
# Effect of Different Levels of Concentrated Feed and Hay in the Diet on Metabolic Hormones in Local Iraqi Goats

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**Abstract**
This research aimed to study the effect of feeding different proportions of concentrated feed and hay on metabolic hormones (leptin, ghrelin, thyroid hormones, and growth hormone) in Iraqi local goats. Due to the importance of goats in meat and milk production and their ability to adapt to the harsh environmental conditions in Iraq, the research seeks to determine the optimal balance between coarse and concentrated feed to improve the digestive and productive performance of the animals. The experiment was conducted on 18 Black Iraqi local goats, randomly divided into three groups fed with different proportions of concentrate and hay: Group I 80% concentrate + 20% hay, Group II 60% concentrate + 40% hay, Group III 40% concentrate + 60% hay, Blood samples were collected monthly to measure the concentrations of metabolic hormones. The data were analysed using Genstat statistical analysis software. The results showed a significant increase in the concentration of leptin in the first group (T1) fed with a high percentage of concentrated feed, indicating its association with the level of energy and nutrition in the body, and a significant increase in the concentration of ghrelin in the third group (T3) fed with a high percentage of hay, reflecting its role in the regulation of food intake and weight gain. There was a significant increase in the concentration of thyroxine and thyronine hormones in the first and second groups (T1 and T2), which were fed with higher percentages of concentrated feed, indicating the effect of highly concentrated diets on thyroid hormone levels, and a significant increase in the concentration of growth hormone in the second and first groups (T2 and T1), indicating the effect of concentrated feed on metabolic processes and muscle growth.
The results of the study indicate that balanced feeding based on specific proportions of concentrated feed and hay significantly affects metabolic hormones in Iraqi local goats. Good nutrition (T1 and T2) resulted in higher energy and growth hormones, reflecting a positive effect on the biological performance of the animals. In contrast, inadequate feeding (T3) reduced the levels of these hormones, indicating reduced metabolic performance and growth. This study demonstrates the importance of balanced nutrition in improving the productive performance of Iraqi local goats by influencing metabolic hormones. These findings can be used to develop improved feeding strategies that contribute to increasing meat and milk production and reducing production costs.

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## Introduction

The goat is one of the most important meat- and milk-producing animals, as it is characterised by a high genetic capacity that makes it suitable for genetic improvement to fill the shortage in animal production. In Iraq, goats are adapted to harsh environmental conditions, making them an ideal choice to improve productivity (Alberto *et al*., 2018; Habib *et al*., 2022). Nutrition plays an important role in reducing production costs, as inexpensive coarse feeds can be used to maintain performance and reduce dependence on grains. However, excessively concentrated feeds may lead to nutritional disorders, so a balance