

*Punica granatum L.*  
*Oryctolagus cuniculus*

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(2018/ 1 / 10 2014/ 5 /4 )

/ 5

/ 6

6

60

/

( $P \leq 0.0001$ )

T4 )

(Thyroid Stimulating Hormone T.S.H)

6

(Triiodothyronine T3 ) (Thyroxine

/

T3 T4

:

**Effect of Pomegranate Juice (*Punica granatum* L.) on some Hormones and Histological Features of Aorta in Healthy and Ovariectomized White Female New Zealand Rabbits (*Oryctolagus cuniculus*)**

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**ABSTRACT**

This study was conducted to investigate the effect of pomegranate juice which contains active compounds that stimulate necessary hormone production to reduce the effect of ovariectomy in initiate and development of atherosclerosis, female New Zealand rabbits had been divided randomly into four groups (5 rabbits/ group), all groups had been given a standard ration with free water, first group had been drenched normal saline by mouth and considered as a control group, while the second group drenched 6ml pomegranate juice /Kg body weight, third group eradicated ovaries by laparoscopic surgery, fourth group eradicated ovaries then drenched 6ml pomegranate juice /Kg body weight, the drenching contentious for 60 days.

The results showed positive effects as a significant increase ( $P \leq 0.0001$ ) in Adiponectin hormone, Thyroid stimulating hormone (T.S.H) and Thyroid hormones T4 and T3 in rabbit's serum that drenched 6ml pomegranate juice /Kg body weight, in contrast there is a negative effects as a significant decrease in Adiponectin hormone, T.S.H, T4 and T3 in ovariectomized rabbit's serum, while tend in ovariectomized rabbits to be in near with normal concentration in control.

Histological sections of aorta artery in ovariectomized rabbits showed atherosclerotic lesions between the muscle fibers in media of aorta in contrast with the normal structure of aorta in rabbits drenched pomegranate juice so as in control, also observed improve the histological picture of aorta in ovariectomized that drenched pomegranate juice represented by decrease the atherosclerotic lesions between the muscle fibers in tunica media.

**Keywords:** Pomegranate Juice, Adiponectin hormone, Thyroid hormones, Thyroid stimulating hormone, Ovariectomized, Female New Zealand Rabbits.

(2001 )

(2004 )

(2012 )

*.Punica granatum*

.(Mahdihassan, 1984)

.....

(Gil *et al.*, 2000)

(Lansky and Newman, 2007)

(Hartman, 2006)

( Aviram and Rosenblat,

(Turk, 2008)

.(Yancy, 2005)

(2012

(Braunwald, 2008)

.(2013 )

Adipo Q

Adipokines

(2008 )

.(2013 )

(Tahmasbi *et al.*, 2013)

(Ha *et al.*, 2006 )

.(Barrett-Connor and Bush, 1991) %50-35

:

: -1

(11-9)

20

: -2

(2000-1500 )

10

14

°(2±26)

.(1997 )

)

24

/ 20

(2012

CO2 / 50 (2003 )

/ 3

Pnemoperitonium (Al-Badrany, 2009)

.(2003 )

/ 5

: -3

Gavage tube

: 60

:( )

(2014 ) / 6

:

:( )

/ 6

:( )

3 5

60 : -4

20

Kit

: -5

MyBioSource

AccuBind ELISA Microwells

Kit

.ELISA

: -6

%10

.(Luna, 1968)

-

(P≤0.0001)

