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Quantitative trait loci for udder conformation and other udder
traits in Finnish Ayrshire cattle

Keywords Quantitative trait loci, udder conformation, dairy cattle,

Abstract

Udder traits are important due to their correlation with clinical mastitis which causes major economic losses to the dairy farms. Chromosomal areas associated with udder conformation traits, milking speed and leakage could be used in breeding programs to improve both udder traits and mastitis resistance. Quantitative trait loci (QTL) mapping for udder traits was carried out on bovine chromosomes (BTA) 9, 11, 14, 18, 20, 23, and 29, where earlier studies have indicated QTL for mastitis. A granddaughter design with 12 Ayrshire sire families and 360 sons was used. The sires and sons were typed for 35 markers. The traits analysed were udder depth, fore udder attachment, central ligament, distance from udder to floor, body stature, fore teat length, udder balance, rear udder height, milking speed, and leakage. Associations between markers and traits were analysed with multiple marker regression. Five genome-wise significant QTL were detected: stature on BTA14 and 23, udder balance on BTA23, rear udder height on BTA11, and central ligament on BTA23. On BTA11 and 14 the suggested QTL positions for udder traits are at the same position as previously detected QTL for mastitis and somatic cell count.

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