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Research Article

Effects of Virgin and Multipara Camel Milk in Sperm Count and Sperm Deformity of Diabetic Rats

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Abstract | The present study was conducted to investigate the effect of colostrums and camel milk treatment on sperm count and sperm deformity of alloxan induced diabetic rats. The study was divided into two experiments according to period of the treatment. The first experiment was undertaken to investigate the effect of virgin and multipara camel milk through 30 days of treatment. Second experiment was undertaken to investigate the effect of virgin and multipara camel milk through 60 days of treatment. The results of experiments revealed that the diabetic male rats in second group suffering from significant decrease at ($p \leq 0.05$) in sperm count and sperm deformity.

Keywords | Multipara, Alloxan, Diabetes, Type 1, Insulin

INTRODUCTION

Diabetes mellitus is a chronic systemic disease characterized by an increased blood glucose concentration. The word diabetes is derived from the Greek word "diabainein" and means "to pass through", referring to the large volume of urine, while mellitus comes from the latin term "mel", which means honey and refers to the sweetness of the urine from patients with untreated diabetes (WHO, 2006). Diabetes is caused by either decreased production of insulin from the pancreatic β-cells or decreased effect of insulin on target tissues or by a combination of these two. Diabetes not only causes disturbances in carbohydrate metabolism (WHO, 2011), but also affects lipid and protein metabolisms he two major categories of diabetes are type 1 and type 2 diabetes, previously also called "insulin-dependent" (IDDM) and "non-insulin-dependent" (NIDDM), or "juvenile" and "adult-onset" diabetes, respectively. Type 1 diabetes is characterized by an autoimmune reaction that leads to a total loss of function of the insulin-secreting β-cells of the islets of Langerhans in the pancreas, resulting in absolute insulin deficiency. Type 2 diabetes is theconsequence of decreased insulin sensitivity (primarily in skeletal muscles, adipose tissue, and liver)

and/or decreased insulin secretion from β-cells, it is the most common form of diabetes and is increasing in epidemic proportions worldwide. Considerable overlap exists between the two conditions, and type 1 and type 2 diabetes have been proposed to be different forms of the same disease, the main difference being the absence of an immune response in patients with type 2 diabetes, leading to a slower rate of β -cell loss (Wilkin, 2001).

On the other hand, the clear lack of evidence for similar genetic factors predisposing to type 1 and type 2 diabetes supports the notion of two separate diseases. It is predicted that about 366 million people worldwide will be diabetic by the year 2030. There are 2 types of diabetes; T1D and Type 2 Diabetes (T2D). T1D is a heterogeneous disorder associated with the destruction of pancreatic beta cells, with the resultant effect of absolute insulin deficiency. Type 2 diabetes on the other hand is characterized by resistance to insulin action and suboptimal insulin secretary response. Causes of diabetes ranges from auto immune- mediated destruction of beta cells and idiopathic destruction or failure of beta cells. About 5-10% of the total cases of diabetes worldwide are due to T1D. T1D is the most common type of diabetes in children and adolescents while Type 2 Dia-

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betes (T2D) is common among young adults. Type 1 Diabetes (T1D) has been increasing by 2% to 5% worldwide (Kumar et al., 2012).

MATERIAL AND METHODS

The study includes tow experiments and one hundred twenty male rats have been used.

EXPERIMENT ONE

Effect of the treatment with virgin and multipara milk for 30 days. Fourty two male rats were divided equally and randomly in to seven groups

Group (1) - standard normal control group consists of (6) males rats treated orally with 2 ml of normal saline for 30 days.

Group (2) - diabetic control group consists of (6) males rats that were injected intra peritoneal (I.P.) with (150mg/kg) dissolved in 1/2 ml of alloxan for induction diabetes.

Group (3) - diabetic – insulin group consists of (6 induced diabetic rats) treated with i.p injection of (6 units /kg/day) insulin.

Group (4) - diabetic – virgin camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the virgin camel milk for 30 days.

Group (5)- diabetic – multipara camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the multipara camel milk for 30 days.

Group (6) - virgin camel milk group consists of (6 rats) treated orally with 2 ml/day from the virgin camel milk for 30 days.

Group (5)- multipara camel milk group consists of (6 rats) treated orally with 2 ml/day from the multipara camel milk for 30 days.

