

Treatment of Oligozoospermic Patients with a Formulation of Plant Origin (Speman)

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Abstract

Background: Assessment of sperm concentration as a component of semen analysis is one of the most important steps in the evaluation of male in infertile couples so that Oligozoospermia is a decrease in the numbers & density of spermatozoa produced by testes (< 20 mill/ml). Speman is formulation of plant origin with no side effects and has been tried for oligozoospermia, asthenozoospermia, enlarged prostate and azoospermia

Objective: To assess the effect of speman on

1-Pituitary –gonadal hormones 2-On the certain sperm parameters

Patient and Methods: A prospective study was conducted on forty oligozoospermic patients attended the High Institute of Infertility Diagnosis and Assisted Reproductive Technologies/Al-Nahrain University for period between first September 2011 to September 2012 , the mean age 35 years and with duration of infertility ranged between 1.5—12 years.

The patients were considered oligozoospermic if the sperm concentration was less than 20 million/ml according to WHO 1999 criteria . Speman drug was administered at a dose of 2 tablets, three time daily for three months. Semen analysis , particularly certain sperm parameter(sperm density , motility and morphology) and Hormonal assay of serum levels of testosterone , Follicles stimulating and Luteinizing hormones was conducted before and after treatment .

Results: The results showed there was a highly significant ($p < 0.001$) which increase in the means of sperm density (19.90 million/ml) it was observed after 3months of Speman treatment. Regarding the sperm motility particularly grade-A was showed a significant(< 0.05) improvement (31.87%) after treatment, and grade-A+B were improved (50.27%) after treatment. The morphology of sperm was significantly (< 0.05) reduced (31.50%)after treatment . The mean serum level of testosterone and Luteinizing hormone were showed a significant (< 0.05) increased (6.24 ng/ml) and (3.98 μ IU/ml) after treatment respectively.

Regarding its effect on follicle stimulating hormone were about 22.5% of cases shows high serum level of FSH so that the speman , significantly (< 0.05) reduced follicle stimulating hormone (5.69 μ IU/ml) after treatment i.e. decreasing serum level by negative feedback mechanism on hypo-thalamic-pituitary-testicular axis due to increase serum level of LH which in turn lead to increase testosterone that causes decreased serum level of FSH.

Conclusion: speman may improve the sperm density , motility and morphology due to improvement of testicular function and male accessory genital gland by influencing of testosterone hormone which caused the serum level of FSH to be normal through feedback mechansim and increasing serum level of LH.

Keywords: Oligozoospermia, Speman, Semina fluid, serum Testosteron, LH FSH

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Introduction

Infertility is defined as the inability to conceive after one year of intercourse without contraception. It is a distressing problem for 10-15% of the population, with the incidence increasing over the years, with the male factors as a sole cause in about 35% and is today a greater health and social problem in term of both prevention and therapy.[1]

Oligozoospermia is an important clinical condition, it means decrease in the numbers & density of spermatozoa produced by testes throughout reproductive life (count less than 20 mill/ml), it account more than 18.5% of seminal fluid abnormality.[2]

More than 90% of male infertility cases are due to low sperm counts, poor sperm quality or both. The remaining cases of male infertility can be caused by many other factors.[3,4]

The semen quality and hormonal parameters offer insight to testicular function and the endocrine status of the hypothalamic-pituitary-testicular (HPT) axis.5 There are numerous studies regarding the use of hormonal therapy in the form of thyroid hormone, clomiphene citrate, human chorionic gonadotrophin and androgens administered to the sub fertile male partners.

Steroids given for long periods are not effective and have side effects. With safety being the priority. There is a search for alternative treatment modalities in other systems of medicine like Ayurveda[5].

Ayurveda is an ancient medical system based on natural herbs and their extracts. "Speman" (A product of The Himalaya Drug Company, Bangalore) is an indigenous formulation of plant origin with no side

effects and has been tried for oligozoospermia, asthenozoospermia, enlarged prostate, azoospermia and other testicular problems[6]. Speman is reported to be effective in improving the morphology and motility of the sperms, as reported by various workers. It is a compound of indigenous drugs reputed to have a pharmacological action in oligospermia[7].

Speman is reported to promote spermatogenesis, improve sperm motility, semen viscosity, raise the threshold of susceptibility to sexual stimuli and be useful in hyper aesthetic sexual conditions [8,9] The active ingredients of Speman are given by oral administration of 2 tablets, three time daily for a period of 4 to 6 months.

