



Single nucleotide polymorphisms in immunity-related genes and their association with mastitis in Chilean dairy cattle

A.M. Carvajal, P. Huircan and A. Lepori

Laboratorio de Biotecnología, Instituto de Investigaciones Agropecuarias, Remehue, Osorno, Chile

Corresponding author: A.M. Carvajal
E-mail: andres.carvajal@inia.cl

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ABSTRACT. Mastitis remains a major cattle disease with great global economic implications. Various approaches are currently employed in attempts to improve understanding of mastitis resistance and develop phenotypic markers for use in breeding programs (e.g., somatic cell score), including QTL discovery, wide-genome association studies, and identification of candidate genes related to immune function. This study evaluated three single nucleotide polymorphisms contained in Toll-like receptor 4 (TLR4) and lactoferrin (LF) genes associated with mastitis traits: TLR4 P-226, TLR4 2021, and LF P-28. Genotyping was performed by restriction fragment length polymorphism-polymerase chain reaction (PCR) and high-resolution melting quantitative PCR from genomic DNA of four dairy cattle breeds (Holstein, Jersey, Montbeliarde, and Overo Colorado) previously classified as healthy, with clinical or with subclinical mastitis. The high-resolution melting quantitative PCR allowed genotyping of each locus and resulted in allele frequencies indicating that all loci were in Hardy-Weinberg equilibrium. The TT genotype of TLR4 2021 was significantly associated with the healthy condition, but no associations with somatic cell score were evident. Further studies are therefore necessary in order

to confirm the results of this investigation.

Key words: Dairy cattle; Mastitis; TLR4; Lactoferrin