1

/ 6

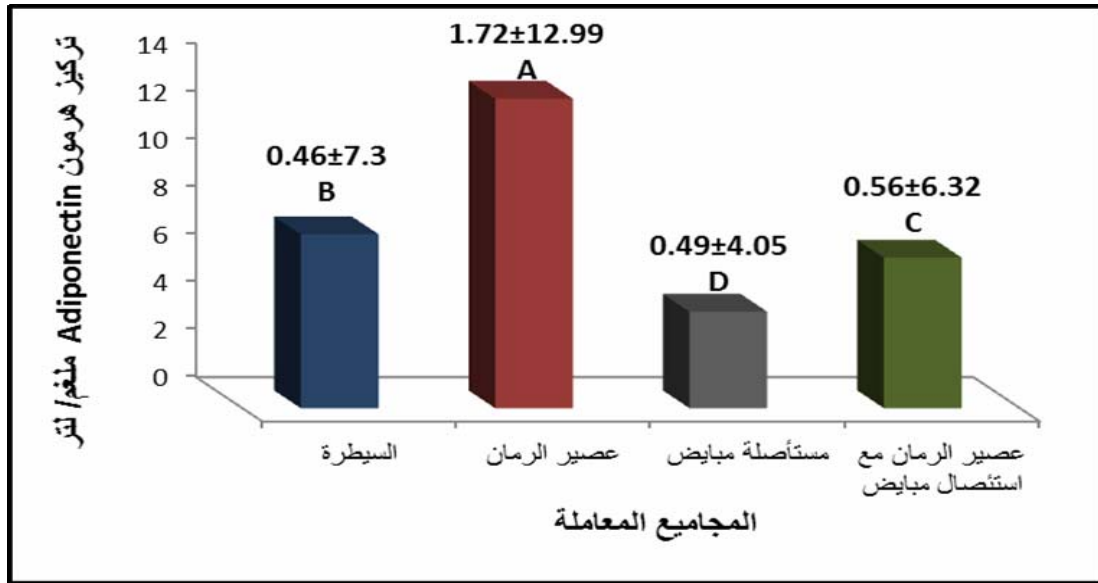
/ (1.72±12.99)

/ (0.49±4.05)

/ (0.46± 7.30)

/ 6

. / (0.56±6.32)



5= / ± \*

(P≤0.0001)

:1

(P≤0.0001)

2

6

Thyroid Stimulating Hormone (TSH)

μIU/ ml (0.04±0.85)

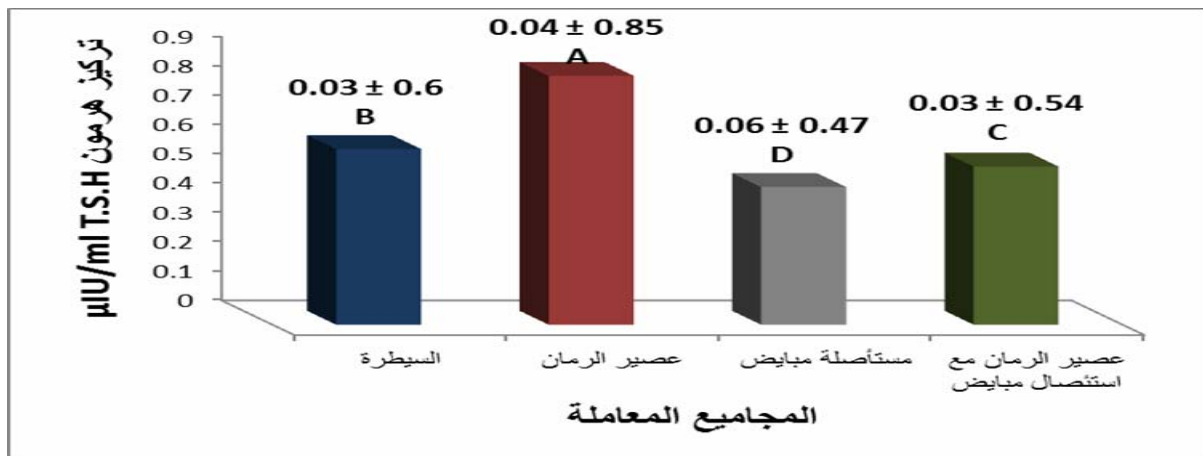
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μIU/ ml (0.03 ±0.6)

μIU/ ml (0.06±0.47)

/ 6

.μIU/ ml (0.03±0.54)



5= / ± \*

(P≤0.0001)

T.S.H.

