

Mesopotamia Journal of Agriculture, Vol. 52, No. 3, 2024 (183-196)



Mesopotamia Journal of Agriculture

<https://magrj.mosuljournals.com>



INTERPLAY OF GROWTH HORMONE AND THYROID AXIS IN HYPO- AND HYPERTHYROIDISM: INSIGHTS FROM AN EXPERIMENTAL CASE-CONTROL STUDY ON THYROID HORMONES AND GENE EXPRESSION BY USING RT-PCR

Abstract:

The study examines the complex relationship between growth hormone (GH) and thyroid hormones in hypo and hyperthyroid conditions in premature male rats, concentrating on the physiological impacts of hormonal alterations and genetic effects. It was done in an animal housing facility at the University of Mosul Faculty of Veterinary Medicine. A study of 50 male rats, 30 days old and weighing 160 ± 5 g, was conducted over 21 days. The first control group (G1) received normal saline subcutaneously. The second group (G2) induced by growth hormone deficiency via sodium diethyldithiocarbamate (SDDT) subcutaneously, the third group (G3) were given a growth hormone drug (Norditropin) subcutaneously, while fourth group (G4) induced hypothyroidism by Propylthiouracil (PTU) orally, and the fifth group (G5) induced hyperthyroidism by (Levothyroxine) orally. This experiment showed that thyroid stimulating hormone (TSH) has a high significance value at $p > 0.05$ in G4 and G2 compared to G1. However, Triiodothyronine (T3) and Thyroxine (T4) are significant in G3 and G5. Regarding Reverse Triiodothyronine (rT3) in G3 and G4 display highest level in contrast to the other groups. Thyroid-binding globulin (TBG) and Thyroid peroxidase antibodies (TPO) were greatest in G4, whereas growth hormone (GH) and IGF-1 were highest in G2 and G5. The gene expression results showed that GH and IGF-1 are up-regulated in comparison to the rest of the groups by using a modified conventional PCR with the formula. In conclusion, one hormonal agent system may significantly affect other hormonal activities, stressing the need for a complete endocrine approach.