These reports prompted to study and evaluate Speman tablets in our cases of oligospermia.

Patients and Methods

A forty patients are suffering from oligozoospermia whether primary or secondary infertility due to the common causes which are idiopathic, infection, varicocele & hyperprolactinemia with mean age 35 years (20-60) irrespective of socioeconomic, informed verbal consent was obtained from the patients before starting of investigation and treatments.

A proper medical history including age of the patients, duration of infertility, previous history of conception, with respect to types primary and secondary were obtained. Examinations were recorded on each follow up. The study was carried out from 1st September 2011 to June 2012. The patients were presented herbal medicine speman tablet two tablets three time daily for three months which comprises of different herbal

medicinal plants and their extracts[6,7]. Speman, a herbal formula comprising of *Orchis mascula* 65 mg, *Lactuca scariola* 16 mg, *Hygrophila spinosa* 32 mg, *Mucuna pruriens* 16 mg and extracts of *Parmelia perlata* 16 mg, *Argyrea speciosa* 32 mg, *Tribulus terrestris* 32 mg, *Leptadenia reticulata* 32 mg, enriched with Suvarnavang (Mosaic Gold) 16 mg in terms of improving sperm counts, others seminal parameters and their hormonal controls [10] in oligozoospermic patients.

Patients with undescended testis, evidence of thyroid diseases, inguinal hernia, severe diabetes with complications and other systemic diseases requiring specific therapies were excluded from the study, while others returned to study like varicocele, infection, hyperprolactinemia were treated with surgery, antibiotic & Dostinex (cabergolin) tablet for one month respectively.

Laboratory Tests included

1-Seminal Fluid Analysis.

Macroscopically (Liquefaction, Appearance, Volume, Viscosity, pH) Microscopic Examination (Sperm concentration, Sperm motility percent and grade of activity, Sperm Abnormal Morphology Percent, Sperm agglutination and round concentrations, A phase-contrast microscope is recommended for all examinations of unstained preparations of fresh semen spermatozoa, the examination may be carried out at room temperature between 20 and 24°C.

2- Hormonal Assay

The hormonal investigations are performed before initiating the treatment and after completion of 3 months treatment. MiniViduse are used for hormonal investigations for all the patients before & after treatment with speman tablets.

Principle Hormonal Assay

The assay principle combines an enzyme immunoassay sandwich method with a final

fluorescent detection (ELFA). All of the assay steps are performed automatically by the instrument.

VIDAS[®]LH(BIOMÉREUX), VIDAS[®] Testosterone, VIDAS[®]FSH & VIDAS[®] Prolactine.

Statistical Analysis

Data were analyzed using SPSS (Statistical Package for Social Science) version 16 and Microsoft Office Excel 2007. Numeric data were expressed as mean +SEM (standard error of mean). Paired t-test was used to compare numeric data before and after treatment. P-value <0.05 was considered significant.

Result

The results of present study indicated that the age groups of 20-30 years and 31-40 years had highest percentage of oligozoospermic patients (50%) and (32.5%) respectively, while the age groups of 41-50 years and 51-60 years had the lowest percentage of patients (12.5%) and (5%) respectively table (1).

Table (2) shows the abnormal hormone level cases with high level of FSH level than normal, LH and testosterone which are (22.5%), (10%) and (5%) respectively while the lowest level is testosterone (20%) followed by LH (7.5%) and FSH (5%). Figure (1) shows the highest percentage of severe (45%) and mild (30%) and with lowest percentage are moderate (25%).

Statistical Analysis

1-Effect of Three Months Treatment With Speman Tablets Seminal Fluid Parameters

The mean ejaculated volume was no significant ($p > 0.05$) effected from (2.78 ± 0.23) before treatment to (2.65 ± 0.14) after treatment as shown in table (2) and figure (2) The mean baseline sperm concentration was highly significant ($P < 0.001$) elevated from (7.13 ± 0.84)

before treatment to (19.90 ± 2.69) after treatment as in table (3) and figure (3).

Regarding the sperm motility grading , the mean baseline of sperm motility grade-A was significantly ($P<0.05$) increased from (19.87 ± 2.47) before treatment to (31.87 ± 2.63) after, while the others grades not significant ($P>0.05$) were compared with before treatment as the table (4) and figure (4).

