

9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Oral Presentations

O-12

Effect of crocin and metformin on the reproductive system dysfunction of diabetic male mice induced by methylglyoxal

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Background: Diabetes has recently been a serious problem in the world. Sexual and reproductive disorders are one of the most important secondary complications in patients with diabetes.

Objective: The effect of crocin on methylglyoxal (MGO)-induced diabetes in the male reproductive system has not been studied yet; so this study performed on MGO-induced diabetic male mice.

Materials and Methods: 70 male NMRI mice, one-month-old, weighing 20-25 g were divided into 7 groups (n = 10): sham, MGO (600 mg/Kg/d), MGO+crocin15, 30 and 60 mg/kg/d, MGO+Metformin (200 mg/kg/d), and crocin 60 mg/kg/d. Methylglyoxal administered orally in 30

days. In 14st day, after proving hyperglycemia, Metformin and crocin administered orally. On the 31st day of the study, plasma and tissue samples prepared for experimental assessments.

Results: Blood glucose and insulin levels in the MGO group are higher than the sham group (p < 0.001), and decreased with Metformin (p < 0.001) and crocin treatment (not in all doses). Testis width and volume decreased in the MGO receiving mice, and improved in crocin treated mice (p < 0.05), but not in the metformin group. Superoxide dismutase decreased in diabetic mice (p < 0.05) and Malondialdehyde enhanced (p < 0.001). Crocin and Metformin improved MDA and SOD. Testosterone (p < 0.001), and sperm count (p < 0.05) decreased in diabetic mice, treatment in all doses recovered these variables. Luteinizing hormone increased in diabetic mice (p < 0.001) and crocin treatment (but not metformin) decreased it. Seminiferous diameter and height decreased in diabetic mice and increased in treatment groups. Vacuoles and ruptures have been seen in diabetic testicular tissue, crocin improved testicular morphology (p < 0.01).

Conclusion: MGO increases oxidative stress, reduces sex hormones, and induces histological problems in male reproductive organ. Crocin and metformin improved the reproductive damage caused by MGO induced diabetes.

Key words: Crocin, Diabetes mellitus, Methylglyoxal, Oxidative stress, Reproductive system.