EXPERIMENT TOW

Effect of the treatment with virgin and multipara camel milk for 60 days. Fifty-four male rats were divided equally and randomly in to eight groups.

Group (1) - standard normal control group consists of (6) males rats treated orally with 2 ml of normal saline for 60 days.

Group (2) - diabetic control group consists of (6) males rats that were injected intra peritoneal (I.P.) with (150mg/kg) dissolved in 1/2 ml of alloxan for induction diabetes.

Group (3) - diabetic – insulin group consists of (6 induced diabetic rats) treated with i.p injection of (6 units /kg/day) insulin.

Group (4) - diabetic – virgin camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the virgin camel milk for 60 days.

Group (5)- diabetic – multipara camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the multipara camel milk for 60 days.

Group (6) - diabetic – virgin camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the virgin camel milk for 60 days, killed after 30 days from stopping treatment.

Group (7)- diabetic – multipara camel milk group consists of (6 induced diabetic rats) treated orally with 2 ml/day from the multipara camel milk for 60 days, killed after 30 days from stopping treatment.

Group (8) - virgin camel milk group consists of (6 rats) treated orally with 2 ml/day from the virgin camel milk for 60 days.

Group (9)- multipara camel milk group consists of (6 rats) treated orally with 2 ml/day from the multipara camel milk for 60 days.

SEMINAL ANALYSIS

Sperm Concentration: The sperms were counted by using Neubauer hemocytometer chamber which use for RBC and WBC count.

Procedure: The epididymis were put in a petry dish contained 5 ml of 0.9 % normal saline.

The epididymis was cut into 6 – 10 pieces by using sharp scalpel.

The suspension resulted from the previous step was filtered by clean piece of gauze into a test tube.

One drop from the filtrate was dropped on the Neubauer chamber which covered previously with cover slid.

The sperms found on the five squares that use for counting the RBCS by using the objective lens (40 x).

The sperms were calculated in one mm3 as following

Sperms/cmm = nx 10000

n = number of sperm in 5 squires.

PERCENTAGE OF ABNORMAL SPERMATOZOA

The estimation of the percentage abnormal spermatozoa was done by using same slide that was used in the measurement of the dead and live spermatozoa, two hundred sperms were counted under the light microscope using 100 X power.

STATISTICAL ANALYSIS

The statistical analysis was used the software SPSS version 19.0; the results was expressed as mean ± standard error (mean ± SE). One-way ANOVA was used to compare parameters in different studied groups. P-values ($P<0.05$) were considered statistically significant.

RESULT

EFFECT OF VIRGIN AND MULTIPARA SHE CAMEL MILK TREATMENT OTHER SPERM COUNT AND SPERM A ABNORMALITY AFTER 30 DAYS OF TREATMENT.

As seen in Table 1 the sperm count revealed a significant

Table 1: Effect of 30 days treatment of virgin and multipara she camel milk on sperm count and sperm deformity of control and experimental groups of male rats.

Sperm abnormalities Mean± S.D	Sperm count Mean± S.D	Groups
21.00± 1.41	59.66± 3.66	Normal control group treated with 2 ml DW\day (30 days)
65.5± 3.14	33.50± 1.04	Diabetic control group (30 days)
41.00± 3.52	31.50± 1.37	Diabetic group treated with insulin (30 days)
31.50± 2.42	134.16± 48.37	Diabetic group treated with virgin she camel milk (30 days)
33.66± 2.25	83.00±9.33	Diabetic group treated with multipara she camel milk (30 days)
21.33± 1.21	117.33± 24.70	Standard control group treated with virgin she camel milk (30 days)
23.66± 1.366	90.66± 3.38	Standard control group treated with multipara she camel milk (30 days)
3.00	26.16	LSD

decrease in 2nd and 3rd groups compared to other groups and they showed non significant differences between them . On the other hand the 4th and 6th group record a significant increase compared to other groups, while 5th and 7th group increase non-significantly compared to normal control

Depending on the results listed in Table 1, there were a significant increase at (p< 0.05) in sperm a abnormality in diabetic group compared to all other groups, while 6th and 7th group showed non significant difference compared to normal control and decrease significantly compared to other groups. There was non-significant difference between the 4th and 5th groups, while there was a significant decrease in 4th and 5th groups in comparison to the 3rd group.

