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EFFECT OF PUMPKIN SEED ON SEMEN PARAMETERS (VOLUME, CONCENTRATION AND MOTILITY)

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ABSTRACT : This study was designed to investigate the possible protective effect of pumpkin seed on semen parameters. The experiment based on 4 married men samples collected randomly from Baghdad all (4) samples treated with 50g of pumpkin seed for (60 days contentiously). Semen parameters were examined in all samples before and after using the treatment. The aim of this study suggest using of pumpkin seed as food to identify it is effect in Semen parameters. The result show that there were significant increase in the semen motility (first time reported) in the most sample because the significantly affect of pumpkin seed on motility, while it has little effect on volume and concentration. The study concluded that long term treatment of pumpkin seed lead to increasing the semen parameters in men in different age significantly.

Key words : Pumpkin seed, human, semen, semen parameter.

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INTRODUCTION

Over the years, problems of infertility specially in man has grow to be a supply of world concern (Ferlin *et al,* 2007), it have been attributed to factors such as smoking, drinking of alcoholic beverages, use of confined drugs, stress, negative diet and lack of workout. Male infertility in most of time cause a fitness hassle with a dramatic affect on both individuals' and couples Worldwide, at least forty five million couples are suffering from infertility in about 50% of couples (Esteves *et al*, 2011). Male infertility may be result from congenital anomalies or some disease that increased scrotal temperature such as varicocele, endocrine disorders (Syed *et al,* 2019). The male infertility aspect contributes to 1/2 of all infertile couples. About 40% of these have an unknown cause. This subgroup can be divided into two categories based on the effects of two efficiently obtained semen analyzes (SA): idiopathic male infertility (IMI) and unexplained male infertility (UMI). Both companies display regular bodily examination results and endocrine assessments, however differ in the fact that guys with IMI had odd semen analyzes whilst men with UMI had regular semen standards (WHO, 2000).

The aim of this study suggest using of Pumpkin seed as food to identify it is effect on semen parameter (increase or decrease) after one spermatogenic cycle.

Semen evaluation

Semen evaluation represent one of the first steps in. the contrast of the infertile male. Conventional semen evaluation assesses. the physical traits. of semen, specimen volume, sperm concentration, sperm motility and progression, sperm morphology, and .the range of leukocytes (Neri *et al*, 2014). It presents data .on the purposeful reputation. of the somniferous tubules, .epididymis, and accessory sex. glands, and its outcomes are regularly taken .as a surrogate measure. of his capacity to father a pregnancy. Although helpful, conventional semen evaluation cannot on my own be used to predict the male fertility potential. It is drastically modulated by using internal and exterior factors, such as abstinence period, basic fitness status and environmental exposure to toxicants, to cite a few, therefore leading to. difficulties in the interpretation and administration of, infertile guys with regular and ordinary results (Hamada *et al*, 2001). Therefore, the male infertility comparison should go some distance beyond a easy semen analysis The diagnosis of male infertility is presently based totally on the find out about of seminal parameters such as sperm concentration, motility and morphology (Esteves *et al,* 2012). Semen evaluation presents beneficial information concerning viability, manufacturing and motility of spermatozoa, as properly as the patency of the male genital tract. In general, spermatozoa account for 10% of the whole semen, whilst the remainder of the ejaculate consists of merchandise secreted with the aid of the seminal vesicles (55%), prostate (25%) and bulbouretheral gland (10%). Assessment of the quantity and consistency of the ejaculate can offer perception into the condition of the accessory glands. While quantifying the range and motility of spermatozoa is possibly intuitive, evaluation of sperm morphology is greater complex, owing to the variability in criteria utilized to evaluate their shape and measurement.

Spermatogenesis

Human spermatogenesis is achieved in 60-80 days, so the analysis of the semen of an man or woman reflects the organic recreation that came about 2-3 months ago (Agarwal and Said, 2003). Ideally, semen samples ought to be produced 2-3 days after abstinence, ideally besides lubricants, and kept at physique temperature if transportation is required if the individual's history indicates latest insults to spermatogenesis such as medical illness, testicular injury, or publicity to chemical substances or toxins, then the semen evaluation need to be elevated over countless months (Samplaski *et al*, 2014). Although, there can be full size biocompatibility in semen analyzes, men whose semen carries 48 × 10^6 sperm per ml are regarded fertile whilst these with 10 × 10^6 sperm per ml are viewed fertile.

