Multidisciplinary

The effect of shilajit herb on sexual hormonal level in male and female in Karbala province

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Abstract
Background: Shilajit is also known as a powerful aphrodisiac and is given for treatment of male sexual disorders. Shilajit has been known to increase serum levels of (testosterone), (LH) and (FSH) in males and (estrogen) and (progesterone) in females in patients after treatment compared to those before treatment.
Objectives: The objective of the current study was to assess the levels of some hormonal parameters (testosterone), (LH) and (FSH) in male and (estrogen) and (progestogen) in female
Materials and Methods: 5 ml of blood was collected from patients and controls utilizing a disposable syringe, put in a plain test tube and coagulated at room temperature (20-25°C) for 15 minutes. The coagulated blood was exposed to centrifugation at 2500 rpm for 15 minutes; serum was then taken and divided into 0.25 ml aliquots in Eppendorf tubes for hormone testing.
Results: Results of hormonal parameters showed that there are significant decrease in the levels of (testosterone), (LH) and (FSH) in male and (estrogen) and (progestogen) in female in before treatment patients in comparison with control group, while notice there are a significant enhancing in the levels of (testosterone), (LH) and (FSH) in male and (estrogen) and (progestogen) in female in after treatment patients in comparison with before treatment patients.
Conclusion: From the current study, it is apparent that bitumen is capable of treating infertility. Additionally, the herb's use can be attempted in small and large animals with stressful climates in order to address infertility. Because of its anti-oxidant properties, an increase in metal content is possible.

Keywords: Shilajit, Testosterone, LH, FSH, Estrogen, Progestogen

Introduction

Shilajit is a light brown to dark brown excretory product. It derives from Himalayan rock formation at an elevation of between 1000 and 5000 m in the Indian subcontinent. It's a heavy mass of soil (60-80%) as well as other components like benzoic acid, hippuric acid, fatty acids, ichthyols, ellagic acid, resins, sterols, phenolic lipids and amino acids [1]. The primary functional effects of shilajit are caused by the role of bioactive dibenzo-α-pyrones as well as fulvic acids and humic, these molecules serve as vehicles for the active ingredients [2]. In oriental medicine, the activity of shilajit has been documented to address a variety of diseases including digestive issues, neurological issues, kidney stone issues, diabetes, anemia, and chronic bronchitis.

Classical medicine believes that shilajit has the ability to alleviate the recurrence of acne and tumors [4]. Modern scientific research has consistently documented the properties of shilajit, and it has demonstrated that shilajit is a genuineacea in traditional medicine [1]. In oriental medicine in Asia, shilajit is also considered to have an aphrodisiac effect and is employed to address the male sexual issues [3, 1].

Bitumen can enhance the function of the male reproductive system. To determine the fertility of the male reproductive system, the sexual desire, sperm motility, volume of semen, the percentage of dead sperm, and the number of sperm are all considered paramount to the male reproductive system. Bitumen preparations (Ashree forte and Tentex forte) are employed to augment sexual desire and pleasure in men [5] and rams [6]. This enhancement in sexual desire may be attributed to the stimulating effect of shilajit on the central nervous system [7]. This substance also possesses androgenic properties, and can increase testosterone levels, which in turn increases sexual activity [8], the desire for sex is primarily derived from testosterone [9]. The increase in serum volume is possibly caused by an increase in testosterone production, as testosterone affects the production and composition of supplemental glands [10]. 60 infertile men were given the processed silajit at a dose of 100 mg twice a day for a maximum of 90 days and observed an elevation in semen volume.

The movement of sperm is crucial to the transportation of sperm to the place of fertilization as well as the penetration of the zona pellucida into which the egg is surrounded. The movement of sperm is of paramount importance in the diagnosis of male fertility [11]. The administration of processed shilajit to patients with oligospermia increased the motility of their sperm by 12.4-17.3%. (12) and (3) reported an increase in sperm quantity caused by bitumen. (8) The administration of bitumen to patients with oligospermia increased the sperm count by 37%. Bitumen averts the stress of oxidative damage, this is possible by decreasing the levels of malondialdehyde (MDA) and promoting the reproduction of sperm [13]. The

percentage of dead sperm was reduced in the treated group compared to the control group [8]. The decrease in the percentage of dead sperm may be caused by the removal of free radicals, as bitumen has a significant role in removing free radicals [14]. Shilajit has a significant anti-inflammatory effect [15], it is a free radical scavenger [14], and it has anxiolytic properties [16]. Shilajit has been documented to enhance the reproductive capabilities of infertile mice caused by cadmium, the improvement was observed in the form of increased movement, reproduction, testosterone, and seminiferous tubule function [17]. The administration of 200 mg of bitumen for three months increased the levels of follicle-stimulating hormones and testosterones, but had no significant effect on the human level of luteinizing hormones [18].

