Open Veterinary Journal, (2025), Vol. 15(11): 6035-6039
Research Article
DOI: *10.5455/OVJ.2025.v15.i11.58*

Eldaghayes Publisher
دار الدغيس للنشر
Advancing Knowledge Through Peer-Reviewed Science

Eldaghayes Publisher
www.eldaghayes.com

Submitted: 12/07/2025 Revised: 20/10/2025 Accepted: 31/10/2025 Published: 30/11/2025

Molecular detection of transferrin genetic formation as a marker for weight and growth hormones in male Arabi sheep

Nadhim M. Jawad Ali[1]*, Jaafar Mohammed Owaid[2] and Ashwaq Raheem Nazzal[1]

[1]*Department of Veterinary Public Health, College of Veterinary Medicine, University of Basrah, Basrah, Iraq*
[2]*Department of Animal Production, College of Agriculture, University of Basrah, Basrah, Iraq*

ABSTRACT

Background: Blood proteins have been widely used to characterize animal breeds, as most are genetically determined and follow simple genetic rules. Therefore, the transferrin protein has been studied based on its various alleles. Transferrin is a type of protein that binds two iron atoms to each transferrin molecule. Sheep meat production can be increased through genetic improvement.

Aim: The aim of the study is to predict the live weight and growth hormone (GH) concentration of lambs by identifying transferrin gene alleles and selecting them for meat production or breeding.

Methods: This study was conducted at the Research Station of the College of Agriculture, University of Basrah. Blood samples were taken from 74 Arabi sheep, and the genetic makeup of the iron transporter protein (transferrin) was studied using polyacrylamide gel electrophoresis in a variable buffer solution with black amido dye. The relationship between gene expression, lamb live weight, and GH concentration was investigated.

Results: indicated the detection of six transferrin genotypes AA, AB, AC, BB, BC, and C were detected based on their electrophoretic mobility in basal medium. Three alleles, A, B, and C, accounted for these genotypes. The results showed that the AA and BB genotypes were associated with lamb live weight and GH concentration, accounting for 48.61% and 16.66 % of the genotypes, respectively. The average lamb weights were 38.15 and 37.22 kg, and the GH concentrations were 9.97 and 9.51 ng/ml, respectively. In contrast, the genotypes AB and AC accounted for 20.83% and 11.11%, respectively, with an average weight of 36.20 and 36.05 kg, and a GH concentration of 8.97 and 8.85 ng/ml, respectively. As for the genotypes AC, BC their percentage reached 1.33%, with an average weight of 35.65 and 35.35 kg, respectively, and a GH concentration of 8.75 and 8.45 ng/ml, respectively, as these traits are recessive.

Conclusion: From the results, we conclude that there is a correlation between body weight, GH concentration in lambs, and the genotype AA and BB, indicating that it is the dominant trait over the other genotypes.

Keywords: Genetic transferrin, Live weight, Growth hormones, Genetic polymorphism.

Introduction

Blood proteins have been widely used to characterize clans of animal lineages because most of these proteins are genetically formed and follow simple heredity laws. Therefore, these proteins have been studied in several animal species using various techniques. Most of these studies were valuable, particularly in the areas of heredity, clan inheritance, clinical diagnosis, and genetic maps. Transferrin is a class of protein that binds to two atoms of iron for each transferrin molecule. It acts as an oxygen carrier, and its concentration in natural plasma ranges from 240 to 280 mg/100 ml (Tulloh, 1991). There are also several names for the transferrin protein, and these names depend on the origin of the protein; for example, if it is found in the blood, it is called transferrin (Evan *et al.*, 1956). Ovotransferrin in birds constitutes approximately 12% of the egg white protein (Williams, 1968). Lactoferrin plays a significant role in the transport of iron ions in milk (Baker and Rumball, 1987). Melanotransferrin is found in human tissue (Richardson, 2000).

Many researchers have taken advantage of this advantage of the huge biological diversity of alleles and started studying the relationship between these alleles and some economic traits in sheep, including birth weight and weight gain (Bildik and Yur, 1999; Dellal and G, 2002; Yadva et al, 2013), wool production (Dellal, 2001), milk production in goats and sheep (Sultan., 2019; Younis *et al.*, 2024) milk production in goats and sheep (Sultan., 2019; Younis *et al.*, 2024), and reproductive performance (Steppa *et al.*, 2007; Jaafar Ahmed *et al.*, 2018). Bashar (2015) identified six genotypes for the transferrin protein, comprising three homozygous genotypes AA, BB, and

***Corresponding Author:** Nadhim M. Jawad Ali. Department of Veterinary Public Health, College of Veterinary Medicine, University of Basrah, Basrah, Iraq. Email: *nadem.jawad@uobasrah.edu.iq*