j. port. sci. res.
ISSN: 2616-7441 (Online)
ISSN: 2616-6232 (Print)
ISSN: 2616-7220 (USB)
INTERNATIONAL IDENTIFIER FOR SERIALS

Journal port Science Research
Available online www.jport.co
Volume 5, No:1. 2022

USING TUNA MEAT AS A SUPPLEMENT TO INCREASE TESTOSTERONE HORMONE LEVEL IN MEN

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Abstract This experiment was designed to investigate the effect of using tuna meat as a supplement to increase testosterone hormone level in men. The experiment based on 15 non married men aged (21 – 27) divided into two groups, group of ten men who ate 100 g of tuna daily for 15 days, the other group consists of 5 men were on a control diet . Testosterone levels of all men were examined before and after by blood tests using I-chroma test procedure. The results after 15 days showed significant variant in the T hormone. For example, the treated group results before eating tuna was (3.22 , 2.67 , 7.38 , 2.29 , 2.91 , 2.82 , 2.52 , 2.99 , 1 , 2.54) ng/ml and after eating tuna is (2.64 , 1.94 , 7.13 , 3.47 , 6.62 , 3.68 , 3.9 , 5.32 , 2.7 , 3.5) ng/ml respectively. While the control group were, before: (4.1 , 1.06 , 3.97 , 2.15 , 1.86) ng/ml and after: (1.5 , 2 , 2.3 , 3.34) ng/ml respectively. The percentage of hormonal variation before and after experiment in treated group were (-18% , -27% , -3%) decrease for samples no. (1, 2, 3) respectively and for samples no (4, 5, 6, 7, 8, 9, 10) were (51%, 127%, 30%, 54%, 77%, 170%, 37%) increase. While the control group have decreased levels in samples no. (1, 3) with percentage of (-14%, -49%) respectively, and increased levels in samples number (2, 4, 5) with percentage of (41%, 7%, 79%). as we notice, not much difference in control group, but treatment group has certain increase in seven samples and decrease in only three samples, because of several factors that the samples was exhibited to leads to decrease the hormone in these samples after treatment. The study concluded that , continuous oral consumption of 100g as supplement of Tuna meat for at least 15 days can lead to increase and/or regulate blood levels of testosterone hormone in men.

10.36371/port.2022.1.1

Keywords: *Tuna meat , Testosterone , men*

INTRODUCTION

Testosterone in men represent the main sex hormone which produced from testicles. It have a lot of physiologic properties may includes physical performance, lean (body muscles and muscular strength) and improved sexual activity. testosterone is known as the hormone of manhood. It enhance the physical, sexual performance and mental development of men(1) . It has been far from that .since we .are struggling .with the deficiency .of T-hormone in men do .to aging, cancer and. environmental causes (2). Using Testosterone (T.) boosters is not the most efficient. way since these supplements. are misleading people .with their .incorrect labeling. claims that can lead to .minor boost results (3). Increasing the T- hormone. Is extremely possible with consumption of fish as food such as tuna fish . Tuna is a one of the most richest fishes in protein, it contains a high amount of vitamins (A, B12 and D3). It is may known as an actual main source of iodine and phosphorus (4). Using of tuna as canned and other fishes are widely common , it consumed by the public because; it is have polyunsaturated fatty acids in high amount (5) . Canned tuna is a good source for minerals and nutrients which is a must in human diet (6) The main aim of the study suggests using canned tuna meat as a daily supplement increase testosterone hormone level in men.

Tuna Fish : it are important sources of vitamins, fatty acids, and minerals (such as calcium, iron, zinc, iodine, ole, copper, and selenium and one of the most common canned foods to consume is tuna (7) (Table,1) . Because of its high content of essential nutrients - protein, omega-3 , Fatty acids, vitamin D and selenium - a suitable model. To assess the risks and benefits, several studies have evaluated the heavy metals in canned tuna and linked them to their effect on testosterone levels (8) Manipulation of dietary fatty acids alters the features of reproductive tissues. Many researchers have studied the effect of fish oil and its effect on reproductive characteristics in pets, but there is reliable information regarding the effect of diet on semen quality and serum testosterone concentrations (9). Brickfish and white tuna

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contain high levels- From eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), both forms of omega-3 fatty acids. Some people take fish oil supplements to help with ADHD. Fish consumption and fish oil supplements are called brain food because of the relationship between these omega-3 fatty acids and improved cognitive function. Fish oil supplements: have been shown to reduce blood triglyceride levels in athletes (10)

Table(1): *Refer to the main component of tuna meat and its benefit to humans* [3,11]

Component	Quantity in 100g
Energy	116 kcal
Protein	26 g
Fats Total	1 g
Carbohydrate	0
Fiber	0

MATERIALS AND METHODS.

