

(2006/9/4 2006/5/29)

/ 75

Cyclophosphamide
12

13

16-15-14

.Cyclophosphamide

/ 75

Teratogenic Effects of Cyclophosphamide in Mice

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ABSTRACT

In this study, various types of fetal malformations, including cleft palate were induced by the intraperitoneal administration of cyclophosphamide to pregnant mice. The dose 75 mg/kg b.w. when given at the 12th day of gestation has lead to multiple defects including cleft palate, flat head, curved head, exencephaly, shortening of the extermities, and smaller size of the fetus. When the same dose was given at the 13th day of gestation, the malformations included curved head, exencephaly, shortening of the extermities and a lower percentage of cleft palate. When given at the 14th, 15th, or 16th days of gestation,

it lead to curving of the head and small size of the fetus. Cleft palate was confirmed histologically as the palatine shelves were quite apart. Additionally, there were thickening and vacuolar degeneration of the epithelial element of the shelves. The core of the shelve consisted of pleomorphic mesenchymal cells with foci of chondroblastic proliferation.

Cleft Palate

. (Fraser, 1970 ; Bonaiti – Pellie, 1982 ; Wilkie and Morriss – Kay, 2001)

Cyclophosphamide
Albino
Cleft Palate
(Sutton et al., 1990)

.(Shepard, 1986) Palate

Cyclophosphamide
Mus musculus

Mus musculus

:

Cyclophosphamide

:Preparation of Animals

.1

:The mating .2

(14-12)

28

.(Wischnitzer, 1975 ; Meirow et al., 2001) Vaginal Plug

Kochhar and Johnson, 1965; Correia–Pinto et al.,)

.(2001

:Drug used .3

Cyclophosphamide

/ 2

/ 75

(NaCl 0.9%) Normal saline

.(Meirow et al., 2001)

:Experimental Design .4

Cyclophosphamide

100

1

Interaperitoneal Injection

.(2004)

:

(10) () -

/ 75 Cyclophosphamide (10) -

(10) () -

/ 75 Cyclophosphamide (10) -

(10) () -

/ 75 Cyclophosphamide (10) -

(10) () -

				42
/	75	Cyclophosphamide	(10)	-
			(10) ()	-
/	75	Cyclophosphamide	(10)	-
				.5
			:Dissection	
		(Marks et al., 1981)	(18)	
		(2002) Dissecting Microscope		
		:Photography of External Features of Embryos		.6
		Konica		
		:Weight and Measurement of Dimensions		.7
		Sartorius, AG Gottingen		
			(Germany)	
			:Fixation	.8
		Aqueous Bouins Fluid Fixative		
			(Luna, 1968)	
		:Microscopic Slides Preparation		.9
		(Drury and Wallington, 1980)		
		:Examination and Microscopic photography		.10
			Altay Recichert Neovar	
			Biolab Line ALTAY 1007, Taiwan	
		:Statistical Analysis		.11
			F	

(1) Cyclophosphamide / 75
Cyclophosphamide

:
: 12 (/ 75) -

1.35 0.709 :(%69.44) -1
0.87 0.53

2.088 1.053
(a1 a2) 0.95 0.68
Microphthalmia
(b1) Cleft Palate
(b5 d2)

0.557 :(%16.66) Exencephaly -2
0.64 0.45 1.3
(c2)

:
Xerophthalmia

0.875 :(%13.9) -3
(b2) 0.82 0.59 1.8
(b2)

Cyclophosphamide : 1

16.66	12	72		12	/ 75
13.9	10	71			
69.44	50	72			
25	13	52		13	
-	-	-			
75	39	52			
-	-	-		14	
-	-	-			
100	55	55			
-	-	-		15	
-	-	-			
100	57	57			
-	-	-		16	
-	-	-			
100	60	60			

: 13 (/ 75) -

:

0.738 :(%75) -1

. 0.9 . 0.6 1.43

.(c5 3)

0.56 :(%25) Exencephaly -2

(4) 0.77 0.5 1.28

:

: 14 (/ 75) -

0.66

1.52

0.860

.(d5) 0.9

.(d5)

: 15 (/ 75) -

.(e5)

1.79

0.937

0.8

0.6

: 16 (/ 75) -

.(b6)

0.68

1.85

0.984

0.92

:

() F

F 0.05 0.01

F

12

14

13 12

16

15

.(7)

12

14

13

.(8)

16

15

:

:

-

.Maxilla

.(9)

.(10)

3-1

.(11)