Pumpkin seed

There are many strategies and substances used to expand semen motility and quality, and one of these techniques is the use of herbal seeds the most necessary herbal redress that are used to stimulate semen is pumpkin seeds (Sun *et al*, 1997). They are rich in vitamin E (tocopherol), carotenoids, provitamins, Squalene, saponins, phytosterols, triterpenoids, phenolic compounds and their derivatives ,coumarins, unsaturated fatty acids, flavonoids and proteins Moreover (Esteves *et al*, 2012) (Table 1). Pumpkin seeds are a good source of minerals the experiments showed an increase in sperm count and the percentage of normal sperm cells as well as higher levels of testosterone in the blood serum. Pumpkin seeds are also an important source of polyunsaturated fatty acids, phytosterols, and zinc, which can prevent chronic diseases the pumpkin seed extract at the same time increased the number of germ cells in the seminal tubes and had a positive effect on the recovery of spermatogenesis (Sun *et al*, 1997). In addition to the importance of these minerals in increasing the quality of the semen and thus reducing the incidence of male infertility, as these minerals are necessary for the survival of the semen,And improve sexual health (Aghaei *et al*, 2013).

MATERIALS AND METHODS

Experimental design

The study started in February-2021 lased for 3 months. The experiment designed has been done as described in Fig. 1. A four married men their ages about 25-54 years old were designed in the study. Semen samples had been collected before treatment to identify the semen volume, concentration, individual and massive motility of sperms for all saples. After that all 4 men treated with 50mg of shell less pumpkin seed for 60 days contentiously, semen test then re tested in same procedure.

Samples

The samples of study depend on selected four married men their ages about (25-35 years old) (Table 2) selected randomly from Baghdad governorate-AlRusafa side, all these samples undergo from decrease in semen parameter according to their history.

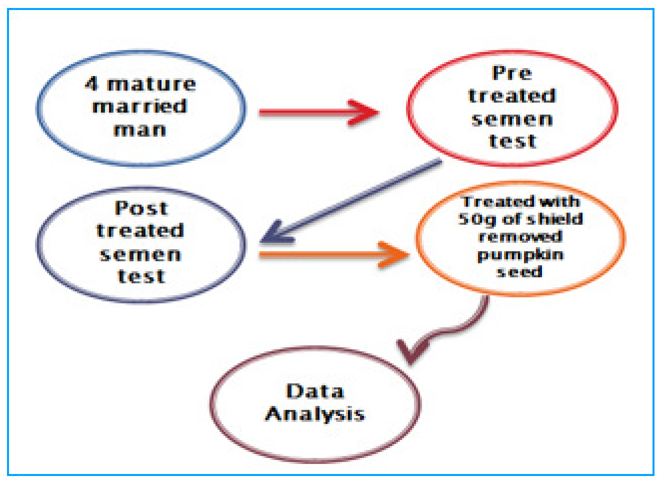

Fig. 1 : Demonstrate the experimental design of the study.

Semen test

Semen samples has been collected and evaluated from all 4 men before and after treatment in Fadak lab located in Baghdad, Alrusafa side, Alsader city. Semen parameter were detected in our study (semen volume, sperms concentration and the motility (active, sluggish, immotile). The result had been checked accurately reported in the results.

RESULTS

The results showed there were significant variation in the semen characteristics before treatment with pumpkin seed (Table 3). Results illustrated in Table 3

Table 1 : Refer to the main component of Pumpkin seed and its benefit for human.

Component	Quantity in 50 g
Carbohydrates	5.3 g
Energy	329 Kcal
Total Fats	22.2g
Protein	15.1g
Fiber	3 g*

