

ADSA undergraduate competition

Genotype and Breed Trend Influences on Citric Acid and Coagulation Times of Raw Milk

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Citric acid or citrate in milk plays a very important role while processing milk to produce cheese or yogurt. The objective of this study was to determine if citric acid levels measured in milk was related to genetic variants identified in Holstein and Jersey cows. We collected milk samples from both Holstein and Jersey cows from the Cal Poly Dairy Farm, San Luis Obispo. Citric acid levels, protein, fat, lactose and minerals were measured using FTIR methods with the FOSS MilkoscanTM FT2 on each sample. Genotypes were obtained for the DGAT 1 locus using polymerase chain reaction and an enzymatic digestion using the MWO I restriction enzyme. This procedure distinguishes the A and G variants of DGAT 1 gene. Results from 13 Holstein and 12 Jersey cows indicated that citric acid level, as a percentage, was higher for the Jersey than for the Holstein cows -- 0.18 and 0.14, respectively. However, when protein and percent fat were included as independent variables in the statistical model, the difference between Holstein and Jersey for citric acid level was not significant. This indicated that the differences between breeds were due to breeding practices and the resulting milk composition