

Lead Pb

1

1.1

[1,2]

[3]

(Leydig's cell)

[4]

45 d

15 mg/kg

Murthy

[5]

(250 500 1 000 mg/kg)

1

250 mg/kg

3

1 000 mg/kg

2~3

1~2

1

250 mg/kg

1 000 mg/kg

3 1 000 mg/kg

Singh [6]

(1 500 mg/kg)

9

(lipid droplet)

1.2

[7]

[3]

Batra [8]

DNA
Marchlewicki [9] (chemiluminescence CL)

< (19% 39% 51%)

[10]

Hernandez-Ochoa [11]

1.3

Rodamilanes [12] 30d T (49
± 10) ngg (129± 30) ngg Weibe [13] 17
- 17~20 3 - T
- - [3]

LH SH
[14] SH LH [15]
(25~40 μ gdl)LH (>40 μ gdl)
SH

SH FSH
(2· 64× 10⁻¹²~2· 64× 10⁻⁴mol/L)
10⁻⁴mol/L 24 h FSH
[16] Wiebe SH
[17]

2

2.1

(LPO) (15 30 mgkg)
1 11 T-SOD GSH-Px
T-SOD [18] LPO SOD
GSH-Px

2.2

G-6-PD -G LDH LDHx

[19] [20]

	-G	LDHx	-
[21]		7 d	LDH ALP
Saxena [22]		45 d	SDH
G-6-PD	[23]		
NOS	NO		
	[24]		

2.3

DNA

(SCE) DNA () DNA
 [25] [26]

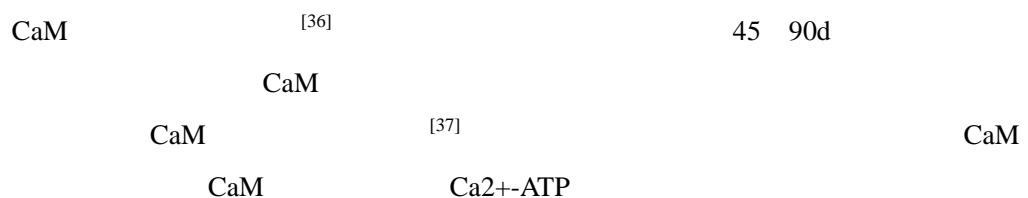
C57BL 4 d 10

Hernandez-Ochoa [27]

DNA	Corpas	[28]	:	DNA	RNA
DNA	RNA		Hartwig	[39]	
			CaM		DNA
[30]	DNA 8-		(8-OHdG)/106		(dG)
	DNA			[31]	
DNA					DNA
DNA					DNA
			DNA		
				[32]	
	(NGF)			[33]	NGF
ALAD ₂					
)			DNA		DNA

2.4

CaM ATP



3

[38]

- [1] Gautam A K, Agarwal K, Shah B A, et al. Lead induced spermotoxicity in mouse and MPG treatment[J]. Environ Biol 2001 22(4):287~291.
- [2] Acharya U R, Acharya S, Mishra M. Lead acetate induced cytotoxicity in male germinal cells of Swiss mice[J]. Ind Heal, 2003, 41(3):291~294.
- [3] , . [M]. : , 1997.348~359.
- [4] . [J]. 1992
6(4):285~288.
- [5] Murthy R C, Saxena D K, Gupta S K, et al. Ultrastructural changes in the testis rats.[J] Exp Pathol, 1994, 42(2):95~100.
- [6] Singh A, Cullen C, Dykeman A, et al. Chronic lead exposure induces ultrastructural alterations in the monkey testis. Submicrosc Cytol Pathol 1993 25(4):479~486.
- [7] . [J]. 1986 3(2):51~55.
- [8] Batra N, Nehru B, Bansal M P. Influence of lead and zinc on rat male reproduction at 'biochemical and histopathological levels'. Appl Toxicol, 2001, 21(6):507~512.
- [9] Marchlewica M, Michalska T, Wiszniewska B. Detection of lead-induced oxidative stress in the rat epididymis by chemiluminescence. Chemosphere 2004 57(10): 1553 ~1 562.
- [10] Bizarro P, Acevedo S, Nino-Cabrera G, et al. Ultrastructural modifications in the mitochondrion of mouse Sertoli cells after inhalation of lead cadmium or lead-cadmium mixture. Reprod Toxicol 2003 17(5):561~566.
- [11] Hernandez-Ochoa I, Garcia-Vargas G, Lopez-Carrillo L, et al. Low lead environmental exposure alters semen quality and sperm chromatin condensation in northern Mexico. Reprod Toxicol 2005 20(2):221~228.
- [12] Rodamilames M. Toxic Lett[J] 1988 24:285~290.
- [13] Wiebe J P, Barr K J, Buckingham K D. Lead administration during pregnancy and lactation affects steroidogenesis and hormone receptors in testes of offspring. Toxicol Environ Health 1982 10(4~5):653~666.
- [14] . . 1999 10(3):156~157.
- [15] . . 1997 14(4):193~194.
- [16] . . 2000 21(4):126~127.
- [17] Wiebe J P, Salhanick A I, Myers K I. On the mechanism of action of lead in the testes: in vitro suppression of FSH receptors cycle Amp and steroidogenesis. Life Sci 1983 32 (17):1 997~2 005.
- [18] , , . , 1999, 26(3):308~309.
- [19] Marchlewica M, Michalska T, Wiszniewska B. Detection of lead-induced oxidative stress in the rat epididymis by chemiluminescence. Chemosphere, 2004, 57(10): 1553 ~1 562.
- [20] , , . , 2004, 17(4):237~239.
- [21] , . , 2004, 24(10):2 329~2 333.
- [22] Saxena D K, Lal B, Srivastava R S, et al. Lead induced testicular hypersensitivity in stressed rats. Exp

Pathol,1990, 39(2):103~109.

[23] , , .

,2004,31(2):183~186.

[24] , , .

,1996,16(3):167~169.

[25] Curtis D K.Toxicology: the Basic Science of Poison. 6th. Beijing: People's Medical Publish,2002,674.

[26] , , .

,1994,16(1) 44.

[27] Hernandez-Ochoa I,Sanchez-Gutierrez M,Solis-Heredia M J, et al.Spermatozoa nucleustakesup lead duringthe epididymal maturation altering chromatin condensation.Reprod Toxicol,2006,(in press).

[28] Corpas I, Gaspar I, Martinez S, et al. Testicular alterations in rats due to gestational and early lactational administration of lead. Reprod Toxicol, 1995, 9(3):307~313.

[39] Hartwig A, Schlepegrell R, eyersmann D. Indirect mechanism of lead-induced genotoxicity in cultured mammalian cells. Mutat Res, 1990, 241(1):75~82.

[30] . DNA

,1999,18(5):269~271.

[31] , , .

DNA

,2004,20(3):311~312.

[32] , , .

[J].

,2000,31(4):313~317.

[33] , , .

mRNA

[J].

,1996,10(3):136~139.

[34] , , .ALAD

[J].

,2004,21(2):101~103.

[35] Dolmetsch RE,Pajvani U,Fife K,et al.Signaling to the nucleus by an L-typecalcium channel-calmodulin complex through the MAP kinase pathway[J]. Science,2001,294(5541):333-339.)

[36] , , .

[J].

,1995,21(3):139~141.

[37] , , , .

ATP

[J].

,2002,19(3):132~133.

[38] , , , .

[J].

(

).2008,46(6):640-643.

[39] . [J].

:

,1999,26(2):95-98.

[40] . [J].

, 2006,41(1):123~127.