1- Material :

Table (2) : *Refer to the origin of material use in research .*

Table (2) : *Refer to the origin of material use in research .*

Instrument or equipment	Origin	company
Centrifuge	Germany	Universal 16A
I Chroma	Korea	Boditech med
Testosterone kit	Korea	Boditech med
i-chamber	Korea	Boditech med

Table (3) : *Refer to the co mpounds of testosterone kit.*

Compound	Spiked concentration (ng\Ml)	Cross reactivity
Androstenedione	10	1
Cortisol	1000	ND
DEHA	1000	ND
Estradiol	50	ND
Oxymentholone	100	2.14
Progesterone	1000	0.52
Hydroxy Progesterone	1000	0.21
Cortisone	1000	ND
Dihydrotestosterone	50	16

2- Methods

a - Experimental Design: The study started in February-2021 lased for 3months . The experiment designed has been done as described in figure :(1) Fifteen men their ages between (21-27 years old) were design in the study. The samples divided in to two groups , the treating group (10 men) and control group (5men). The T. hormone samples has been collected before the eat tuna meat and after eat tuna meat to identify the deference in T. hormone blood levels.

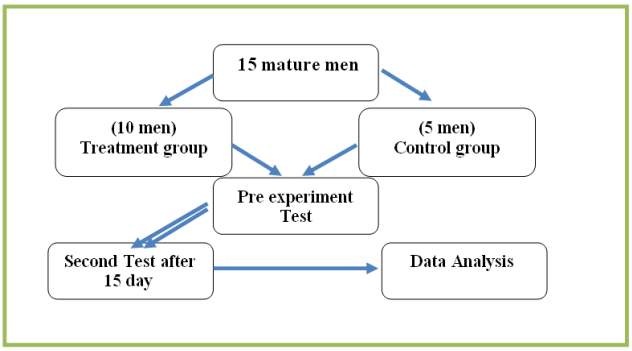

Fig.(1): *refer to experimental design*

b- Samples: The samples of study depend on selected 15healthy young men their ages between (21-27) as show in tables (2-1). Selected randomly from Baghdad AlRusafa side.

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Volume 5, No:1. 2022

Table: (4) refer to the information of sample.

	Sample No	Name	Age
Treated group	1	H.M	26
	2	H.B	22
	3	J.H	22
	4	H.S	25
	5	M.I	21
	6	M.K	22
	7	H.N	23
	8	A.R	21
	9	M.A	21
	10	A.K	25
Control group	1	M.M	24
	2	H.A	26
	3	G.M	21
	4	H.L	26
	5	M.A	25

Results : According to table(5): the results of testosterone hormone in treated group in cases numbers (1,2,3,4,5,6,7,8,9,10) before experiment were (3.22, 2.67, 7.38, 2.29, 2.91, 2.82, 2.52, 2.99, 1, 2.54 ng/ml) Respectively , while the levels of testosterone hormone of control group the in cases number (1,2,3,4,5) before experiment were (4.1, 1.06, 3.97, 2.15, 1.86 ng/ml) Respectively. While in table(6): the results of testosterone hormone in treated group in cases numbers (1,2,3,4,5,6,7,8,9,10) after experiment were (2.64, 1.94, 7.13, 3.47, 6.62, 3.68, 3.9, 5.32, 2.7, 3.5 ng/ml) Respectively , while the levels of testosterone hormone of control group the in cases number (1,2,3,4,5) after experiment were (3.5, 1.5, 2, 2.3, 3.34 ng/ml) Respectively.