:2

Thyroxine

( $P \leq 0.0001$ )

3

/ 6

T4

$\mu\text{g/dl}$  (  $0.68 \pm 12.3$ )

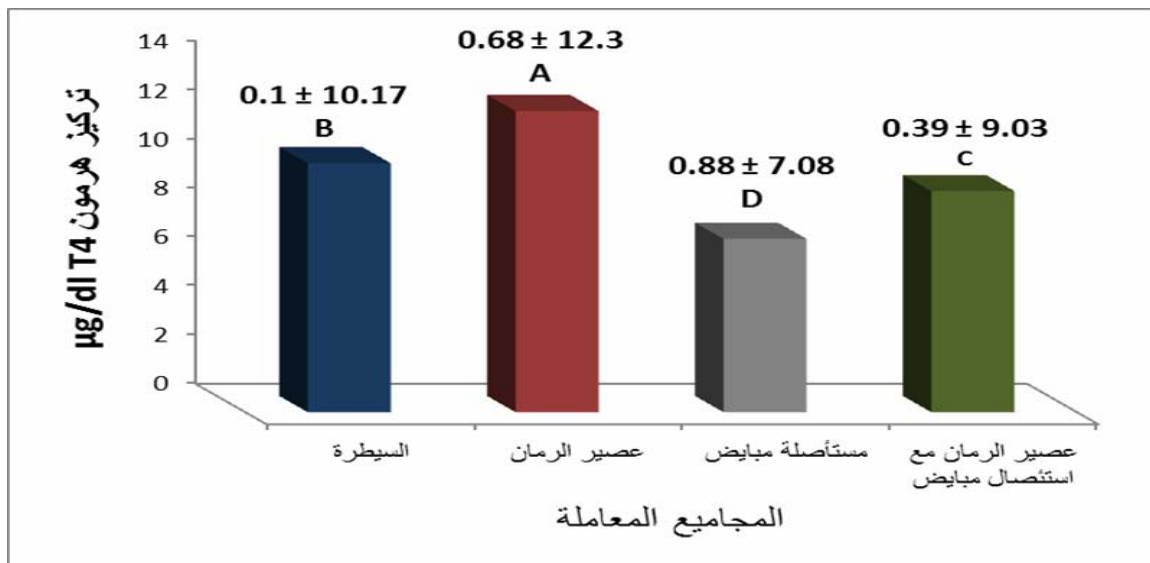
$\mu\text{g/dl}$  (  $0.88 \pm 7.08$ )

$\mu\text{g/dl}$  (  $0.1 \pm 10.17$ )

/ 6

T4

$\mu\text{g/dl}$  (  $0.39 \pm 9.03$ )



5=

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±

\*

( $P \leq 0.0001$ )

T4

:3

( $P \leq 0.0001$ )

4

/ 6

Triiodothyronine

$\text{ng/ml}$  (  $0.02 \pm 1.81$ )

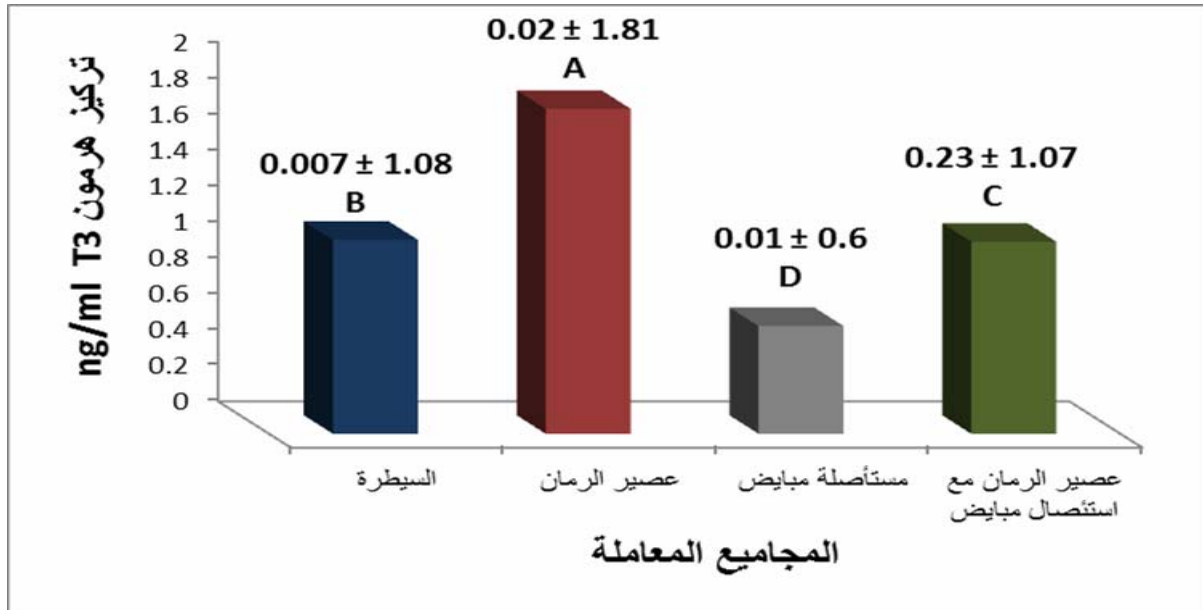
T3

$\text{ng/ml}$  (  $0.03 \pm 0.6$ )

