The probable therapeutic effects of date palm pollen in the treatment of male infertility

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Received 2 /4 /2005 : accepted 10 /5 /2005

Abstract

This study was performed to determine the possible therapeutic effects of Date palm pollen in male infertility. Pollen powder was packed as 500 mg in capsules , and used for treatment of 25 infertile men as 500 mg twice daily for 3 months. The treatment significantly increased serum LH,FSH and testosterone levels . It also significantly increased sperm count and motility . Sexual desire was also significantly increased. Wives of two treated male became pregnant during the treatment period . Pollen of Date palm causes no biochemical and hematological toxicities. As a conclusion it is effective, cheap, and safe therapeutic agent.

التأثيرات العلاجية المحتملة لحبوب لقاح طلع النخيل في علاج عقم الذكور

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المستخلص لقد نفذت هذه الدراسة لتحديد التأثير الدوائي المحتمل لحبوب لقاح طلع النخيل في علاج عقم الرجال. لقد عبئ مسحوق حبوب لقاح طلع النخيل في محافظ تحتوي كل منها500 ملغم وأعطي بجرعة 500 ملغم مرتين يوميا لـ 25 ذكرا عقيما لمدة 3 أشهر . أظهرت نتائج الدراسة أن هذا العلاج زاد بشكل ملموس إحصائيا مناسيب كل من هرمون LH , FSH والتستوستيرون . كما أن العلاج زاد بشكل ملموس إحصائيا معدل عدد وحركة النطف والدافع الجنسي . وان زوجات اثنين من الذكور المعالجين حملن أثناء فترة العلاج. لم تسجل سميه لمسحوق حبوب طلع النخيل على مكونات الدم والقيم الكيميوحيويه للمصل . ومن الممكن الاستخلاص من نتائج الدراسة انه علاج فعال ورخيص وأمين .

Key words : Male infertility ,Treatment , Pollen of Date palm,

Introduction

Infertility is one of the major health problems .Male infertility is defined as inability of the wife to conceive after six months of unprotected sex in the absence of female cause[1]. The causes of male infertility includes , deficient sperm production, incomplete development of testes, testicular maldescent , vascular testicular defect , diseases of reproductive system , increase scrotal temperature , environmental factors (such as smoking , alcohol consumption , and therapeutic agents), nutritional factors, immunological reactions , anatomical problems and ejaculatory disorders [2-6]. Semen analysis is commonly used to determine the fertility potential in male. However, the occurrence of pregnancy is multifactorial [1,2]. Many treatment approaches are used in the treatment of male infertility , but there are no previous studies on the use of pollen of Date Palm in the treatment of male infertility. Date Palm *(Phoenix dactyliphera* Linn.; Palmaceae) is widely grown in Iraq. Stamens are the part of date palm male flower which produce pollen grains. The pollen of Date Palm had a history of use as male tonic to improve fertility[7-10] .A gonadotropically active substance was isolated from pollen of Date Palm, which when injected to mice at a dose of 10 mg produced gonadotrophin like effects equivalent to 0.88 IU of human pituitary gonadotrophin[10]. This study was designed to investigate the probable therapeutic effects of Date palm pollen in male infertility.

Materials and methods

The study was carried out on 25 patients, 23 to 45 years in age, attending the Infertility Clinic at Kirkuk General Hospital . The patients consulted a fertility specialist in the hospital for complete evaluation. Testicular biopsy and other tests were performed to exclude obstructive azoospermic men. Pollen's capsules were prepared by packaging 500 mg of dried pollen in gelatinous capsule. The infertile men participated in this study were those who had abnormal sperm count or/and motility with normal other semen parameters. During the period of the treatment, each patient was advised to attend the infertility clinic in the hospital weekly. The patients were treated with 500mg pollen powder twice daily for 3 months. The semen was collected in the hospital laboratory by masturbation after 3-7 days of the sexual abstinence, blood samples were collected for biochemistry , hematology and hormonal analysis . The seminal analysis, and biochemical values were determine by routine laboratory methods, hematological values were determining using autoanalyzer .Serum level of LH , FSH and testosterone were determined by radio immuno assay . All these parameters were checked before and after the treatment period.

The paired t-test and the percentage of changes were used for statistical analysis [11].

