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Abstract

Exploring Prolificacy-Associated Gene Polymorphism in Algerian Sheep Breeds

Fatima Zohra Mahammi[1,2]*, Assia Hadjazi[2], Sara Mouffok[1], Nacera Tabet-Aoul[2,3]

[1] Higher School of Biological Sciences of Oran (ESSBO), BP 1042, Saim Mohamed 31003, Oran, Algeria
[2] Laboratory of Molecular and Cellular Genetics, Department of Applied Molecular Genetics, Faculty of Nature and Life Sciences, University of Science and Technology of Oran Mohamed Boudiaf, Oran, 31000, Algeria
[3] Department of Biotechnology, Faculty of Natural and Life Sciences, University of Oran1, Ahmed Benbella, Oran, 31000, Algeria

Abstract

Background and Aim: This study focuses on investigating the genetic basis of prolificacy in Algerian sheep breeds by analyzing polymorphisms within fertility-related genes (Fec): FecB/BMPR1B, FecG/GDF9, FecX/BMP15, and FecL/B4GALNT2. Despite the low heritability of prolificacy, specific mutations in these genes are known to influence ovulation numbers. The research aims to explore the correlation between gene polymorphisms and prolificacy levels in different Algerian sheep breeds, with the ultimate goal of identifying mutations that can enhance prolificacy and contribute to economic gains in sheep breeding.

Method: To execute this study, our strategy involves field surveys and the implementation of a comprehensive sampling strategy encompassing each breed. We will conduct phenotype assessments on the various sampled breeds, encompassing the collection of morpho-biometric data, such as gender, weight, animal dimensions, wool characteristics, as well as reproductive attributes including fertility and prolificacy rates. Genotyping for the various sampled breeds will entail the extraction and purification of total DNA from blood samples through the sodium chloride (NaCl) method. Subsequently, we will delve into the polymorphism analysis of the key genes implicated in sheep prolificacy using diverse molecular biology techniques, including PCR-RFLP, allele-specific PCR, and potentially sequencing.

Results: The anticipated outcomes of this study hold promise in supplying fresh insights to bolster the management of Algerian sheep populations, particularly in regions where significant mutations influencing prolificacy are prevalent.

Conclusion: Ultimately, the findings will contribute to the development of a targeted selection plan aimed at increasing the overall productivity of the sheep sector in Algeria.

Keywords: *Prolificacy, Genetic polymorphism, Sheep breeding, Fertility genes, Algerian sheep*

*Corresponding author: Fatima Zohra Mahammi. Higher School of Biological Sciences of Oran (ESSBO), BP 1042, Saim Mohamed 31003, Oran, Algeria.
E-mail address: fmahammi@gmail.com