$\text{ng/ml}$  (  $0.007 \pm 1.08$ )

/ 6

$\text{ng/ml}$  (  $0.23 \pm 1.07$ )



5= / ± \*

(P≤0.0001)

T3

:4

(1)

(3)

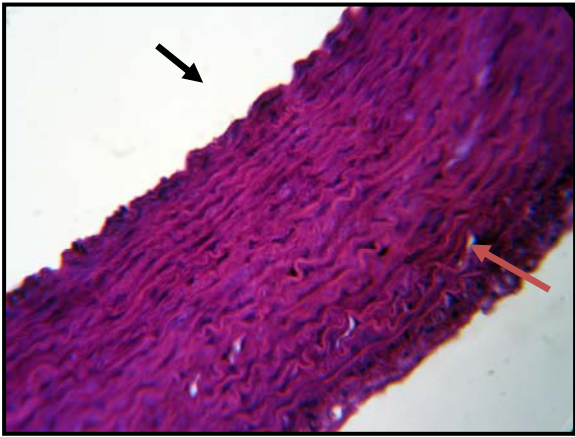
(2)

(3)

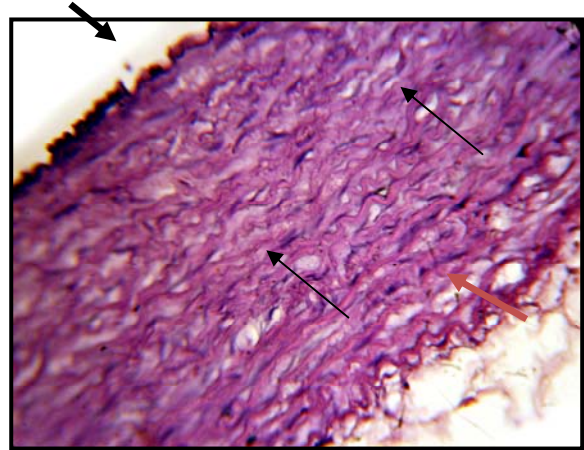
Foam cells

Foam cells

(4).



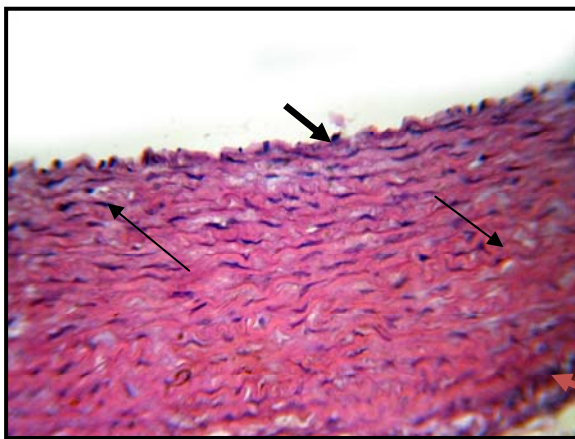
:2



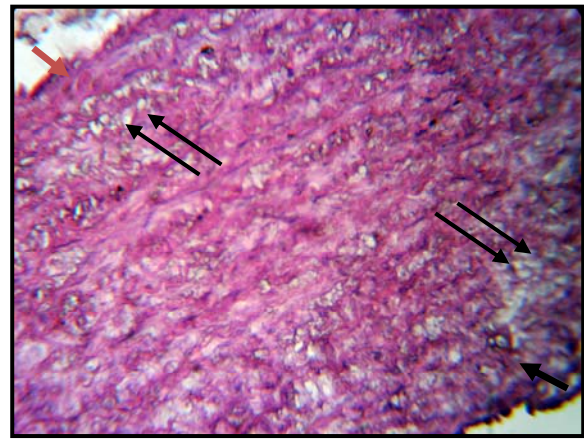
:1

)  
(400X

)  
(400X



:4



:3

)  
(400X

)  
(400X

(Yan *et al.*, 2014)