Component	Quantity in (50) g	Functional importance
Pumpkin seeds oil	170–200 mg	Used a for treatment of various cancers, multiple sclerosis,. systemic lupus erythematosus, breast and pulmonary cancers and other benign diseases and also as an immunosuppressive agent for organ transplantation
Fatty acids	14 mg	Responsible for Reduced urethral , bladder pressure and improved bladder compliance it improve the quality of sperm
Myristic	14 mg	helps in regeneration the skin's barrier in a way as ceramides .
Palmitic	16 mg	One of the main uses is help keep skin smooth.
Stearic	18 mg	Used as formulations stabilizer, gives products a smooth, satiny feel. Represent as ingredient of choice for creams and lotions. it also helps to rebuild the skin's.
Oleic	18 mg	Used to reduce the susceptibility of Peroxidation in testis and epididymis to lipid
Linoleic	18mg	support health of heart and improves insulin sensitivity and blood pressure.
Vitamin E	35.1mg	helps strengthen the immune system and maintain healthy blood vessels. ODS recommends eating the seeds as a source of Vitamin E.
Vitamin D	140IU	it is very important for male fertility. It is used to boost testosterone levels in males
Zink	7.8mg	they are essential in the semen survival and neutralized the acid ph of vagina
Potassium	183mg	theses elements found in the semenial plasma
Magnesium	105mg	antioxidant used to neutralize free radical agents. Used to generate of lipids, proteins and DNA molecules
Calcium	27mg	is necessary for normal immune function and preventing uterine infections.
Sodium	3.6mg	Used for decrease side effect of lead contaminants and improve the male sexual health status
Phosphour	0.5-1.04 mg	protect spermatozoa at the time of ejaculation
Beta-carotene :	4.5 micro gram	It converted to vitamin beta-carotene. beta carotene performs deferent functions in body health, it may reduce the risk of developing some types of cancer and protect the body from heart disease. Diet containing beta-carotene may reduce the risk of developing certain types of cancer and heart disease.
Cryptoxanthin	5.3micro gram	cryptoxanthin is converted to vitamin A (retinol) and is, therefore, considered a provitamin A
Lutein : Sitostanol & phytosterol	37 micro gram	is an antioxidant that belongs to the carotenoid group. Used to prevention and treatment of infertility in male.
Cyclophosphamide (CP)		Promote the epididymis and support sperm parameters through preventing sperms oxidative stress.
Omega 3 and 6		Important for brain healthy and improve body functioning and improving bladder and prostate disorders
Cucurbita maxima (CM oil)		Used in prevention of urinary tract disorders such as Overactive bladder and prostate hypertrophy.
Cucurbita pepo (CP oil)		Used in benign prostate hypertrophy
Carnitin		Support metabolism, transports fatty acids into mitochondria for energy production. It also participates in removing products of metabolism from cell

Table 1 continued....

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Tryptophan		used to treat insomnia because converts it into serotonin, ((relaxation" hormone)) and melatonin, the (sleep hormone)
Carotenoids		Antioxidants: which play an essential role in improving hormone testosterone levels.
Phytosterols		Antioxidants that fight harmful free radicals, and they also shield cells in the retina from high-energy blue light

*Aghaei *et al* (2013) and Syed *et al* (2019).

Table 2 : Refer to the information of samples and date of semen test before and after experiment.

Case number	Age	Marital stage	Date Semen test before Exp.	Semen test after Exp.
1	26	Married	3-2-2021	4-4-2021
2	27	Married	5-2-2021	6-4-2021
3	29	Married	8-2-2021	9-4-2021
4	25	Married	8-2-2021	9-4-2-21

samples their ages about (25-29 years old) all 4 men treated with 50mg of shell less pumpkin seed for 60 days contentiously. After using the treatment, the results showed there were significant variation in the semen parameters. Results illustrated in Table 3.

According the Table 3, the results shows that semen volume in the case no (1, 2, 3, 4)were (3.5ml, 4.5ml, 1.5ml, 3.0ml), respectively after treatment. While, the

Table 3 : Refer to the results of semen test before and after experiment.

No.	Volume		Concentration 1×10^5		Sluggish motility %		Individual motility %		Progressive motility %	
	Before exper-iment	After exper-iment	Before exper-iment	After exper-iment	Before exper-iment	After exper-iment	Before exper-iment	After exper-iment	Before exper-iment	After exper-iment
1	2	3.5	120	150	20%	10%*	15%	25%*	65%	65%
2	3.5	4.5	70	75	32%	19%*	20%	20%	48%	61%
3	2.0	1.5	82	60	35%	24%	10%	19%*	55%	57%
4	**5**	**3.0**	**70**	**60**	**37%**	**26%**	**20%**	**20%**	**43%**	**54%**

