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Association between a polymorphism in intron 3 of the bovine growth hormone gene and growth traits in Holstein heifers in Antioquia

J. Arango, J.J. Echeverri and A. López

Biodiversity and Molecular Genetics Research Group - BIOGEM Department of Animal Production, School of Agricultural and Livestock Sciences, Universidad Nacional de Colombia, Antioquia, Medellin, Colombia

Corresponding author: J.J. Echeverri
E-mail: jjecheve@unal.edu.co / jjez69@hotmail.com

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ABSTRACT. The aim of this study was to determine the association between a polymorphism in intron 3 of the bovine growth hormone (BGH) gene and growth traits related to the start of the reproductive life of Holstein heifers. This research was conducted using 480 Holstein heifers belonging to eight herds in three municipalities in the Department of Antioquia (Colombia). The phenotypic information used corresponded to information that had been historically recorded for each of the herds and was supplemented with information obtained through bimonthly visits to the herds over a period of 24 months. Genotyping was performed using the PCR-RFLP technique with DNA extracted from peripheral blood using the salting out technique. To determine association, statistical analyses were performed using parametric methods. Allele frequencies for the alleles (+) and (-) were 0.91 and 0.09, respectively. The genotype frequencies were 0.77, 0.2 and 0.03 for the genotypes (+/+), (+/-) and (-/-), respectively. There was an association between genotype and weight at first estrus and first calving ($P < 0.01$). The regression coefficients for both characteristics were

significant, indicating that for each (+) allele, weight at first estrus and first calving decreased by 9.24 and 16.07 kg, respectively. The results indicated the existence of an association between a polymorphism in intron 3 of the BGH gene and both weight at first estrus and first calving, which can be used to facilitate the selection of animals with these genotypes for use in breeding programs.

Key words: PCR-RFLP; Molecular markers; Animal production; Growth traits

