

Genetic characterization by SNP analysis of a holstein breed population in Colombia

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In Colombia, genetic improvement is limited by a lack of phenotypical and genealogical information. Additionally, molecular markers are an important tool for the study of the genetic structure of populations. The objective of this paper was to determine the genetic structure of Holstein population in Colombia. We thus genotyped a population of 1800 animals distributed over 178 herds in 11 municipalities from the department of Antioquia, Colombia. The genotyping was done using the PCR-RFLP technique for the polymorphisms of the genes for the bovine growth hormone, kappa casein, prolactin, and BoLA DRB3.2. Population structure parameters were calculated and Hardy Weinberg equilibrium was determined. An analysis of molecular variance was performed, and the Nei distances estimated. It was found that the total population is in the Hardy Weinberg equilibrium for the four genes. However, a deviation from the equilibrium was also found for the kappa casein gene in some particular populations. The population has a genetic structure with a small genetic differentiation, a trend toward outcrossing was found in most populations. The most genetically distant populations were the ones located in the Marinilla and Rionegro municipalities. This is due to their technological levels and geographic locations, which have left them outside the scope of the artificial insemination programs that use foreign semen. This is the first research in Colombia in this sense, and is the first step in the acknowledgment of genetic structure of bovine population in the country.

Biography

Julian Echeverri has a Ph.D in Animal Science, obtained in 2011 at Antioquia University in Colombia. He currently serves as an Assistant Professor in the Department of Animal Production National University of Colombia. He is author of several academic publications and more than 30 scientific papers in Colombia, derived from their research and their work group (BIOGEM, Biodiversity and Molecular Genetics).

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