EFFECT OF VIRGIN AND MULTIPARA SHE CAMEL MILK TREATMENT ON THE SPERM COUNT AND SPERM A ABNORMALITY DURING 30 DAYS OF TREATMENT

The result in the Table 2 indicate that the diabetic group and 2nd group showed a significant decrease (p <0,05) in sperm count compared to other group but there were no any significantly between them, while 4th, 5th, 6th and 9th group in crease significantly compared to normal control and there were non significant difference between them , where as 7th group revealed non significant difference in comparison with 7st group On the other hand the 8th group showed a significant increase compared to other all groups. The Table 2 clarified the sperm a abnormalities after 60 days of treatment, diabetic group showed significant increase in sperm abnormality in comparison with other groups.While there were no significant difference between the 4th , 8th and 9th group compared to normal group and between them. On the other hand the 3rd and 6th group decrease significantly at (p< 0.05) compared to 2nd group , but there were non significant difference between then, whereas the 7th group increase significantly compared to other group while decrease significantly compared to diabetic group.

Table 2: Effect of 60 days treatment of virgin and multipara she camel milk on sperm count and sperm deformity of control and experimental groups of male rats

Sperm abnormalities Mean± S.D	Sperm count Mean± S.D	Groups
21.83±1.60	59.33± 3.66	Normal control group treated with 2 ml DW\day (60 days)
62.00±4.42	29.50±1.04	Diabetic control group (60 days)
35.66±3.38	32.50±1.37	Diabetic group treated with insulin (60 days)
23.33±3.38	91.50±9.56	Diabetic group treated with virgin she camel milk (60 days)
31.66±1.36	81.00±4.89	Diabetic group treated with multipara she camel milk (60 days)
38.33±2.25	73.33±5.35	Diabetic group after one month form stopping 60 days treatment with virgin she camel milk
44.00±2.28	64.50± 3.33	Diabetic group after one month form stopping 60 days treatment with multipara she camel milk
21.33±1.21	117.33±24.70	Standard control group treated with virgin she camel milk (60 days)
23.66±1.36	90.66±3.38	Standard control group treated with mulipara she camel milk (60 days)
4.00	14.00	LSD

DISCUSSION

EFFECT OF COLOSTRUM AND CM ON SOME REPRODUCTIVE ABILITY INDICATOR.

The rats treated with alloxan to induce diabetes show a sig-

nificant decrease in the number of sperm compared with central group as a result of testicular tissue changes result from the high level of oxidative stress. Thus causes lipid peroxidation of fat intesticalar tissue result from increase formation of free radicals (Emanuelle et al.,1991; Husain and Somani,1997). Sex hormone and disruption result in imbalance in the endocrine and this will lead to a decline in the number of spermatogonia (Jelodar et al., 2009).

The increased lipid per oxidation lead to increase the alteration of sperm membrane function impair development of sperm and reduced it is motility and also oxidative damage to sperm DNA (Aitken et al.,1989, Julie, 2003).

Rates treated with CM show improve in semen characteristics properties because they contains several antioxidant vitamins in high concentration like vitamin C, E, B2 and A and highly rich in trace elements e.g., zinc and magnesium (Yousef, 2006) .

Vitamin E act as free radical scavenger and anti oxidant molecules beside it is necessary for normal activity of oxidative enzyme. *vit* C scavengers superoxide, H2O2 and hydroxyl radicals so it prevent sperm agglutination , and as well as prevent lipid per oxidation and protect against DNA damage induced by H2O2 radical (Gurney et al., 1996;Veldink, 2007), while magnesium helps in the absorption and metabolism of different vit (E ,B ,C) (Barbagallo et al., 2009). Zinc found in large quantity in camel milk (Ozdemir and Inanc, 2005; Yousef, 2006), that can block cellular deterioration by antioxidant system activation (Zhiguo et al., 2012). Sperm cell are metabolically active and generate large number of free radicals during their development neutralize by zinc, Thereby improving sperm quality (Haas, 2006, Colagar et al., 2009)

CONFLICT OF INTEREST

We are the authors of this article declare that there is no conflict of interest from the third party for publish this article.

AUTHORS CONTRIBUTION

All authors contributed equally.

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