Medial Aspect

.(12)

.(12)

:

Cyclophosphamide / 75

-

(15)

.(13)

.(14)

.(15)

()

.(16)



/ 75

:1

(b)

(a)

Cyclophosphamide



(a) / 75 :2
(d) . Cyclophosphamide (b)



(a) / 75 :3
Cyclophosphamide .(b)



(a) / 75 : 4
Cyclophosphamide
(b)

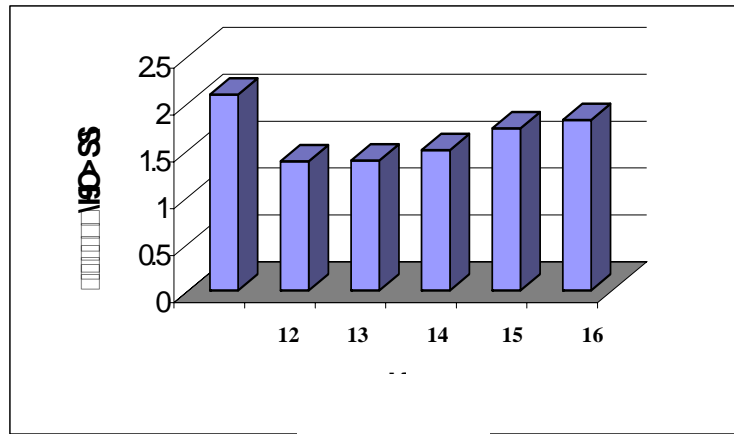


(b) / 75 : 5
(d) (a) Cyclophosphamide
(c)
(e)



:6

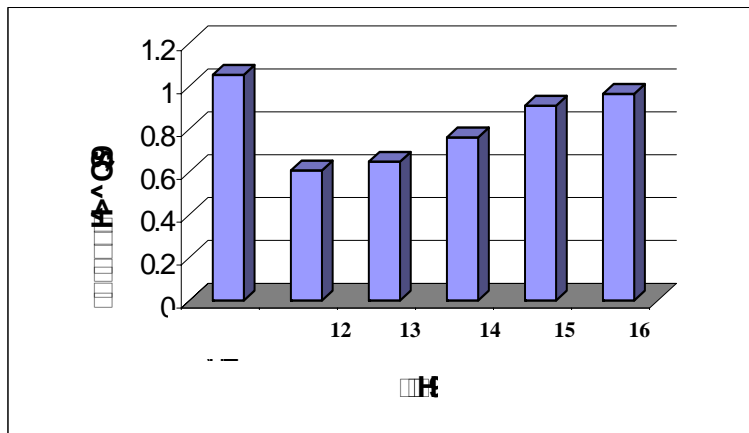
(a) Cyclophosphamide (/ 75) (b)



Cyclophosphamide

:7

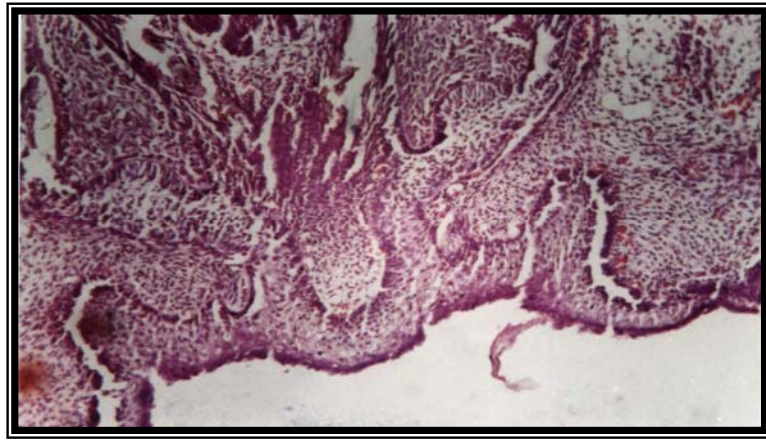
(12)