Materials and methods

Study groups and blood samples collection

The current study was conducted on 40 persons, their ages ranged from (25-45) years. The study population was divided into two groups: first group include 20 of control and second group which include 20 of patients. 5 ml of blood was collected from patients and controls by venipuncture utilizing a disposable syringe and then put in a plain test tube and coagulated at room temperature (20-25°C) for 15 minutes. The coagulated blood was exposed to centrifugation at 2500 rpm for 15 minutes; serum was then taken and dispensed into Eppendorf tubes in 0.25 ml aliquots for hormone testing, which were frozen at -20°C until laboratory examination [19].

Hormonal assays

ELISA Reader and washer/(Biotek/USA) was used to estimate hormonal parameters that include(testosterone), (LH)(FSH), (estrogen) and (progestogen).

Statistical analysis

Data are reported as mean and standard mean of error (SE) and subjected to one-way ANOVA. ANOVA data analysis was performed using the IBM SPSS version 20 program and post hoc tests to determine significant differences between means [20].

Results

Table 1: Comparison of serum testosterone in patients men group with control group (before and after treatment)

Samples	Mean	S. D	S. E	95% confidence interval for mean		Min	Max	*p*. v	lsd
				Lower	Upper				
Control	679.55	109.00	24.37	628.54	730.56	544.80	910.70	.000	45.85
Before treatment patients	308.75	46.45	10.39	287.01	330.49	207.10	406.80		
After treatment patients	467.39	48.74	10.90	444.58	490.19	391.80	573.40		

Table 2: Comparison of serum FSH in patients men group with control group (before and after treatment**)**

Samples	Mean	S. D	S. E	95% confidence interval for mean		Min	Max	p. v	lsd
				Lower	Upper				
Control	7.64	0.73	0.16	7.29	7.98	6.50	9.20	.000	0.37
Before treatment patients	3.35	0.60	0.14	3.07	3.63	2.10	4.60		
After treatment patients	4.61	0.41	0.09	4.42	4.80	3.90	5.30		

Table 3: Comparison of serum LH in patients men group with control group (before and after treatment)

Samples	Mean	S. D	S. E	95% confidence interval for mean		Min	Max	p.v	lsd
				Lower	Upper				
Control	13.53	1.10	0.25	13.01	14.04	11.70	15.10	.000	0.49
Before treatment patients	7.84	0.66	0.15	7.53	8.15	6.90	8.80		
After treatment patients	10.14	0.50	0.11	9.90	10.37	9.11	10.80		

Table 4: Comparison of serum estrogen in patients men group with control group (before and after treatment);

Samples	Mean	S. D	S. E	95% confidence interval for mean		Min	Max	p.v	lsd
				Lower	Upper				
Control	297.11	24.83	5.55	285.48	308.73	266.90	371.40	.000	11.25
Before treatment patients	177.17	15.04	3.36	170.13	184.21	141.50	201.10		
After treatment patients	217.52	12.09	2.70	211.86	223.18	199.50	236.80		

Table 5: Comparison of serum progestogen in patients men group with control group (before and after treatment)

Samples	Mean	S. D	S. E	95% confidence interval for mean		Min	Max	p.v	lsd
				Lower	Upper				
Control	23.50	0.98	0.22	23.04	23.96	21.70	25.10	.000	0.76
Before treatment patients	12.22	1.38	0.31	11.58	12.86	9.90	14.70		
After treatment patients	17.53	1.27	0.28	16.93	18.13	15.50	20.60		