Table: (5) *Refer to samples information before experiment.*

	Sample No	Name	Age	Result
Treated group	1	H.M	26	3.22ng/ml
	2	H.B	22	2.67 ng/ml
	3	J.H	22	7.38 ng/ml
	4	H.S	25	2.29 ng/ml
	5	M.I	21	2.91 ng/ml
	6	M.K	22	2.82 ng/ml
	7	H.N	23	2.52 ng/ml

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	8	A.R	21	2.99 ng/ml
	9	M.A	21	1 ng/ml
	10	A.K	25	2.54 ng/ml
Control group	1	M.M	24	4.1 ng/ml
	2	H.A	26	1.06 ng/ml
	3	G.M	21	3.97 ng/ml
	4	H.L	26	2.15 ng/ml
	5	M.A	25	1.86 ng/ml

Table: (6) *Refer to samples of information after the experiment.*

	Sample No	**Name**	**Age** / year	**Result**
Treated group	1	H.M	26	2.64 ng/ml
	2	H.B	22	1.94 ng/ml
	3	J.H	22	7.13 ng/ml
	4	H.S	25	3.47 ng/ml
	5	M.I	21	6.62 ng/ml
	6	M.K	22	3.68 ng/ml
	7	H.N	23	3.9 ng/ml
	8	A.R	21	5.32 ng/ml
	9	M.A	21	2.7 ng/ml
	10	A.K	25	3.5 ng/ml
Control group	1	M.M	24	3.5 ng/ml
	2	H.A	26	1.5 ng/ml
	3	G.M	21	2 ng/ml
	4	H.L	26	2.3 ng/ml
	5	M.A	25	3.34 ng/ml

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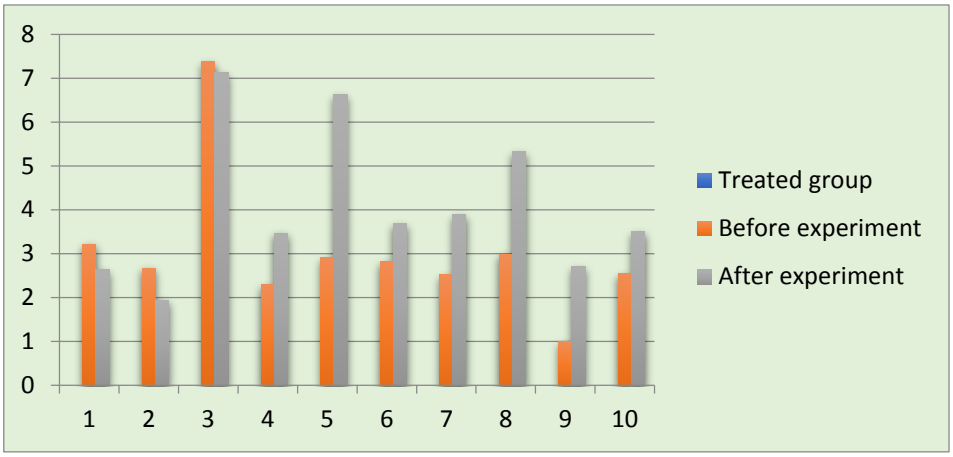
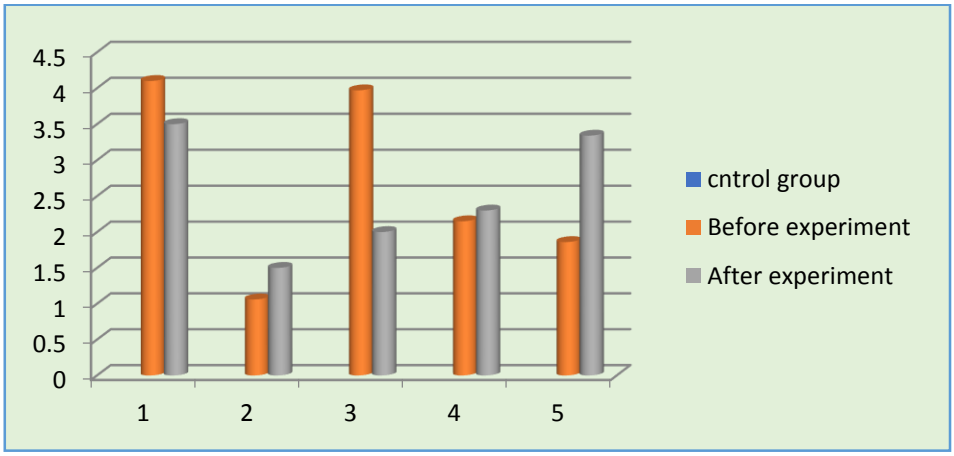


Diag. (1): *Refer to comparison of testosterone levels in treated group before and after the experiment.*



Diag. (2): *Refer to comparison of testosterone levels in control group before and after the experiment.*

According to the diagram (1) the results of testosterone levels in experimental cases in group treated with Tuna meat daily for 15 days show that : there were a small decrease in testosterone levels after experiment in cases number (1,2 and 3) after experiment in comparison with before experiment , while the other cases (4,5,6,7,8,9 and10) reveal increase in testosterone hormone levels after experiment in comparison with before experiment . The result of diagram (2) show high decrease in testosterone levels after experiment in comparison with before experiment in cases number (1 and 3) , moderate decrease in testosterone after experiment in comparison with before experiment in cases number (2 and 4) and highly increase in testosterone hormone level after experiment in comparison with before experiment in case number (5).

