

Polymorphism of FABP3 gene and its relationship with productive performance in Holstein cows

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Corresponding author:**Al-Janabi HRA****ABSTRACT:**

This study was conducted at the Al-Salam Station in dairy cows / Private Sector (Latifia township, 25 km south of Baghdad). Forty samples of Holstein cows were collected from the period of lactation during 2017 – 2018 for conducting the study. Determination of the polymorphisms of FABP3 gene (SNP: rs210042291) and the relationship with some of productive performance in Holstein cows were investigated. The polymorphisms of cows were determined in the SNP (rs210042291) of, the studied fragment of FABP3 gene (458 bp) by using sequencing method, which were GG, GA and AA and their distribution ratios were 80.00, 15.00 and 5.00 % respectively. The differences between these percentages were highly significant ($P<0.01$), and allele frequency were 0.88 and 0.12 for both G and A respectively. The results of the present study showed that the total milk production, the lactation period and the length of the peak of production for the Holstein cows were significantly ($P<0.01$) affected by the polymorphism of FABP3 gene (SNP: rs210042291) for the cows with heterozygous genotype GA. There seen significant differences ($P<0.01$) in the period from birth to the peak of production, with the values of 46.82 ± 0.76 and 39.63 ± 0.96 day for the genotypes GA and AA respectively. The percentages of fat and protein were significantly affected ($P<0.05$) by polymorphisms of FABP3 gene (SNP: rs210042291), reaching the highest fat and protein percentage of cows milk with homozygous genotypes (GG and AA), and the lowest fat and protein percentage of cow's milk with heterozygous genotype (GA), while the percentage of lactose, non-fat solids and specific gravity of milk were not significantly affected by the polymorphisms of FABP3 gene (SNP: rs210042291). It was concluded from the study of the FABP3 gene polymorphism that these markers could be utilized for the genetic improvement strategies for the cattle to increase their economical income by polymorphism selection and crossing which gave a good performance.

Keywords:

FABP3 gene, Productive performance, Holstein cows.