

Abstract

Imprinted genes represent a small subset of mammalian genes that are monoallelically expressed in a parent-of-origin manner. Imprinted genes are involved in fetal growth and placental development in the uterus. *PHLDA₂* is a member of imprinted gene family that has been described to maternally express in fetus and has limiting effects on fetal growth. To determine *PHLDA₂* gene polymorphism and its association with birth weight in Sistani cattle, the blood sample were randomly collected from male and female about 100 sistani cattle located in research station Zahak. The DNA extraction was performed by using phenol chloroform procedures. Polymerase chain reaction was performed for amplification of 384 bp of DNA segment located in exon 1 of *PHLDA₂* gene using specific primer sets. For determining of possible mutations in target sequence the SSCP method, 8% polyacrylamide gel was used and for observation of fragments, polyacrylamide gel electrophoresis and silver staining were used. For investigating of the relationship between *PHLDA₂* gene polymorphism with birth weight and mean comparison, the least squares mean procedure (GLM) t- student test used by statistical software JMP. The results were shown that *PHLDA₂* gene has three band pattern (genotype) named as P1, P2 and P3, with frequencies of 0.45, 0.37 and 0.18, respectively. Statistical analysis has shown significant correlation between the genetic diversity in *PHLDA₂* gene and birth weight trait ($P < 0.05$). Taken together these data suggest that the observed SNP within *PHLDA₂* gene could be used as molecular markers for the birth weight trait in sistani cattle.

Keywords: *PHLDA₂*, polymorphism, PCR-SSCP, Sistani cattle



University of Zabol
Graduate School
Faculty of Science
Department of Animal Science

The Thesis Submitted for the Degree of M.Sc

**Analysis of single nucleotide polymorphism (SNP) of *PHLDA₂*
gene and its association with birth weight in Sistani Cattle**

Supervisor:
Dr.M.Vafaye valleh

Advisors:
Dr. G.R.Dashab

By:
N.jafarvand

January 2015