The Effect of Natural Honey Administration on Some Sperm Function Parameters in Male Infertility Patients

Riyadh Hussein Wally - lecturer/ kut-Technical Institute

Тأثير تناول العسل الطبيعي في بعض معايير وظائف النطف لدى الرجال ضعيفي الانجاب

رياض حسين والي - مدرس / المعهد التقني - كوت

المستخلص:

الدراسة اجريت في مركز معالجة العقم الكائن في مستشفى الكوت – العراق حيث تم اخذ العينات من 43 شخص من لديهم ضعف في الانجاب تتراوح اعمارهم بين 20-40 سنة وليس لديهم امراض تؤثر سلبًا على الدراسة وتم جمع نماذج السائل المنوي بطريقة الاستخراج في وعاء مغلق بعد انتظار من 3-5 يوم وارسلت الى المختبر وتتم قياس تركيز الفركتوز المنوي والنسبة المنوية لعدد الالعاب وحركة ومظهر النطف وتم سحب الدم الوريدي لغرض قياس نسبة هرمونات LH و FSH و Testosterone في عينات الدم و رسم نماذج السائل المنوي والمد لغرض قياس المتغيرات السابقة بعد تناول العسل حيث وجدت الدراسة هناك زيادة ملحوظة في جميع المتغيرات بعد تناول العسل الطبيعي حيث ازداد تركيز الفركتوز وعديد الكلي للنطف وحركة النطف ومظهر الخارجي وقائمة هناك زيادة ملحوظة في مستوى هرمون LH و FSH و Testosterone.

Key word : honey, sperm ,fructose ,fertility

Abstract

The study was conducted in the infertility treatment center located in Al- Kut city of Iraq, the sample were taken from 43 individual have a weakness in fertility, aged between 20-40 years and have no diseases affect the study. Seminal fluid samples were collected by masturbation after 3-5 day abstention in sterile container and send to laboratory for measuring the concentration of fructose and the percentage of count, motility and morphology. Venous blood was drawn to measure the level of hormones LH, FSH and Testosterone. 50 g of natural honey was given to patients to be eaten daily with breakfast for 30 days. After that seminal fluid and blood samples were collecting to measure the previous seminal parameters. The study found that there was a significant increase in fructose level, count, motility and the morphology. As well as there is an increase in the level of hormone testosterone, LH, FSH.

