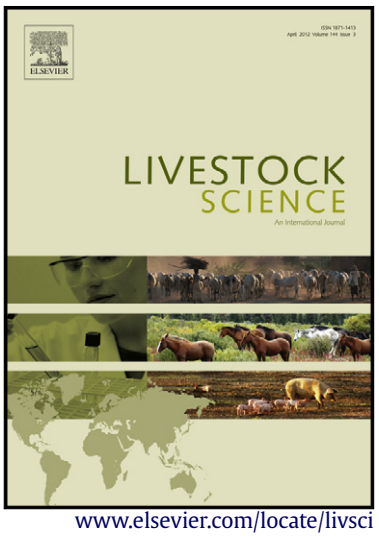

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PII: S1871-1413(13)00324-7
DOI: http://dx.doi.org/10.1016/j.livsci.2013.07.008
Reference: LIVSCI2180

To appear in: *Livestock Science*

Received date: 17 July 2012
Revised date: 16 July 2013
Accepted date: 17 July 2013

Cite this article as: G. Mancini, E.L. Nicolazzi, A. Valentini, G. Chillemi, P. Ajmone Marsan, E. Santus, L. Pariset, Association between single nucleotide polymorphisms (SNPs) and milk production traits in Italian Brown cattle, *Livestock Science,* http://dx.doi.org/10.1016/j.livsci.2013.07.008

Association between single nucleotide polymorphisms (SNPs) and milk production traits in Italian Brown cattle.

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Abstract

Italian Brown is a cattle breed largely exploited in the production of many dairy products in Italy, including typical and traditional cheeses. For this reason, the improvement of selection methods is of economic relevance while a deeper understanding of the genetic mechanisms regulating milk production is of general scientific interest. We selected a total of 561 samples, representing virtually all Italian Brown bull population, to test for association between milk production traits and 29 known genes harbouring 106 single nucleotide polymorphisms (SNPs). After filtering, a total of 31 SNPs in 22 candidate genes and 473 bulls were retained. Associations between each SNP and milk traits were tested by a mixed model approach, obtaining seven significantly associated SNPs, two of which (in β-Lactoglobulin) associated with all traits, and four (in Chemokin receptor I, αs1 Casein, k Casein, Fatty Acid Synthase, Thyroid hormone responsive and Oxytocin prepropetide genes) associated with at least one trait.

Keywords

Milk traits, SNPs, Italian Brown cattle breed