The mean baseline sperm morphological normal was a significant ($P<0.05$) increase from (62.00 ± 2.19) before treatment to (68.00 ± 1.64) after treatment and also a significant ($P<0.05$) decreased in abnormal sperm from (38.00 ± 2.19) before treatment to (31.50 ± 1.66) after treatment as shown in table (3) , figure (5) and (6).

The effect of the speman treatment on the round cells have no significant ($P>0.05$)

improvement from (2.05 ± 0.22) before treatment to (1.75 ± 0.22) as in table (3) and figure (7).

2-Effects of three months treatment on the hormones that regulate spermatogenesis.

The mean baseline of FSH serum level was a significant ($P<0.05$) decreased from (7.72 ± 0.79) before treatment to (5.69 ± 0.55) after treatment , also a significant ($P<0.05$) increased of the mean serum level of testosterone from (4.60 ± 0.25) before treatment to (6.24 ± 0.60) after treatment. The mean baseline of serum LH level was significant ($P<0.05$) increased from (2.91 ± 0.390) before treatment to (3.98 ± 0.33) after treatment , as in table (5) and figure (8).

Table (1): Distribution of cases according to age & duration of infertility.

Age/year	No.	%
20—30	20	50
31—40	13	32.5
41—50	5	12.5
51—60	2	5
Total	40	100%
Duration of infertility/year	No.	%
1 ---- 4	20	50
5---- 8	13	32.5
9----- 12	4	10
More than12	3	7.5
Total	40	100%

Tabl (2): Distribution of abnormal hormones in 40 oligozoospermic male.

Hormones Abnormality	Follicle-stimulating hormone*	Luetinazing hormone**	Testosteron hormone***
Low level	5%	7.5%	20%
High level	22.5%	10%	5%
Total	27.5	17.5%	25%

*1.7---12µl/ml **1.1---7.0 µl/ml ***3---10.6ng/ml

Table(3): Effect of three months treatment with speman on the volume , sperm concentration , morphology & round cells.

Parameter	Before treatment	After treatment	Pvalue
volume	2.78±0.23*	2.65±0.14	0.620
Sperm concentration	7.13±0.84	19.90±2.69	<0.001**
Abnormal morphology	38.00±2.19	31.50±1.66	0.021*
Normal morphology	62.00±2.19	68.00±1.64	0.032
Round cells	2.05±0.22	1.75±0.22	0.351

Value of mean ±SEM *P<0.05 in comparison with after treatment

**P<0.001 in comparison with after treatment

Table(4): Effect of three months treatment with speman on the sperm motility.

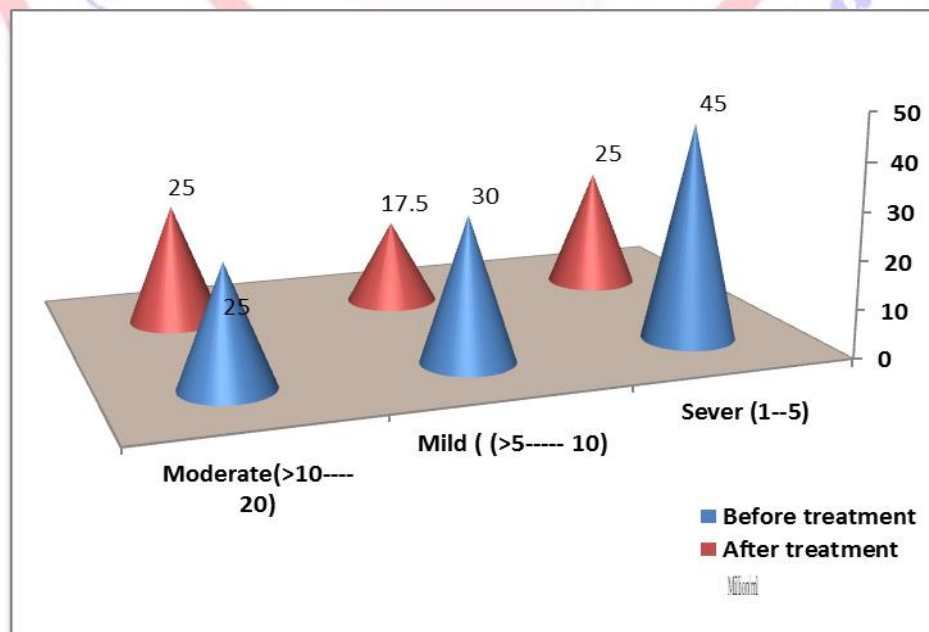
Grade of activity	Before treatment	After treatment	P value
Grade A	19.87±2.47*	31.87±2.63	0.001*
Grade B	19.62±19.00	18.4±1.60	0.799
Grade C	16.87±1.24	14.37±1.10	0.138
Grade D	43.87±3.52	35.00±3.36	0.073