Anthocyanins  
Niacin



Tumor Necrosis	(Plaisance <i>et al.</i> , 2009)	(IL-6) Interleukin-6 ( TNF $\alpha$ )Factor $\alpha$	(Wanders <i>et al.</i> , 2013)
Linoleic acid	(2009)	Cassidy	(Waheed <i>et al.</i> , 2004)
Endothelial nitric	(De Clerq <i>et al.</i> , 2012)	Expression	oxide synthase
10	(2003)	(Lovejoy, 2003)	/
		(Nishizawa <i>et al.</i> , 2002)	
		(2006)	Turgeon
(Buechler <i>et al.</i> , 2011)	IL-6 TNF $\alpha$	(Fasshauer <i>et al.</i> , 2003)	/ 6
(Basly and Lavier, 2005)		Isoflavonoids	Phytoestrogens
		(De-Luis <i>et al.</i> , 2006)	
	$\beta$ -estrogen	(Morito <i>et al.</i> , 2001)	17-Bestradiol
		(Ramsey <i>et al.</i> , 1999)	
		(Kim <i>et al.</i> , 2010)	
Ellagic	(Yoshitomi <i>et al.</i> , 2012)	(Babaei <i>et al.</i> , 2010)	acid
Adipogenesis		Fatty acid synthase	
		(Xiaofengma, and Tian, 2013)	
T4 T.S.H	(Fateh <i>et al.</i> , 2013) Rutin		T3
	(Goncalves <i>et al.</i> , 2014)		T.S.H.

T4 T.S.H. (El-Nemer *et al.*, 1990) A,E,C  
 (El-Nemer *et al.*, 1990) (Obob *et al.*, 2007) T3  
 Yoshioka *et al.*, )

C E (2014) Mahmoud (2004  
 Ellagic (El-Nemer *et al.*, 1990)  
 .(Arrak, 2010) T3 T4  
 (2007) Morris T.S.H

T.S.H  
 Pearce (2007)  
 LDL-c  
 T.S.H. HDL-c  
 .(1987 )  
 (2005) Abech  
 T3 T4

Pituitary-thyroid axis  
 Thyroxine binding globulin  
 (Ain *et al.*, 1987)

/ 6  
 Anthocyanins T.S.H

C-terminal T4 globular  
 (Fernandez-Real *et al.*, 2003)

Sodium-iodide symporter Rutin  
 Thyroperoxidase

Pituitary- Rutin Lima (Goncalves *et al.*, 2014)  
 (2006) thyroid axis  
 Thyroperoxidase

.....

(Basly and Lavier, 2005)

(2002)

Madej

.(Cornwell *et al.*, 2004)

$\alpha$

T3 T4

$\beta$

(Clarkson, 2002)

LDL-c

Foam cells

.(Al-Jaralla *et al.*, 2013)

Foam cells

(1997) Zhu Knopp

Low Density Lipoprotein

High Density Lipoprotein

(apo-B) Apoprotein- B ( LDL-c)

(HDL-c)

.(Ferrerri and Naito, 1987) Cholesterol 7- $\alpha$  hydroxylase

(2007 )

ox-LDL

.(Burke *et al.*, 2001)

genistein

E

(Altavilla *et al.*, 2004)

(El-Nemer *et al.*, 1990)

(2007 ) LDL-c

(El-Nemer *et al.*, 1990) C

TNF $\alpha$

(Rahman, 2001)

Ouch <i>et al.</i> ,)	ox-LDL	Monocytes	
		(Fateh <i>et al.</i> , 2013)	(1999)
		.(Chang <i>et al.</i> , 2004)	LDL-c
			.(2008)
			.(2014)
			<i>Punica granatum</i> L.
			<i>Oryctolagus cuniculus</i>
			.(2012)
	.205-196	(1)5	
			.(2007)
	.101-93	(1)21	
			.(2012)
		.123-111	(2)5
			.(1997)
	.10-1	7-6	
(2)3			.(2001)
			.56-53
			.(2003)
			.(2013)
		.64-50	(2)24
	.22-5	-	.(2004)
			.(1987)

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