Cyclophosphamide

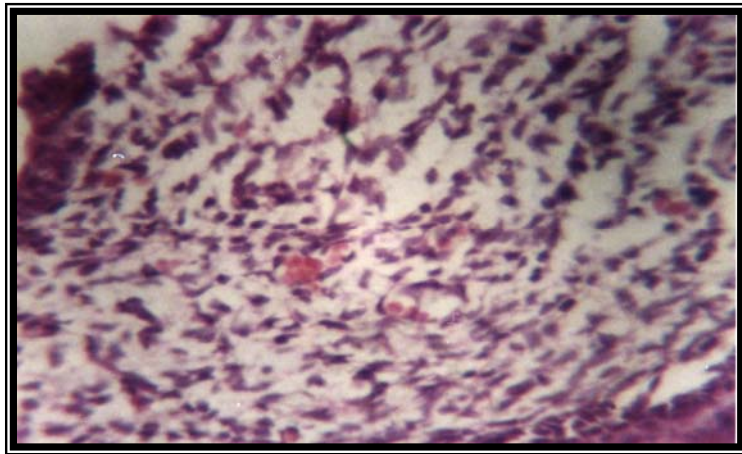
:8

(12)



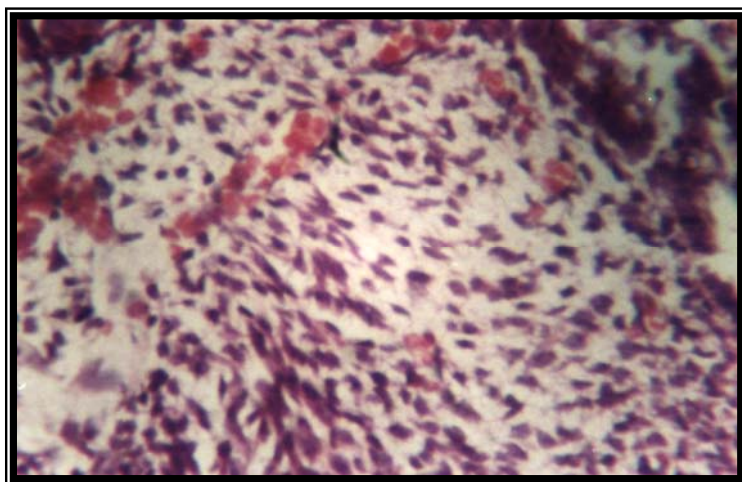
:9

.100X H and E .



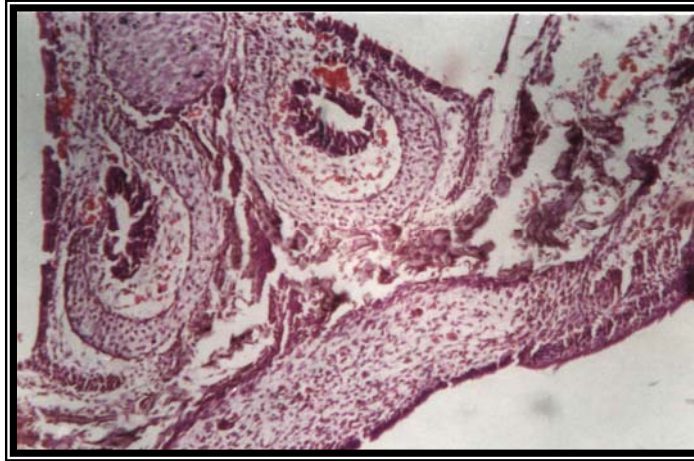
:10

.400X H and E .



: 11

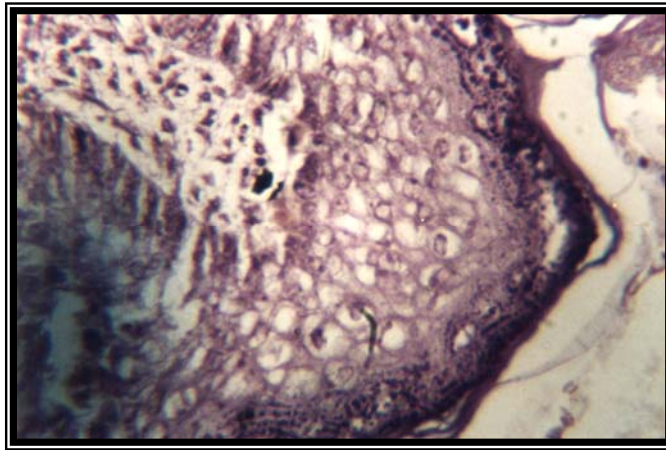
.400 X H and E .()