had been checked accurately. The Semen parameters (semen volume, sperm concentration, motility active, slow, immobile) were detected for all samples used in the experiment before using the treatment. The results were as follows. According the Table 2, the results show that semen volume in the case no (1, 2, 3, 4) were (2ml, 3.5ml, 2.0ml, 5ml), respectively before treatment, while the results show that semen concentration in the case no (1, 2, 3, 4) were (120, 70, 82, 70), respectively before treatment. The results show that semen individual motility in the case no (1, 2, 3, 4) were (15, 20, 10, 20%), respectively before treatment in the other hand the progressive motility in the case no (1, 2, 3, 4) were (65, 48, 55, 43), respectively before treatment. The results show that semen massive motility in the case no (1, 2, 3, 4) were (20, 32, 35. 37)%, respectively before treatment, while the results shows that semen color in the case no (1, 2, 3, 4) were (gray, milky, milky, milky) respectively before treatment. The results show that semen viscosity in the case no (1, 2, 3, 4) were (normal, high, normal, high), respectively before treatment. The results shows that semen pH medium in the case no (1, 2, 3, 4) were (alkaline, 8.8, 7.6, 10.5), respectively before treatment. The experiment has been done on four married men results show that semen concentration in the case no (1, 2, 3, 4) were (150, 75, 60, 60), respectively after treatment. The results show that semen individual motility in the case no (1, 2, 3, 4) were (25, 20, 19, 20%), respectively after treatment in the other hand the progressive motility in the case no (1, 2, 3, 4) were (65, 61, 57, 54), respectively after treatment. The results shows that semen sluggish motility in the case no (1, 2, 3, 4) were (10%, 19%, 24% and 26%), respectively after treatment, while the results show that semen color in the case no (1,2,3,4) were (gray, milky, milky, milky) respectively after treatment. The results shows that semen viscosity in the case no (1, 2, 3, 4) were (normal, high, high, high), respectively after treatment in the other. The results show that semen pH medium in the case no (1, 2, 3, 4) were (alkaline, 8.5, 8.5, 8.5, respectively) after treatment. Depending on the comparison between Tables 3 and 4. The results showed there were highly significant variation in the semen characteristics after using the pumpkin seed. The results were as follows. The results of sperm volume showed a significant increase in the case no (1, 2) were (1.5ml, 1m), while the results of sperm concentration showed a significant increase in the case no (1, 2) were (30 unit, 5 unit). There was a statistically significant increase in sperm individual motility of case no (1, 3) were (10 unit, 9 unit). On the other hand, the results of seem progressive motility showed a significant increase in the case no (2, 3, 4) were 13 unit, 2 unit, 11 unit.

DISCUSSION

According to the result of Table 4 showed a significant increase in the volume of the sample no (1, 2) were (1.5ml, 1ml). Because the direct positive effect of pumpkin seeds on the accessory sexual glands and thus leads to increased reproductive efficiency and increased volume and the high semen volume may reflect active exudation in cases of active inflammation of the accessory organs. In the other hand, the results of semen volume showed a significant decrease in the sample no (3, 4). This variation in the volume may be due to many factors such as nutrient, healthy state and low semen volume can also be the result of collection problems (loss of a fraction of the ejaculate), partial retrograde ejaculation or androgen deficiency the result was agreed with Syed *et al* (2019).

As for the concentration, the present results revealed a significant increase in the semen concentration in the sample no (1, 2)were (30 unit, 5 unit) because to the improving the prostate gland performance the result was agreed with Esteves *et al* (2012). While the results of semen concentration showed a significant decrease in the case no (3, 4) this variation in the concentration may be due to many factors such as (The number of times sexual contact occurs, psychological state and urinary tract infection). The result was agreed with Sun *et al* (1997). The results obtained also showed that there was an increase in progressive motility in most of the samples that were treated with pumpkin seeds. The significant increase in the sperm progressive motility in the sample no (2, 3, 4) were (61, 57, 54) because the positive effect of pumpkin seed to increased the level of testosterone hormone the results was agreed with Akang *et al* (2011). On the other hand, the significant decrease in the semen motility due to many factors such as (orchitis, nutrition, decreased level of testosterone) and low sperm activity may be due to a disorder in secretion of accessory male sex gland, which leads to the glands emptying more slowly. The result was agreed with Aghaei *et al* (2014) and Hashemi (2013).

CONCLUSION

The study had concluded that at a low dose of pumpkin seed oil for long term treatment lead to significant increase the semen parameters within normal range in human in different ages.

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