Effect of Passive Smoking on Some Physiological and Biochemical Parameters in Male Swiss Albino Mice (*Mus Musculus*)

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ABSTRACT

The study included the effect of passive smoking exposure for different periods on some physiological and biochemical parameters in the blood and organs of male mice, forty adult *mus musculus* male mice were used. All animals were randomly divided into five groups depending on exposure time to cigarettes smoke, the first group was exposed for two hours daily for two months, the second group was exposed for four hours daily for two months, the third group two hours daily for three months, the fourth group four hours daily for three months while the fifth group was considered as control group. Results showed a significant decrease ($p < 0.05$) in the total number of white blood cells and a significant increase ($p < 0.05$) in each of packed cell volume and hemoglobin concentration in groups exposed to cigarettes smoking as compared with control group.

The results also revealed that there is a significant increase in the activity of the enzymes: alanine amino transferase (ALT), aspartate amino transferase (AST), alkaline phosphatase (ALP), and gamma glutamyl transferase (GGT). The highest enzymatical activity occurred when increasing the exposure time to four hours for three months. A significant increase in bilirubin concentration was observed in groups that exposed for two hours, four hours daily for three months respectively. Results showed also significant decrease in protein concentration in the group which was treated for two hours daily for three months and four hours daily for three months as compared with the group that was treated with four hours daily for two months. Measurement of acetylcholinesterase activity in brain tissue showed a significant decrease occurred in the group exposed for two hours daily for three months when compared with the group that was treated with two hours daily for two months, and the group which was treated for four hours daily for three months as compared with the group which was treated for four hours daily for two months.

The conclusion from this study suggested that exposure to smoking for different periods causes alternations in some physiological and biochemical parameters in male albino mice.

Keywords : Passive smoking , clinical variables, organ function.

المقدمة

World Health Organization (WHO) 5
 2020 8
 % 25 % 30
 - passive smoking) (Naciye *et al.*, 2004)
) (Pursiainen, 2004) (
 Hepatitis
 Hepato cellular primary biliary cirrhosis
 carcinoma (Bailey *et al.* , 2009)
 El-Zayadi *et al.*,) (2004
 Gastrointestinal tract
 : (The great chemical factory)
 (Schoenfield, 2008)
 Packed Cell (PCV)
 B12 Volum
 (CO)

Aspartate Amino

.(Muharrem *et al.*, 2005)

Alanine Amino Transferase (ALT), Transferase (AST)

AST

ALT

.(Amna *et al.*, 2011)

Alkaline phosphatase (ALP)

cholestasis ()

()

Khan *et al.*,

.(2001)

Gamm Glutamyl Transferase (GGT)

.(Rekha and Jayaprakash, 2011)

Hydrolyases

Central nervous system (CNS)

.(Neveen, 2010)

glutamate

Hb WBC)

ALP ALT AST)

(PCV

(AchE)

(GGT

.....

:

Mus musculus

(3) / /

(13 × 16 × 30) (26-20)

London plastic / North kent (LTDL)

° (2 ± 26)

(10) : (14) photoperiod

% 10 % 25 % 20 % 34)

(% 1 % 10

.(2002) /

:

(40)

4

5

: 1

	(/)	()	
8		0	(1)
8	2	2	(2)
8	4	2	(3)
8	2	3	(4)
8	4	3	(5)

:

(20)

(10)

12

.(2001)

:

(100 × 50 × 75)

(2.5)

(1)

(8 × 12)

.(2006)

()

Electric timer

(3)

.(2001)

(9)

:

/ (8)

(Ghamdan)

/ (12)

:

capillary tube

(³ 2)

(Timm, 1979) orbital sinus

(³ 0.5)

(30)

.....
(15) / 3000

° 20-

:

(0.45 gm)

(pH= 7.0)

(% 2)

(5 ml)

Homogenizer

3-2

:

Total Leukocytes Count

-1

1

Turk's Solution

Hemocytometer

.(Jain, 1986) ³ 100

³ 2

Packed Cell Volum

-2

Microhematocrite Capillary

/ 2000

Microhematocrite Centrifuge

10

.(Hillman and Ault, 2002) Haematocrite Reader

Hemoglobin concentration

-3

(Makarem, 1974)

(540)

(DTA)

:

Biomerieux

(ALT)

(AST)