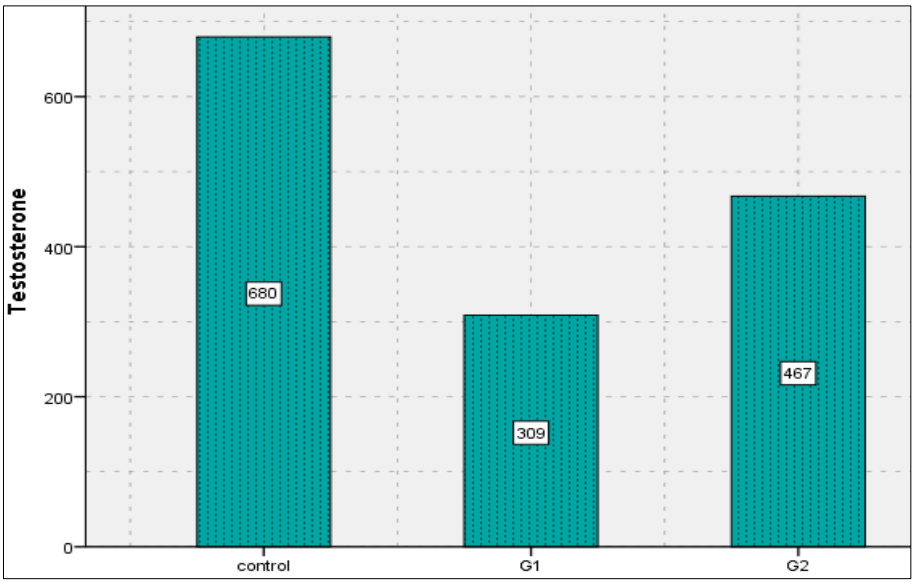

Fig 1: Distribution of control and patients groups in testosterone hormone

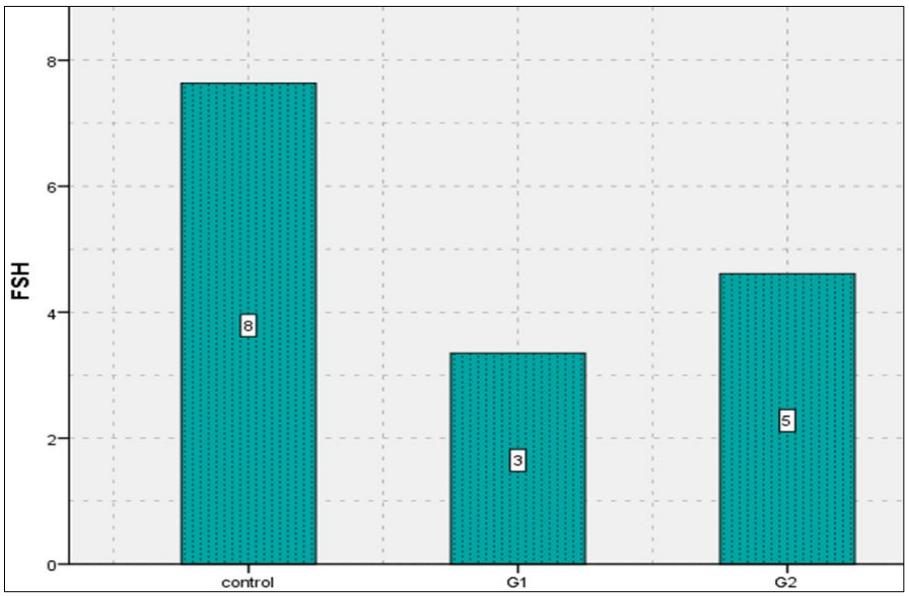

Fig 2: Distribution of patient and control groups in FSH hormone

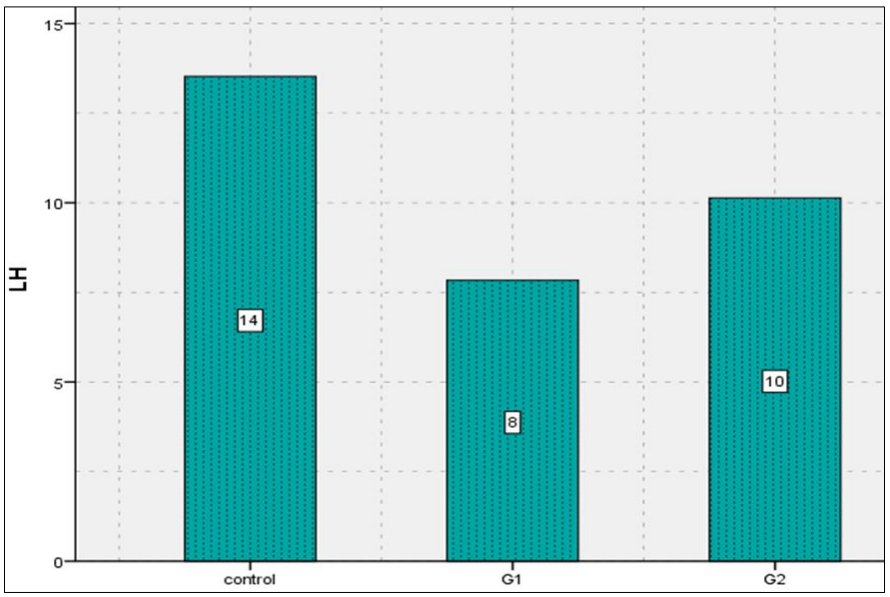

Fig 3: distribution of patient and control groups in LH hormone

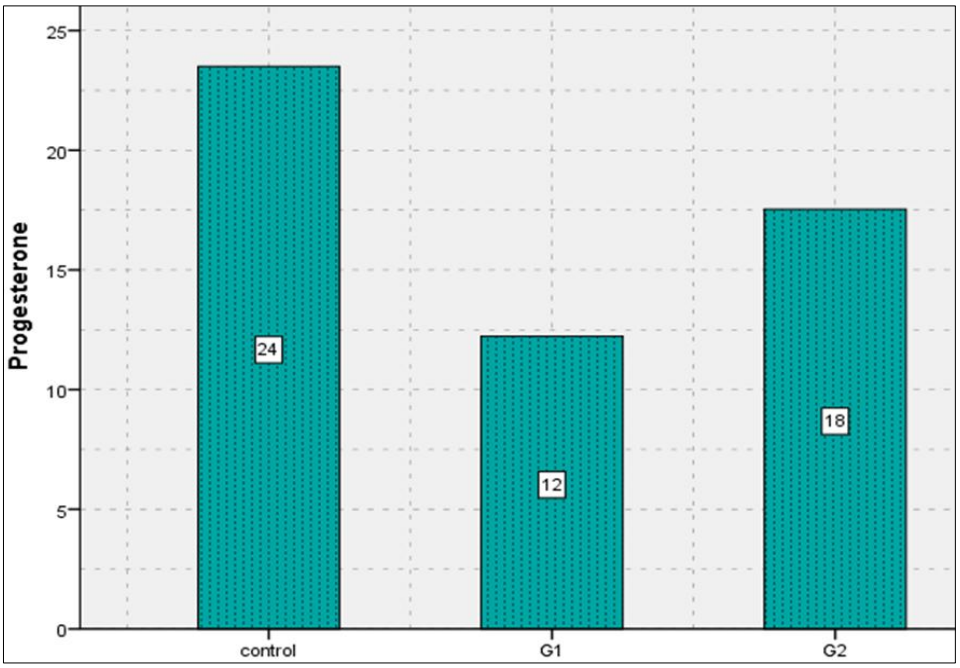

Fig 4: distribution of patient and control groups in progesterone

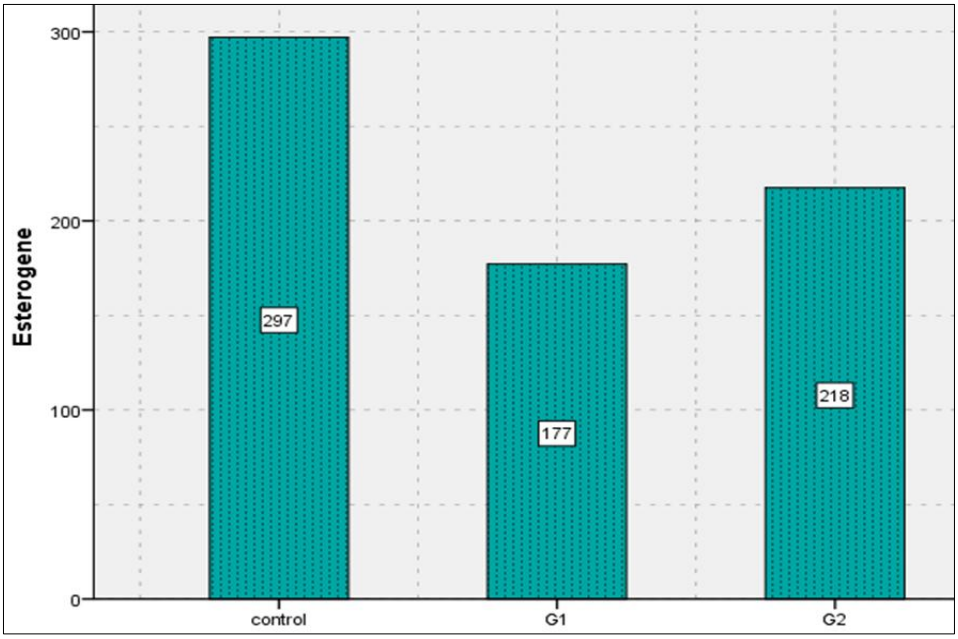

Fig 5: Distribution of patient and control groups in estrogen

Discussion

Findings of the current study revealed that there are significant decrease in the concentration of (testosterone), (LH) and (FSH) in male and (estrogen) and (progestogen) in female in before treatment patients in comparison with control group, while notice there are a significant enhancing in the levels of (testosterone), (LH) and (FSH) in male and (estrogen) and (progestogen) in female in after treatment patients in comparison with before treatment patients, this study agreement with previous investigations [26-28] which have demonstrated that the effects of shilajit on sexual performance and libido have been observed in multiple animal studies. A laboratory research study that was randomizable evaluated the effects of shilajit on the sexual functioning and fertility of male mice that were sterile due to cadmium. The libido rating was higher for the individuals who received the greatest amount of shilajit (26). Similarly, Syed *et al*. investigated the effects of bitumen (Shilajit) on sexual desire, serum testosterone, hemoglobin, and chemical metabolites in Lohi rams. They recorded a significant increase in sexual