Key word: honey, sperm, fructose, fertility

Introduction

After marriage, the couple dreams of completing the foundations of their small family and establishing their structure, waiting for the newborn to enter their lives. But some may have problems with pregnancy, for many different reasons, including a man with infertility. The infertility of the man is inability to fertilize the female egg, as a
result of deficiencies in the production of sperm and the quality of this liquid[1]. There are many reasons for male infertility is related to glands, genitalia, organic disease, or congenital causes infertility[2]. With regard to glands, the delayed maturation and puberty of men may cause infertility, in addition to damage to the pituitary gland, or increase in the level of milk hormone, or endocrine disease and even because of the decline in the production of male hormone were cause by deficiency of LH or FSH hormone that stimulate the testes to manufacture testosterone and sperm, were any decrease in LH and FSH levels, lead to decrease in testosterone levels and decrease in sperm production [3]. As for genitalia "testicles" may be due to a defect or congenital defect in the genitals[4]. Infertility may be caused by chronic kidney or liver disease, by a malformation of the sperm cells, by a defect in the immune system that produces sperm-killing antibodies, by inflammation of the prostate, by seminal vesicles and sometimes bacteria and germs that infect the reproductive system[5]. Infertility in men may also be caused by sexual dysfunction, erectile dysfunction or by the use of creams that kill sperm during sexual intercourse [6]. There are also causes associated with other diseases such as diabetes, nerve injury, spinal cord injury, pelvic fracture, the use of certain drugs that cause infertility without the knowledge of men, or the result of addiction to drugs such as marijuana and smoking[7]. There are many other reasons that are difficult to enumerate and promise. For infertility in men, medical technology and recent developments in medicine have succeeded in treating some causes of infertility. If a man suffers from varicose veins, the process of removing these varicose veins helps reduce the infertility rate in men[8]. Many fertility methods are used to help induce pregnancy and to rely on many artificial insemination methods. As well as many studies and research that have helped to alleviate the causes of male infertility, which are related to some behavioral actions of men[9]. Bee's honey has a clear effect in increasing fertility and treatment of infertility in both sexes. Because contain many compounds that increase sexual ability and raise the level fertility[10]. Natural honey is defined as a food made by bees collecting the nectar of flowers, digesting them for re-processing in the hive[11]. Natural honey is one of the most important health food, which is a medical treatment for a range of diseases that affect human. Honey is easy to absorb and also contains sexually-stimulating substances include (sugar) make up approximately 70% of its soluble substances. This is considered as one of the most important components of honey, fructose sugar found in percentage 42.4% enters the cells and burned in it without the need for the presence of insulin as in the glucose sugar[12]. (enzymes) such as amylase, phosphatase, (amino acids) such as proline, tyrosine, histidine, (minerals) such as potassium, calcium, sodium and (vitamins) such as B series (1,2,3,4,5,6,8,9) and vitamin C[13]. Vitamins so called honey vitamin fertility[14].Yemen is famous for the best honey in the world, and people in some areas of Yemen eat honey that helps greatly increase sexual ability and thus raise the level of fertility[15]. Vitamin F (linoleic acid ) and vitamin E found in honey, which are necessary for the formation of the reproductive cells and maintain their vitality and activity, and lack of this vitamins lead to stop the growth of sperm in males, causes muscle weakness, and reduce the strength of the body[16].
MATERIALS AND METHODS

The study was conducted at the infertility treatment center at Al- Kut hospital in Iraq. 43 infertility patient have no diseases that affect the fertility and inconsistent with the study and have abnormal fructose level, total count, motility and morphology were selected for the study. At least two sample examined for each patient after 3 – 5 days of sexual abstinence all samples were performed after liquefaction of semen to determine fructose level, count, motility and morphology according to the World Health Organization Criteria [17], blood samples also collected from patients for determination of LH, FSH, Testosterone hormones level. Patients were given a quantity of natural honey to eat 50 g of honey in the morning with breakfast daily for one month with the emphasis not to eat any treatment of sexual stimulants during the study period. Semen samples were collected after one month by masturbation in a sterilized plastic container. Fructose level was examined immediately after liquefaction to ensure that not consumed by the active motile sperm using colorimetric method and using a Seliwanoff’s reagent.. Direct microscopy method was used to estimate the total count, motility and morphology of sperm. Sperm motility was determined in 4 classes defined by the World Health Organization as follows: (grade A) fast forward progressive, (grade B) slow forward progressive, (grade C) non-progressive and (grade D) immotile sperm [18].

Statistical analysis:

The SPSS software was used to analyze the data statistically, the results were expressed as mean ±SD, and the least significant difference at the probability level (P <0.01).[19]

RESULTS

The study show significance increase in patient seminal parameters after the treatment with honey were the mean concentration of fructose sugar was (2.66 ± 0.78) before treatment and increased after treatment (3.28 ± 0.82) (P < .001). Total count before treatment was (37.2 ± 6.8) and increased after treatment (39.45 ± 8.4) (P < .001). Morphology was (20.4 ± 3.8%) and increased to (23.4 ± 3.8%), after treatment (P < .001), as in Table 1

