

Animal Genetics

Volume 40 Issue 1, Pages 101 - 105

Published Online: 15 Oct 2008

Genetic variation in BoLA microsatellite loci in Portuguese cattle breeds

C. Bastos-Silveira*, C. Luís[†], C. Ginja^{‡,§}, L. T. Gama[‡] and M. M. Oom[¶]

*Centro de Biologia Ambiental, Universidade de Lisboa, Museu Nacional de História Natural, 1269-102 Lisboa, Portugal. [†] CIES-ISCTE, 1649-026 Lisboa, Portugal. [‡] Departamento de Genética e Melhoramento Animal, Estação Zootécnica Nacional, Fonte Boa, 2005-048 Vale de Santarém, Portugal. [§] Instituto Superior de Agronomia, Tapada da Ajuda, 1349-017 Lisboa, Portugal. [¶] Centro de Biologia Ambiental, Departamento de Biologia Animal, Faculdade de Ciências, Universidade de Lisboa, 1749-016 Lisboa, Portugal

Correspondence to C. Bastos-Silveira, Museu Nacional de História Natural, Rua da Escola Politécnica, 58, 1269-102 Lisboa, Portugal. E-mail: cbsilveira@fc.ul.pt

KEYWORDS

bovine lymphocyte antigen • cattle major histocompatibility complex • DRB • microsatellite • Portuguese cattle

ABSTRACT

Major histocompatibility complex (MHC) typing based on microsatellites can be a valuable approach to understanding the selective processes occurring at linked or physically close MHC genes and can provide important information on variability and relationships of populations. Using microsatellites within or in close proximity with bovine lymphocyte antigen (BoLA) genes, we investigated the polymorphisms in the bovine MHC, known as the BoLA, in eight Portuguese cattle breeds. Additional data from non-BoLA microsatellite loci were also used to compare the variability between these regions. Diversity was higher in BoLA than in non-BoLA microsatellites, as could be observed by the number of alleles, allelic richness and observed heterozygosity. Brava de Lide, a breed selected for aggressiveness and nobility, presented the lowest values of observed heterozygosity and allelic richness in both markers. Results from neutrality tests showed few statistically significant differences between the observed Hardy–Weinberg homozygosity (F) and the expected homozygosity (F_E), indicating the apparent neutrality of the BoLA microsatellites within the analysed breeds. Nevertheless, we detected a trend of lower values of observed homozygosity compared with the expected one. We also detected some differences in the levels of allelic variability among the four BoLA microsatellites. Our data showed a higher number of alleles at the *BoLA-DRB3* locus than at the *BoLA-DRBP1* locus. These differences could be related to their physical position in the chromosome and may reflect functional requirements for diversity.

Accepted for publication 17 July 2008

DIGITAL OBJECT IDENTIFIER (DOI)

10.1111/j.1365-2052.2008.01791.x