passion and testosterone levels in the serum [27]. The results of these investigations are in agreement with the results of the present study. In 2006, Park *et al*. conducted a research study to investigate the effects of long-term administration of shilajit on the growth of sperm and eggs in mice. The investigation showed that shilajit increased the production of sperm and eggs in adult mice, along with increasing testosterone [24]. Another study had rams placed in the same housing system for 9 weeks. After 7 weeks of treatment with shilajit, the average libido score and testosterone level in the serum were both increased

significantly in comparison to the control group [27]. Despite this research not being conducted on humans, the results of these studies seem to be in agreement with the findings of this study. The increase in sexual desire that follows the administration of shilajit is likely caused by the stimulation of the central nervous system [29].

Numerous clinical studies have demonstrated that testosterone is beneficial in addressing female sexual issues [30-31]. Many published articles have demonstrated that shilajit enhances the concentration of dehydroepiandrosterone sulfate (DHEAS), which is a precursor to testosterone [21, 23, 27, 32, 33]. It appears that increased DHEA causes an increase in testosterone, which is beneficial for sexual performance. Increased blood flow to the genitals can lead to and improve female sexual issues [31]. In a research by Das *et al*. Shilajit has been demonstrated to promote the induction of genes associated with the migration of endothelial cells and the growth of blood vessels [34]. Another study stated that the effects of shilajit on angiogenesis were caused by the magnesium and copper ions in shilajit [18].

Other mechanisms by which shilajit affects the female sexual function may involve reduced anxiety and increased transcripts in the pelvic region and bone cells. The flow of blood to the genitals and sexual desire are both reduced during anxiety [35]. Shilajit has a reputation for decreasing mental and physical tension while also increasing the confidence needed to manage stress through an increase in memory [36]. Several researches have demonstrated that a strong pelvic floor is linked to sexual behavior and could enhance sexual performance [37]. A research article analyzing the effects of shilajit on the transcripts of bone cells revealed that alterations in bone structure occurred via the repositioning of genes involved in mechanical properties, elasticity, repair, and control when using shilajit [25].

The traditional method of utilizing shilajit was not limited to diabetes and the urinary system, it also had a focus on edema, tumors, muscle atrophy, epilepsy, and mental disorders. Modern criteria include all of the human body's systems, there is a large number of supplements utilized for the reproductive and nervous systems. Clinical research has substantiated the majority of the properties of shilajit [38].

Conclusion

The conclusion of this study is that bitumen can be used to treat infertility. Additionally, the herb's use can be attempted in small and large animals with stressful climates in order to address infertility. Because of its anti-oxidant properties, an increase in metal content is possible.

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