Value of mean ±SEM *P<0.001 in comparison with after treatment

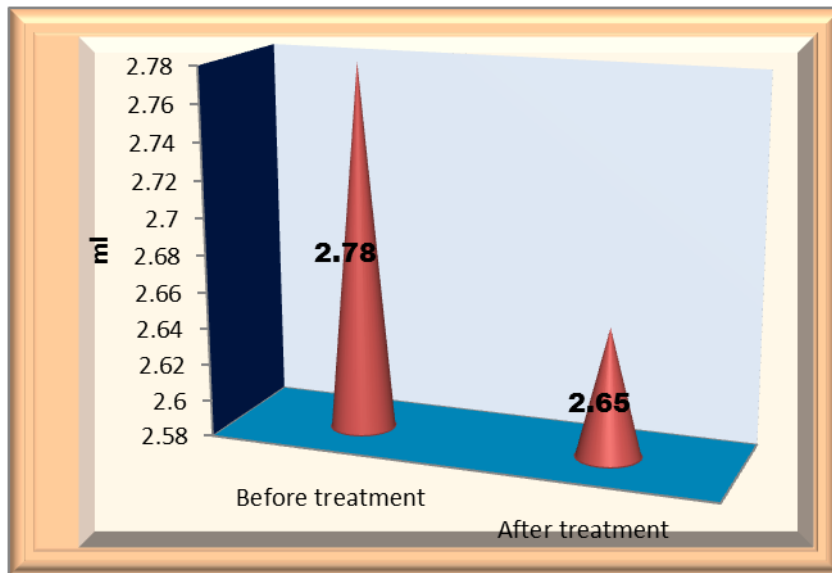
Table(5): Effect of three months treatment with speman on the hormones

Hormone	Before treatment	After treatment	P
Testosterone	4.60±0.25	6.24±0.60	0.014*
LH	2.91±0.390	3.98±0.33	0.039
FSH	7.72±0.79	5.69±0.55	0.039

Value of mean ±SEM *P<0.05 in comparison with after treatment



Figure(1): Distribution of sperm concentration according to severity.



Figure(2): Effect of three months treatment with speman on the volume.

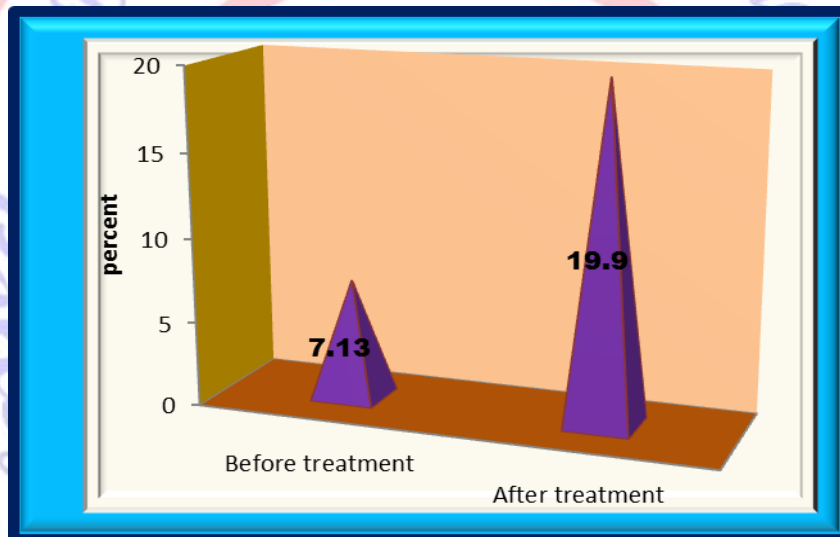


Figure (3): Effect of three months treatment with speman on the sperm concentration