Table (I) : The effect of natural honey on seminal fructose, count and morphology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before taking honey</th>
<th>After taking honey</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fructose (mg/dl)</td>
<td>2.66 ± 0.14</td>
<td>3.28 ± 0.21</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Count (million/ml)</td>
<td>37.2 ± 6.8</td>
<td>39.45 ± 8.4</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>Morphology %</td>
<td>20.4 ± 3.8%</td>
<td>23.4 ± 3.8%</td>
<td>P &lt; .001</td>
</tr>
</tbody>
</table>
The study showed significant increases in the percentages of grade A, B and C motility of sperm where the mean percentage of sperm motility with grade A was (7.42 ± 5.72%) before treatment and (10.77 ± 6.07%) after
the treatment (P < 0.01), grade B were (13.34 ± 4.24%) their increased to (19.88 ± 7.45%) (P < .001) and C were (18.67 ± 7.65%) and increased to (24.67 ± 9.65%) (P < .001). as in Table 2

Table (2) : The effect of honey on motility grades of seminal fluid

<table>
<thead>
<tr>
<th>Motility Grade</th>
<th>Before taking honey</th>
<th>After taking honey</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7.42 ± 5.72%</td>
<td>10.77 ± 6.07%</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>B</td>
<td>13.34 ± 4.24%</td>
<td>19.88 ± 7.45%</td>
<td>P &lt; .001</td>
</tr>
<tr>
<td>C</td>
<td>18.67 ± 7.65%</td>
<td>24.67 ± 9.65%</td>
<td>P &lt; .001</td>
</tr>
</tbody>
</table>

The study showed significant increases in the hormones level where the mean concentration of LH (4.28 ± 1.74) before and (5.32 ± 1.47) after the treatment (P < .001). The mean concentration of FSH (2.86 ± 1.06) and increased to (3.61 ± 0.97) after treatment (P < .001) and the mean concentration of Testosterone (4.72 ± 1.77) before treatment and increased to (5.93 ± 2.07) after treatment (P < .001).as in Table 3.

Table (3) : The effect of honey on reproductive hormones LH, FSH and Testosterone

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before taking honey</th>
<th>After taking honey</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH (mIU/ml)</td>
<td>4.28 ± 1.74</td>
<td>6.32 ± 1.47</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>FSH (mIU/ml)</td>
<td>2.86 ± 1.06</td>
<td>3.61 ± 0.97</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Testosterone (ng/ml)</td>
<td>4.72 ± 1.77</td>
<td>6.93 ± 2.07</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>
Discussion

The study showed important effect to administration of natural honey on seminal fluid parameters where cause increased in fructose level, count, motility and morphology also increased level of reproductive hormones LH, FSH and testosterone. The process of spermatogenesis begins in men at puberty in the testis and manufactured under hormonal regulation where FSH stimulates semenerferous tubules to produce semen and LH stimulates certain cells in the testicle called Leydig cells to secrete the testosterone hormone which helps to manifest the characteristics of male and helps to produce sperm[20]. In addition to the role of male hormones in the production of semen there is a role of fructose sugar, which is the main source of food and energy to the spermatozoa and also reflects the secretions function of seminal vesicles and maintain alkaline medium of semen under ideal conditions to sperm survival purpose[21]. Previous Studies found that eating natural honey, which contains 42.4% of its weight fructose sugar (22) has a positive effect on the hormone LH, which stimulate the liydig cell to secrete more of testosterone hormone and also has a positive effect on sertoli cell directly or indirectly through the FSH hormone, which stimulates the conversion of spermatides into mature cells[23]. Honey increase the number of sperm in the epididymis by activating the enzymes that share in the formation of sperm in the testicle such as activate sorbitol dehydrogenase enzyme and reduces the effective of lactate dehydronase[24]. Also it contains antioxidants such as glucoseoxidase which reduce fat oxidation and reduce the stress on sperm cells[25]. Two sources of seminal fructose are a natural source from food, or part of which is produced in the seminal vesicles by an alternative nonphosphorylative pathway were sorbitol enters as a substrate material for sorbitol dehydrogenase enzyme to produce fructose [26].

Conclusion

Natural bee honey which cause increased seminal fluid fructose level and lead to increase count, motility, and morphology parameters also increased the level of reproductive male hormones LH, FSH and testosteron which involved in the spermatogenesis

References


