



# Comparative Analysis of the Effects of Taurine and Metformin on Serum Levels of LH, DHEA, and Testosterone in Type 2 Diabetic Wistar Rats

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## ABSTRACT

**Introduction:** The utilization of medicinal plants has a long-standing history. Diabetes is one of the most common endocrine disorders arising from either insulin deficiency or insulin resistance. Considering the antioxidant properties of taurine, this study aimed to compare the effects of taurine with metformin on the serum levels of LH, DHEA, and testosterone in type 2 diabetic rats.

**Methods and Materials:** In this experimental study, 32 male adult Wistar rats, weighing between 180-200 g and aged 9-10 weeks, were divided into four groups of eight: healthy control, diabetic control, diabetic receiving metformin (500 mg/kg), and diabetic receiving taurine (500 mg/kg). To induce type 2 diabetes in Wistar rats, a single intraperitoneal injection of streptozotocin (STZ) solution at 60 mg/kg body weight was used. The STZ was dissolved in 0.9% NaCl and buffered with 100 mM sodium citrate at pH 4.5. Additionally, 15 minutes after the STZ injection, nicotinamide was administered at a dose of 120 mg/kg to induce type 2 diabetes. At the end of the experiment, the animals were humanely euthanized using ketamine (100 mg/kg) and xylazine (20 mg/kg). Also, cardiac blood sampling and serum separation were conducted. The results were analyzed by ANOVA and Tukey's test.

**Results:** LH, DHEA, and testosterone levels significantly decreased in the diabetic control group compared to the healthy control group. Metformin and taurine groups showed a significant increase in LH, DHEA, and testosterone levels compared to the diabetic control group. There were no significant differences in the LH, DHEA, and testosterone levels between the taurine and metformin groups.

**Conclusion and Discussion:** Taurine, due to its antioxidant and antidiabetic properties, was able to reduce the effects of diabetes on serum hormonal changes (LH, DHEA, and testosterone) in adult male rats.

**Keywords:** Diabetes, Metformin, Taurine, Testosterone, Wistar rat