According to table: (7) the result control group show highly variable results between cases before and after experiment, the decrease in percentage of testosterone levels that ranged between (14%-49%) , and the increase in percentage of testosterone hormone ranged between (7% - 79%). While in treated group the decrease in percentage of testosterone hormone ranged between (3%-18%) and the increase in the percentage of testosterone hormone ranged between (37% -170%)

Table (7) *: Show the percentage of hormonal variation before and after experiment in treated and control groups .*

	Sample No	Name	Before	After	100%	
	1	H.M	3.22	2.64	-18%	↓
	2	H.B	2.67	1.94	-27%	↓

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Treated group	**3**	**J.H**	**7.38**	**7.13**	**-3%**	↓
	4	**H.S**	**2.29**	**3.47**	**51%**	↑
	5	**M.I**	**2.91**	**6.62**	**127%**	↑
	6	**M.K**	**2.82**	**3.68**	**30%**	↑
	7	**H.N**	**2.52**	**3.9**	**54%**	↑
	8	**A.R**	**2.99**	**5.32**	**77%**	↑
	9	**M.A**	**1**	**2.7**	**170%**	↑
	10	**A.K**	**2.54**	**3.5**	**37%**	↑
Control group	**1**	**M.M**	**4.1**	**3.5**	**-14%**	↓
	2	**H.A**	**1.06**	**1.5**	**41%**	↑
	3	**G.M**	**3.97**	**2**	**-49%**	↓
	4	**H.L**	**2.15**	**2.3**	**7%**	↑
	5	**M.A**	**1.86**	**3.34**	**79%**	↑

DISCUSSION

According to table (7) the results showed increase in testosterone level of treated group, in cases (5,9) the researcher noticed high increase in testosterone level (6.62 and 2.7 ng/ml) with percentage of (127%, 170%) these increases may occurred due to good effect of Tuna meat in stimulate the testes to produce highly bursts of testosterone in short period . The result was agreed with [12] and [13]. In cases number (4,7,8) the researcher noticed a remarkable increase of testosterone levels (3.47, 3.9 and 5.32 ng/ml) with percentage (51%, 54% and 77% respectively), these increase may due to performing heavy free weight squat and deadlight exercise which may effected on synthesizes testosterone and growth hormone, this result was agreed with [14]. In cases number (6,10) the researcher noticed moderate increase in testosterone levels (3.86-3.5 ng/ml) (30% and 37%) these increase may occur due to association of testosterone-related dietary pattern, the result was agreed with [15] and [16]. on the other hand cases number (1,2) there were mild decrease in testosterone level (-18% and -27%) respectively, the result may be due to sleep loss that reduces testosterone levels in these cases or due to involvement of testosterone inhibitor food in diet, peppermint effects men by decrease luteinizing hormone and follicle-stimulating hormone and decrease in testosterone hormone level, the result was agreed with [12] and [17].

In case number (3) the researcher noticed small decrease in testosterone level (3%), the reason may be due to effects of bad mood (depression) on testosterone level. The result was agreed with [18]. While in control group the result were highly variable between cases before and after experiment, in cases number (1,2,3,4 and 5) before experiment were (4.1%, 1.06%, 3.97%, 2.15% and 1.86%) , and after experiment were (3.5, 1.5, 2, 2.3 and 3.34ng/ml) respectively, the decrease in percentage of testosterone levels that ranged between (14%-49%), and the increase in percentage of testosterone hormone ranged between (7% - 79%). The result showed high variation in testosterone level, in case number (5) the researcher noticed a significant increase of zinc in the diet which helps to increase testosterone hormone level in men blood, the result was agreed with [19].

CONCLUSION

The study concluded that , continuous oral consumption of 100g as supplement of *Tuna* meat for at least 15 days can

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lead to increase and/or regulate blood levels of testosterone hormone in men.

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