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

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INTRODUCTION

Sheep'stwining birth character is of high interest forsheep breaders due to it's economic importance.To date, mutations in three genes (BMPR-1B, BMP15 and GDF9) in sheep have beendetected ashigher fecundity or infertility sources. GDF9 caused infertility in homozygous state and multiple births in heterozygote genotypes.The purpose of this study was evaluation of polymorphism in GDF9-exon 1 and its association with litter size inafshari
sheep breed.

MATERIALS AND METHODS

In this study, we used 20 rams and 60 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 Hhal at 37 for 4 hours.

RESULTS AND DISCUSSION

Results showed that the presence of G1 mutation in afshari breed with .125% 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.Also available in unproductive sample, the genotype homozygous wild. Moreover, homozygosity in this mutant didn't cause to sterility and the only infertileentity sheep didn't show the G1 mutation. So, G1 mutant in afshari sheep was nota 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.