(Reithman and Frankel, 1957)

(Biomerieux)

(ALP)

(GGT)

.(Kind and King, 1954)

(Biolabo)

.(Tietz , 1999)

.(Plummer, 1978)

.(Plummer, 1978)

:

(AchE)

.(Ellman *et al.*, 1961)

analysis of variance

(Duncan's multiple rang test)

.(1983) ($p < 0.05$)

($p < 0.05$)

(2)

(48-24) (72-24) T-cells
(phytohaemagglutinin)

.(Sasikala *et al.*, 2003)

.(Samuel *et al.*, 2008) apoptosis

(2001)

Lewis

Lymphocytes Monocytes

(p < 0.05)

(2)

(PCV)

(2005)

Muharrem

(PCV)

()

(CO)

:2

()					
4	2	4	2		
4759±1887.72 (a)	6889±1090.94 (b)	8981±322.44 (c)	7992±2932.01 (bc)	10901±685.15 (d)	(³)
52.79±2.20 (c)	49.07±4.03 (b)	48.77±2.70 (b)	47.20±4.92 (b)	41.51±2.16 (a)	(%)
17.67±0.75 (c)	16.40±1.35 (b)	16.35±0.90 (b)	16.18±1.65 (b)	13.20±0.85 (a)	(³ /)

. 8 =

. standard error

± mean

(p < 0.05)

(p ≤ 0.05)

(2)

Hb

(CO)

Hb

(Muharrem *et al.*, 2005)

()
 .(Lynnette *et al* ., 2004) ()
 AST (p < 0.05) (3)
 ()
 (p< 0.05)

AST (2006)Yousef and Demerdash,
 hepatocytes
 .(Rekha and Jayaprakash, 2011) ALT
 : 3

()					
4	2	4	2		
68.06±5.32 (c)	57.44±2.87 (b)	30.51±10.97 (a)	33.38±3.18 (a)	32.79±4.47 (a)	(U /L) AST
64.12±5.67 (d)	47.67±4.23 (c)	40.60±4.00 (b)	40.03±4.27 (b)	31.05±1.61 (a)	(U/L) ALT
46.25±4.95 (c)	34.99±6.19 (b)	27.32±1.46 (a)	27.63±1.18 (a)	24.38±2.47 (a)	(U/L) ALP
26.26±4.07 (c)	23.21±5.06 (bc)	25.14±3.88 (c)	20.32±2.67 (b)	13.94±1.51 (a)	(U/L) GGT
0.64±0.20 (b)	0.65±0.17 (b)	0.23±0.04 (a)	0.20±0.03 (a)	0.21±0.03 (a)	(mg/dL)
3.97±0.35 (a)	4.98±0.67 (b)	5.93±0.49 (c)	5.90±0.46 (c)	6.05±0.52 (c)	(gm/dL)
0.09±0.03 (a)	0.21±0.04 (b)	0.29±0.06 (c)	0.36±0.06 (d)	0.41±0.03 (e)	AchE (μ mol/mg/min)

8 = -

. standard error ± mean -

(p < 0.05) -

11

.....

(P< 0.05)

(3)

(ALT)

ALT

(ALT)

.(Amna *et al.*, 2011) AST

(ALP)

(P < 0.05)

(3)

(3)

/

ALP

.(Mahfouz *et al.*, 1975)

Cannabis sativa

ALP

ALP

.(Amna *et al.*, 2011)

AST ALT

:

(50 – 10)

ALT

.(Williams and Wilkins, 2000)

(P < 0.05)

(GGT)

(Gifford and Raymond, 1972)

Cholestasis

()

(Jacobs, 1975)

.(Rekha and Jayaprakash, 2011)

(3)

(p< 0.05)

(2000) William and Wilkins

(Henry, 2001)

(anemias)

.(Watanabe *et al.* , 1995)

(p < 0.05)

(3)

(2002) Mustafa

/

(AchE)

(p< 0.05)

(AchE)

.(Teh *et al.*, 2010)

Nicotin Muscarine

.....
 (Lassiter *et al.*, 2003)

(AChE) (2006) Orgunkeye and Roluga,

(AChE)

.(2001)

Oryctolagus

.cuniculus

" .(1983)

.354-309

Melia azedarch L.

.(2002)

.Rattus norvegicus

.(2006)

.Mus musculus

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