Results

Sperm count and motility increased significantly for infertile patients treated with 500 mg pollen powder twice daily for 3 months ($P < 0.05$). The percentage of sperm count change was (+30.034%) and sperm motility was (+47.829%)(table 1).Serum level of FSH, LH, and testosterone significantly increased ($P < 0.05$) compared to baseline data. The percentage of hormonal changes were (+77.962%), (+112.984%), and (+ 64.250 %) respectively (table 2). Intercourse rate / week was significantly increased ($P < 0.01$). The percentage of change was

(+207.350%) (table 3). Serum level of ALT, AST, urea, creatinine, total protein, total bilirubin, alkaline phosphatase and triglycerides were not significantly changed post therapy. However, random blood sugar and serum cholesterol were slightly increased (Table 4). There was no significant changes in Hb, PCV and WBC count in infertile patient after 3 months treatment (table 5).The treatment was well tolerated, and there were no side effects that necessitate cessation of the treatment.

Table (1): Effects of pollen powder capsules 500 mg twice daily for 3 months on semen parameters in infertile men.

Semen parameters	Before treatment — X ± SD	After treatment — X ± SD	Level of significancy between before and after treatment	Percentage of change
Sperm count (million/ml)	24.076 ± 8.290	31.307 ±8.631	P < 0.05	+30.034%
Active sperm motility%	19.166± 4.988	28.333±5.270	P < 0.05	+47.829%

Table (2): Effects of pollen powder capsules 500 mg twice daily for 3 months on FSH, LH and testosterone levels in infertile men.

Hormonal levels	Before treatment X ± SD	After treatment X ± SD	Level of significancy between before and after treatment	Percentage of change
FSH (mIU/ml)	5.958 ± 1.061	10.603± 2.617	P < 0.05	+77.962%
LH (mIU/ml)	3.119 ± 0.667	6.643 ± 1.606	P < 0.05	+112.984%
Testosterone (nmol/l)	10.126 ± 4.089	16.632 ±4.969	P < 0.05	+64.250%

Table (3): Effects of pollen powder capsules 500 mg twice daily for 3 months on sexual desire (intercourse/week) for infertile men.

$\bar{X}$ Before treatment $\bar{X} \pm SD$	After treatment $\bar{X} \pm SD$	Level of significancy between before and after treatment	Percentage of change
2.366±0.409	7.272±1.591	$P < 0.01$	+207.350%

Table (4): Effects of pollen powder capsules 500 mg twice daily for 3 months on the biochemical tests in infertile men.

Biochemical test	Before treatment $\bar{X} \pm SD$	After treatment $\bar{X} \pm SD$	Level of significancy between before and after treatment
ALT(IU/L)	7.800 ± 0.712	7.100 ± 0.715	NS
AST(IU/L)	8.100 ± 1.127	7.000 ± 0.632	NS
Serum urea(mg/dL)	20.300 ± 2.403	21.000 ± 7.211	NS
Serum creatinine(mg/dL)	0.770 ± 0.100	0.790 ± 0.104	NS
Total serum protein(gm/dL)	6.320 ± 0.472	6.650 ± 0.512	NS
Total serum bilirubin(mg/dL)	0.660 ± 0.078	0.690 ± 0.068	NS
Alkaline phosphatase(KAU/L)	11.620 ± 0.963	10.040 ± 1.295	NS
Triglycerides(mg/dL)	87.000 ± 11.431	93.500 ± 12.867	NS
Random blood sugar(mg/dL)	105.100 ± 7.967	137.800 ± 14.273	P < 0.05
Serum cholesterol(mg/dL)	143.000 ± 15.496	150.500 ± 16.401	NS

Table (5): Effect of pollen powder capsules 500 mg twice daily for 3 months on the hematological tests after 3 months treatment.

Hematological test	Before treatment $\bar{X} \pm SD$	After treatment $\bar{X} \pm SD$	Level of significancy between before and after treatment
Hb (gm%)	13.880 ± 0.489	14.100 ± 0.524	NS
PVC%	40.200 ± 1.314	42.300 ± 2.533	NS
WBC(cell/mm^3)	5000 ± 700.000	5100 ± 1138.712	NS

NS : means not significant

Discussion

Sperm count increased significantly for the infertile patients treated with capsule packed with dried powder of pollen of Date palm 500 mg twice daily for 3 months. This could be attributed to the presence of gonadotropically active substance in pollen of Date palm[9]. In addition to gonadotropically active substance, pollen of Date Palm contain steroid precursor [10], which may enhances testosterone synthesis . This will elucidate the increment of testosterone levels. Moreover, the presence of growth hormone like material in the pollen [9] ,which had anabolic effects, could anticipate in this stimulation. Sperm count, active sperm motility, sexual desire, and the rate of sexual intercourse/week did increase for treated infertile patients; all these results could be attributed to the increment in the level of testosterone . Testosterone regulates spermatogenesis, the epididymal spermatozoa maturation and motility and sexual desire[4].

Conception of the treated men wives increased, a result that could be attributed to improvement of sexual desire and semen quality [3].

Biochemical and hematological tests clearly proved that pollen of Date Palm was a safe treatment material.

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