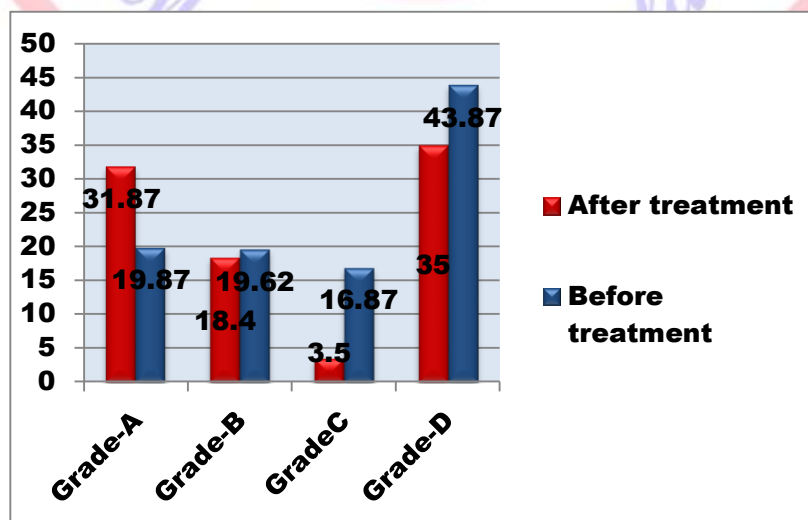
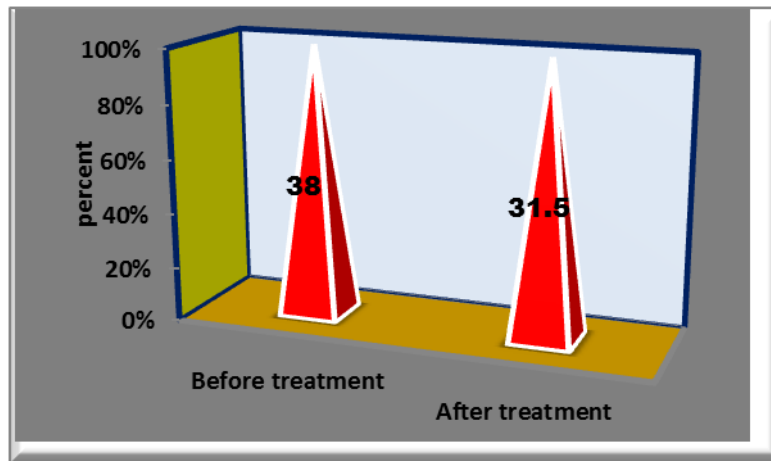
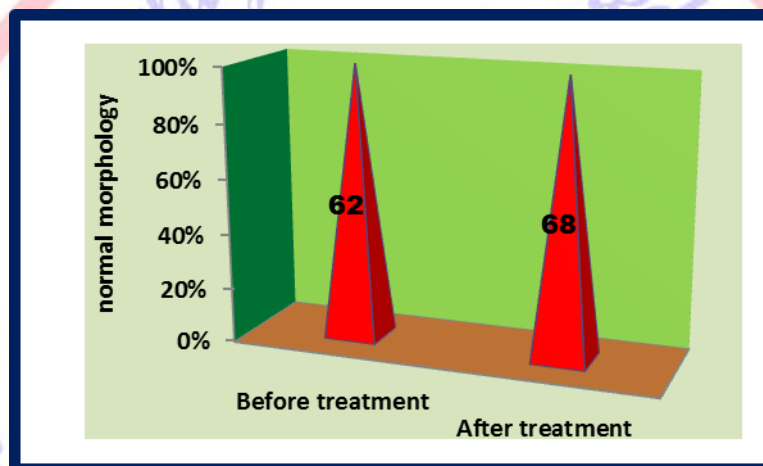


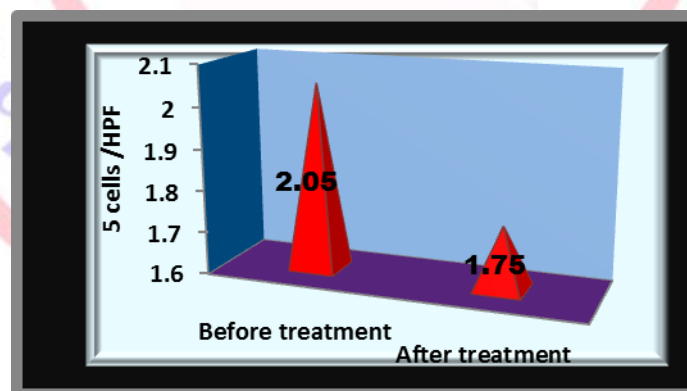
Figure (4): Effect of three months Speman treatment on sperm motility.



