Arash Khaki, J Diabetes Metab 2014, 5:10
http://dx.doi.org/10.4172/2155-6156.S1.028

OMICS Group Conferences
Accelerating Scientific Discovery

5th World Congress on
Diabetes & Metabolism
November 03-05, 2014 Embassy Suites Las Vegas, USA

The antioxidant effect of ginger and cinnamon on spermatogenesis dysfunctionin diabetes rats

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Diabetes is being linked to reproductive dysfunction and plan medicine is shown to be effective in its treatment. Antioxidants have distinctive effects onspermatogenesis, sperm biology and oxidative stress, and changes in antioxidant capacity are considered to beinvolved in the pathogenesis of chronic diabetes mellitus. Ginger and cinnamon are strong antioxidants and have been shown to reduce oxidative stress in the long-term treatment of streptozotocin (STZ)-induced diabetes in animal models. The present study aims to examine the influence of combined ginger and cinnamon on spermatogenesis in STZ-induced diabetes in male Wistar rats. Animals (n = 80) were allocated randomly into eightgroups,10 each: Group 1: Control rats given only 5cc Normal saline (0.9% NaCl) daily; Group 2: rats received ginger (100mg/kg/rat) daily; Group 3: rats received cinnamon (75mg/kg) daily; Group 4: rats received ginger and cinnamon, (100mg/kg/rat ginger and 75mg/kg cinnamon) daily; Group 5: Diabetic control rats received only normal saline. Group 6: Diabetic ratsreceived 100mg/kg/day ginger; Group 7: Diabetic ratsreceived 75mg/kg/day cinnamon; Group 8: Diabetic ratsreceived ginger and cinnamon(100mg/kg/day and 75mg/kg /day). Diabetes was induced with 55 mg/kg, single intra-peritoneal injection of STZ in all groups. At the end of theexperiment (56th day), blood samples were taken for determination of testosterone, LH,FSH, total antioxidant capacity, and levels of malondialdehyde,SOD,Catalase and GPX. All rats were euthanized, testes were dissected out and spermatozoa were collectedfrom the epididymis for analysis. Sperm numbers, percentages of sperm viability and motility, and total serum testosterone increased in ginger and cinnamon and combined ginger and cinnamon treated diabetic rats compared with control groups. Serum testosterone, LH and FSH were higher compared to control group and also serum antioxidants (TAC, SOD,GPX and catalase) all were increased at the end of treatment. Combined ginger and cinnamon showed more intense increase in all parameters compare to ginger and cinnamon alone. Most of the results were significant ($P<0.05$).Weconcluded that combined ginger and cinnamon have significant beneficial effects on the sperm viability, motility, and serum total testosterone, LH, FSH and serum antioxidants' leveland could be effective for maintaining healthy sperm parameters and male reproductive function in diabetics.

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