:12

H and E

100 X

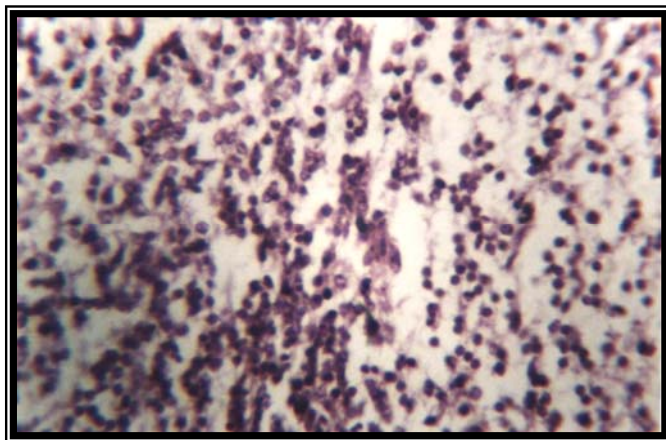


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Cyclophosphamide

/ 75

.400X H and E

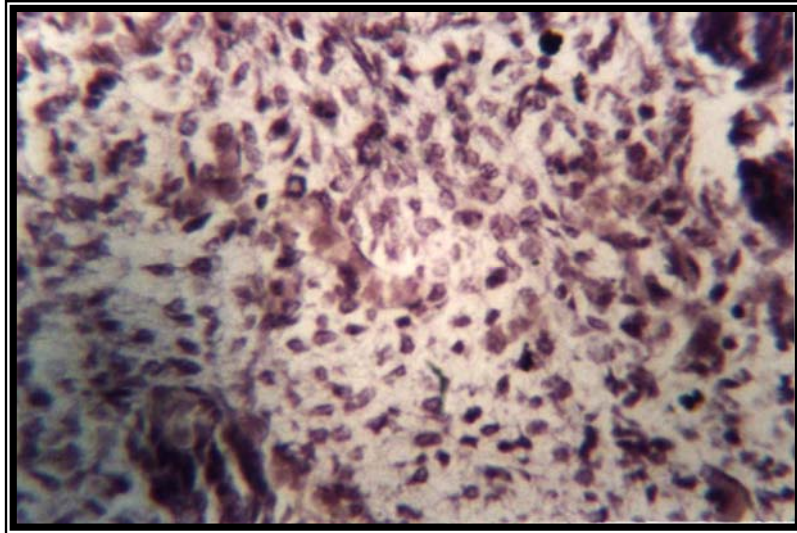


:14

Cyclophosphamide

/ 75

400X H and E



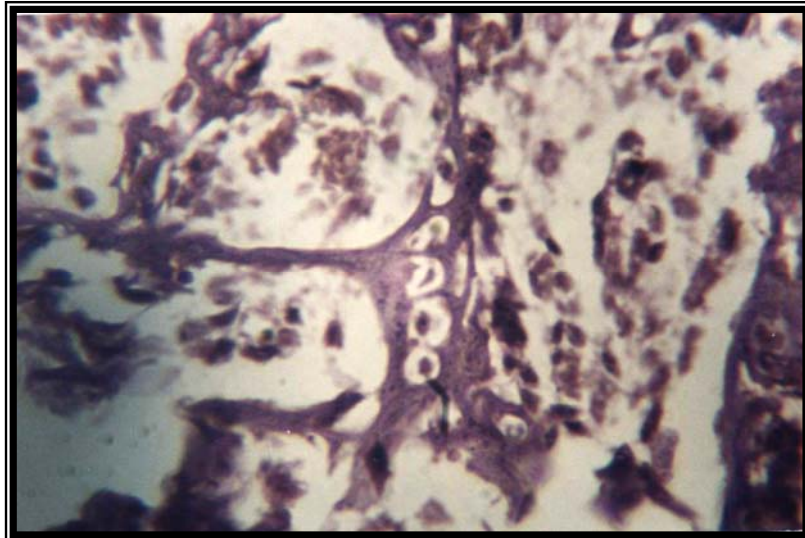
/ 75

:15

Cyclophosphamide

H and E

.400X



/ 75

:16

Cyclophosphamide

.400X H and E .()

Spina Bifida

Thalidomide

Teratogen

.Organogenesis

.(2004

O'Day)

15 14 13 12

(Cyclophosphamide)

16

()

.(IARC, 1981 ; Briggs et al., 1994)

/ 75

12 11

(Shepard, 1986)

Encephalocoele

Exencephaly

.(Kochhar and Johnson, 1965)

%80

()

Mus musculus

.(2004) A

Mus musculus

()

.(Brown and Sondy, 2002)

.(Jones et al., 1997)

.1980

.1981

.2002

. *Mus musculus*.

.1978

.2002

.Cyclophosphamide

.2004

A

.2004

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