Figure(5): Effect of three months treatment with speman on the abnormal morphology.



Figure(6): Effect of three months treatment with speman on the normal morphology.



Figure(7): Effect of three months treatment with speman on the round cells.

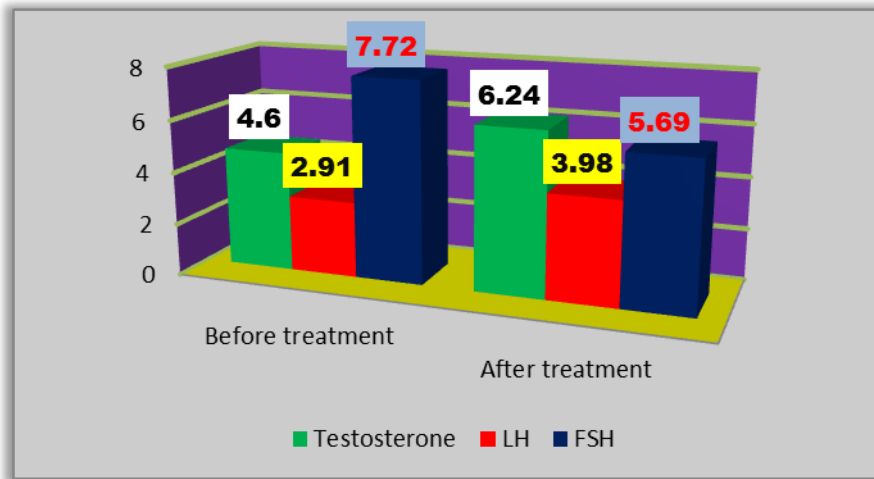


Figure (8): Effect of three months speman treatment on hormones
■ Testosterone ng/ml ■ FSH µl/ml ■ LH µl/ml

Discussion

From the result of the present study, it is clear that increase in the duration of infertility and age of the oligozoospermic patients according to the history of infertility which has effected on the patients that become less interested in seeking medical services, in addition to psychological factors like depression and hopelessness so this in with the other studies[11,12].

In the present study, Speman has no significant ($P > 0.05$) effect on mean seminal fluid volume after treatment, the other studies showed a mild improvement (non significant) affect of treatment on the mean ejaculated volume of semen, in which some pathological low volume ($< 1\text{ml}$), this may give the possibility of partial ductal obstruction, retrograde ejaculation especially with the normal FSH level as in the Goluboffi et al., (13), short abstained period, incorrect collection of semen, androgen deficiency and infection through accessory sex gland secretion (Turek et al, (14) these affects are due to action of orichis mascula and mucuna pruriens.

Speman has a highly significant ($P < 0.001$) affect on the sperm concentration

after treatment as compared with that before treatment.

Indu Singh et al (8), sperm density significantly increased was observed after three months of speman treatment compared to the mean sperm density value before treatment, however, the result in present study showed an improvement in sperm density after three months treatment this improvement is more when compare with previous publication [6,11,15]. Agarwal, et al (16), show that there were a significant increased in the sperm concentration (definite increase in 42 out of 60 cases (70%), an increased from 15 to 30 million/ml), the other study, the mean sperm concentration increased from $27.64 \pm 3.31\%$ to $41.43 \pm 5.96\%$ in the patient group with < 50 million/ml of sperm count. The increase in sperm concentration was not significant in patient group with > 50 million/ml of sperm count [10]. Improvement of the sperm concentration are because the action of Suvarnavag, Tribulus terrestris and Leptadina reticulate.

A sperm motility grading was showed a significant improvement especially grade-A after treatment, however this is in

agreement with other study , the sperm motility showed a significant improvement after treatment i. e highly significant[8,16].

