

(2011 / 11/ 21 2011/ 10 /4 )

28

18

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6

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660 330

. 30

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## **Effect of Excessive Levels of Vitamin A on Bone Formation and some Biochemical Parameters in Young Rats**

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### **ABSTRACT**

The present study was designed to effect the excessive levels of vitamin A on bone formation and some biochemical parameters in young rats. 18 of albino males young rats were divided into 3 groups it 6 animals each. These included untreated control and two treated groups received orally vitamin A at the doses 330 and 660 IU/g B.W daily for 30 days. Animals were weighted weekly, Blood samples were obtained at specific times for biochemical parameters determination which include alkaline phosphatase activity (ALP), Calcium, Inorganic phosphorus ,magnesium and albumin levels. At the end of the experimental period, rats were anesthetized and killed. The right femur bone were obtained for mineral analysis in bone ash include calcium, magnesium and Phosphorus. The results showed significant decrease in body weights and ALP, calcium, Inorganic phosphorus, magnesium, albumin in the serum of the first and the second groups. More reduction was observed in the second group when compared with the control groups. The mineral analysis of bone ash showed a significant decrease in calcium, magnesium, Phosphorus in the first and the second groups compared with control groups. It was concluded from this study, that excessive levels of vitamin A caused an effect on body weight and defect detection in bone formation of young males rats.

**Key words:** vitamin A, vitamin A high dose, bone, rats.

.Bone matrix

33%

%28

%67

%5 Collagen type I

Osteopontin Osteonectin Sialoprotein

Osteocalcin

Proteoglycans

$\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$

.(Bilezikian *et at.*, 2002)

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.(Vander *et al.*, 1998)

fat soluble vitamins

micronutrients

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Retinyl esters

%90

.(Bates, 1995)

Retinol binding protein

Collagen type I

Guo *et at.*, )

.(2011

(Melhus *et at.*, 1998)

.(Burke, 1998)

.(Metz *et at.*, 1985)

.Albino males rats

/

18 .  
 6 28  
 / 660 330  
 . 30  
 30 15

**Collection of blood samples**

heparinized capillary tube  
 ( °18-) 15 / 2500

(kits) ALP (Biomerieux)  
 (Belfeld and Goldberg, 1971) Substrate  
 (kits) Alkaline Phosphatase (Biolabo)  
 (Methyl thymol blue)  
 (570)  
 Spinreact (kits)  
 Molybdicacid  
 (710) - phosphomolybdic  
 (Biolabo) (kits)  
 (xylidyl blue )  
 (kits) (530)  
 (Biolabo)

.....

(Bromocresol green)

(Rude *et al.*, 2006) (630)

(1)

(3) °(550)

(100)

(EDTA-Ca)

(1989

)

(Eriochrome Blanck T)

Molybdc acid

**Statistical Analysis**

Sigma stat 3.5

One way analysis (ANOVA)of

variance

T-test

. P ≤ 0.001

(1)

660 ÷

/

330 ÷

/

:1

( )	( )	
102.3±3.01 Ab	55.1±1.64 Aa	
93.6±2.61 Bb	55.2±1.67 Aa	IU/g BW 330
85.2±1.9 Cb	54.2±1.73 Aa	IU/g BW 660

±

A, B, C  
a, b

15

(2)

30

$P \leq 0.001$

$P \leq 0.001$

30

15

30

15

$P \leq 0.001$

15

(3)

$P \leq 0.001$

30

$P \leq 0.001$

30

15

30

15

(2)

15

$P \leq 0.001$

30

30

15

(2)

50

.....

15

$P \leq 0.001$

15

30

$P \leq 0.001$

30

(3)

15

30

30 15

$P \leq 0.001$

:2

mg/dl		mg/dl		u/l ALP		
30	15	30	15	30	15	
6.561±0.09 Ab	5.168±0.168 Aa	2.435±0.0289 Aa	2.224±0.093 Aa	111.645±0.94 Ab	100.452±0.87 Aa	
4.89±0.785 Ba	5.023±0.20 Aa	1.805±0.140 Bb	2.165±0.0924 Aa	83.250±0.564 Bb	95.725±0.763 Ba	330 IU/g BW
4.825±0.217 Ba	5.123±0.134 Aa	1.527±0.0119 Cb	2.149±0.0233 Aa	73.500±0.336 Cb	88.70±0.66 Ca	660 IU/g BW

±

A, B,C

A, b

:3

mg/dl		mg/dl		
30	15	30	15	
4.311±0.147 Aa	4.151±0.344 Aa	6.80±0.570 Aa	6.77±0.556 Aa	
3.210±0.570 Bb	4.104±0.228 Aa	5.761±0.278 Bb	6.530±0.260 Aa	330 IU/g BW
3.018±0.670 Bb	3.906±0.487 Aa	5.088±0.250 Cb	6.240±0.223 Aa	660 IU/g BW

±

A, B, C

A, b

P ≤ 0.001

(4)

: 4

P %	Mg %	Ca %	
22.5±0.229 A	1.187±0.054 A	39.5±1.9 A	
17.1±0.449 B	0.565±0.0229 B	37.2±0.9 B	IU/g 330 BW
14.5±0.69 C	0.405±0.0116 C	34.5±0.57 C	IU/g 660 BW

±

A, B, C

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(Melhus *et al.*, 1998)

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(Misra, 1968)

.(Burke, 1998)

(ALP)

.

(Swaminathan, 2001 ; Christenson, 1997)

Isoenzyme

(ALP)

.

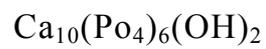
.(Guo *et al.*, 2011)

(Chen *et al.*, 2008)

/ (15,000-45,000)

%98

.



.(Guo *et al.*, 2011)

(Yan *et al.*, 2007)

(mitogenic)

.(Rude *et al.*, 2006)

(epiphyseal plate)

.(Romani *et al.*,1993)

Jenkins and )

(Mitchell, 1975

.(1989)

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