

**Original Article****Study of Local Black Iraqi Goats Genotypes for the *Cytb* Gene****Owaid, J. M¹*, Yousief, M. Y¹, Abdulrda, A. J¹, Ayied, A. Y¹***1. Animal Production Department, College of Agriculture, University of Basrah, Basrah, Iraq*

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Abstract

Goats are the earliest domesticated ruminants. The local goat, *Capra hircus*, is considered one of the most important animals globally to provide good livestock production under harsh environmental conditions. This study aimed to detect the genetic structures of the local Iraqi goats bred in the central and southern regions of the country and investigate the possibility of benefiting from their genetic structures to construct improvement programs for increasing the productivity of these animals. To this end, blood samples were taken from 15 domestic black goats. A total of 10 ml of each animal's blood was placed in plastic containers of 10 ml. The DNA was extracted and sent to the laboratories of Juan Ju University, People's Republic of China, to analyze the sequences of the nitrogenous bases of the *Cytochrome b* (*Cytb*) gene. The results showed the presence of a genetic morphology for a segment of 670 base pairs for all the studied samples, and 15 sequences of this strain were recorded in the gene bank under the following accession numbers (LC496353.1:1-LC496367.1:1). The sequences of the nitrogenous bases of this segment of the gene, which were registered in the gene bank of some international goat breeds, were used for comparison with the sequences of black Iraqi goats to analyze the phylogenetic tree, calculate the genetic distance, study haplotypes, and calculate neutrality. The results showed the presence of one mutation in the studied segment of the *Cytb* gene, with a size of 670 bp. The mutation in base 46 of the studied gene converted from the purine group to the pyrimidine group (the shift from the nitrogen leaders A<C) in all the studied samples. It led to the transformation of the amino acid Asparagine into Histidine, where 233 amino acids were obtained, dominated by the amino acid Isoleucine and Leucine, over other amino acids at a rate of 14.34% and 11.21%, respectively. The phylogenetic tree showed the existence of two main branches, one of which included the local black Iraqi goat breed, and the other included all the international breeds under comparison. It is concluded that the black Iraqi goat breed has a different origin from other breeds.

Keywords: local black, Iraqi goats genotypes, *Cytb* gene**1. Introduction**

Goats are the earliest domesticated ruminants. The local goat, *Capra hircus*, is considered one of the most important animals globally to provide good livestock production under harsh environmental conditions (1).

Goats are one of the animals that have not received enough attention in their breeding in most Arab countries and are still raised on the margins of agriculture. On the other hand, they have been efficiently exploited in many European, Asian, and

African countries due to their production of twins, which are a source of meat, as well as their high milk production, compared to sheep (2). Goats are also characterized by their ability to benefit from all sources of poor-quality feed, such as shrubs and bushes, more than other animals, such as cows or sheep (3), as well as their tolerance to different environments.

The importance of goats in Iraq lies in their adaptability to harsh environmental conditions and the ability to feed on poor fodder. Therefore, goats have