In present study , motility grade A+B were equal to 50.25 % which mean that the sperm motility became normal as compared to WHO criteria 1999. While grade-C and grade-D showed a decrease from 16.87 ± 1.24 to 14.37 ± 1.10 and 43.87 ± 3.52 to 35.00 ± 3.36 respectively .The same result was found in Agrwa et al ., (2003)[16], all these improvements are due to the effect *Lactuca Scariola ,Orichis Masculata and Hygrophila Spinosa*.

Regarding, the effects of drug on morphology has a significant effect in decreasing the morphological abnormal sperm after treatment, so the patients with oligozoospermia may required long-term treatment with *Lactuca scariola mucuna pruriens* to correct abnormal morphology characteristics,[6,16]. The three months regular taking of prescribed medicine has no significant effect on round cells, however, WHO criteria state < 5 HPF are normal , the study revealed slight decrease of round cell in seminal fluid analysis , the other studies showed a significant effect on round cell where combined treatment (speman and antibiotic) as compared to the speman treatment alone [11] , this slight improvement due to antibacterial , antiviral and antioxidant action of speman constituent(*Argyrea speciosa ,Hygrophila spinosa and Parmmelia perlata*)

Regarding speman effect on hormonal control of testicular function , the medicine has a significant decreasing mean serum level of FSH post-treatment where about 22.5% of cases have higher than normal.

The mean serum level of testosterone and LH were significantly increased post-treatment so the speman cause an increased serum level of testosterone was about 20%

and 7.5% of oligozoospermic men showed a decreased in the serum level of testosterone and LH below the normal level respectively , approximately 20% of men with oligozoospermia have elevated FSH and normal LH levels [17].

The elevated FSH is usually liable indicator of germinal epithelial damage ,it is usually associated with azospermia and sever oligozoospermia [18].

In 35% of patient with sever oligozoospermia there was an elevated FSH level, so in presence of sever oligozoospermia or azospermia the male needs endocrine evaluation including testosterone , FSH , LH and Prolactine levels.

These studies explained and confirmed that herbal extract in the speman have a compound (*Tribulus terrestris and Leptadenia reticulata*) that lead to increase testosterone which itself causes negative feedback mechanism on the hypo-thalamic-pituitary-gonad axis , The function of both testis are under hormonal control (hypo-thalamic-Pituitary –gonad axis) , FSH & LH are released from pituitary gland which is controlled by pulses of gonadotropin-releasing hormone (GnRH) from the hypothalamus .These pulses , in turn are subject to the testosterone feedback from the gonads(Testis) [9]. The others previous researches were showed that , the serum values of follicle stimulating hormone (FSH), luteinizing hormone (LH) and prolactine (hPrl) did not show marked changes due to Speman therapy , so that the serum level of FSH was moderate decreased [9] and no change on serum level of LH while the serum level of testosterone was significantly increased following speman therapy[8].

Speman has been shown an improvement in the sperm count , morphology and sperm motility and increase the testicular weight by

producing dose-related growth in the experimental studies[8]. This is beneficial, and reflects the increase in serum testosterone levels, LH and yield normal serum level FSH which are important hormones that regulate process of spermatogenesis improvement in the sperm quality by steroidal saponin and protodioscin (glycoside derivatives) which is the active ingredient in tribulus terrestris in the mixture, lead to an increase in the secretion of the LH hormone. In turn, the LH stimulates the release of testosterone, a powerful building hormone, so it is a non-steroidal drug without any androgen like side effect or systemic toxic effects[7,11] in addition to improve the accessory gland functions including prostatic fluid parameters[11,16].

The speman constituents like antioxidant, antimicrobial, antibacterial, antiviral or antifungal, antitumour and immunomodulative action, also they have protein, carbohydrate, vitamins with a lot of mineral as it was mentioned in chapter two, all play a role in improvement most of seminal fluid parameters (concentration, motility, morphology) and hormones that responsible for regulation of reproduction of normal mature sperm and give a healthy sexual activity. (14)

Conclusions

On conclusions, the effect of the speman of plants origin on the oligozoospermic patient after three months can be summarized as the following:-

- ✚ Significant effect on the sperm concentration following three months therapy.
- ✚ Significant improvement sperm motility and grading particularly grade-A.
- ✚ Grade-A+B were became more than 50% i.e. normal as in WHO 1999 criteria.
- ✚ A significant decreased morphologically abnormal spermatozoa.

✚ Regarding, round cells, it is showed minimal improvement which was not significant.

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