

EVALUATION OF G1-GDF9 POLYMORPHISMS ON TWINING BIRTHS OF GHZEL SHEEP BREEDS

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INTRODUCTION

One of the most important economic traits in sheep's twine. To date, mutations in three genes (BMPR-1B, BMP15 and GDF9) in sheep have been detected as higher fecundity or infertility sources. Previously, this has been reported that G1 mutation in Iranian Ghezel breeds is the main source for twining births. This study was aimed to evaluate if the polymorphisms in G1-GDF9 gene can induce prolificacy of Ghezel breeds.

MATERIALS AND METHODS

In this study, we used 11 rams and 50 ewes with single and twin litter sizes. Five ml of blood was taken from each sheep and kept in EDTA contained falcon tubes. Then DNA extraction was performed using phenol-chloroform procedure. Using specific primers of exon-1, PCRs were carried out for GDF9 gene followed by restriction enzyme digestion of 9 microliter of PCR products with 0.3 IU of HhaI at 37 for 4 hours.

RESULTS AND DISCUSSION

Results showed that the presence of G1 mutation in Ghzelbreed with .140% frequency. Chi-Square test results as well as GLM procedure in SAS software showed that no significant effect at 5% level for G1 mutation among genotypes for twining birth. Interestingly, three highly fertile ewes from Ghezel breeds with triple-birth did not carry the mutant allele. Moreover, homozygosity in this mutant didn't cause sterility and the only infertile entities sheep didn't show the G1 mutation. So, G1 mutant in Ghzel sheep was not a significant reason for twining birth. However, it's likely that G1 mutation synergistic effect with G4, G8, or other partially suppressive GDF9 mutations associate with sheep prolificacy in Iranian breeds.

Keywords: GDF9, Sheep, HhaI, PCR.



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