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Poster Presentations

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The effect of probiotic *Bifidobacterium longum* on testis tissue and testosterone hormone in alloxan-diabetic rats

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Background: Diabetes is a metabolic endocrine disorder that has a major impact on male reproductive system damages. Probiotics are beneficial microorganisms that could have preventive and therapeutic effects in various metabolic disorders beyond gastrointestinal health.

Objective: The present study carried out to investigate the effectiveness of Probiotic *Bifidobacterium longum* on the amelioration of some diabetes complications in the testis tissue in diabetic rats.

Materials and Methods: In this study, 30 male rats were randomly divided into three groups including; control, diabetic (induced with Alloxan 120 mg/kg), and diabetic+*Bifidobacterium longum*. Alloxan was administered intraperitoneally, while the rats in group diabetic+*Bifidobacterium longum* was fed orally by gavage with 1 mL (1×10^9 CFU/ml/day) of probiotics for 48 days. After dissection, fasting blood glucose,

oxidative stress markers, and the amount of tumor necrosis factor-alpha as an inflammatory cytokine were estimated. The rats' testes were quickly removed and put in 10% formalin for further stereological analysis. All data are expressed as mean \pm SEM. Statistical analysis was performed using One-way ANOVA followed by Tukey's post hoc tests using SPSS10 (v23) analytic software.

Results: The results showed that malondialdehyde, fasting blood glucose, and tumor necrosis factor-alpha levels decreased, but the level of serum testosterone also anti-oxidant enzymes including superoxide dismutases, and glutathione peroxidase increased significantly in the diabetic group receiving *Bifidobacterium longum* compared to the diabetic control group ($p < 0.05$). The evaluation of testis tissue indicated that diabetic rats treated with *Bifidobacterium longum* significantly increased the number of spermatogonia, spermatocyte, spermatids, a spermatozoid, Leydig cells, and restoration of testis architecture compared to the diabetic group ($p < 0.05$).

Conclusion: The results of the present study indicated that the *Bifidobacterium longum* decreased some diabetes complications in the testis tissue. More specifically, our results confirming the protective effects of *Bifidobacterium longum* through repairing the stereological damages induced by Alloxan. Therefore it might be a good candidate for treatment purposes.

Key words: Testis, *Bifidobacterium longum*, Diabetic, Rat.