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Genetic parameter estimates for buffalo milk yield, milk quality and mozzarella production and Bayesian inference analysis of their relationships

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ABSTRACT. Buffalo milk has excellent physical and chemical qualities as a consequence of the high percentage of constituents. This milk property is desirable for the dairy industry because it facilitates manufacture of mozzarella cheese. We estimated genetic parameters for milk yield, milk fat and protein and their effects on mozzarella cheese production using Bayesian inference. Using information from 4907 lactation records of buffaloes, genetic and non-genetic parameters were estimated for accumulated 305-day milk yield (MY), milk fat (%F) and protein (%P) percentages and mozzarella production per lactation (MP). The (co)variance components were obtained by Bayesian inference using a multiple trait model, which included as fixed effects contemporary group, milking number and buffalo age at calving as covariables (linear

and quadratic), along with the additive genetic, permanent environmental and residual random effects. Mean *a posteriori* heritability distributions for MY, %F, %P, and MP were 0.25, 0.30, 0.38, and 0.23, respectively. The genetic correlation estimates between MY with %P and %F were negative and moderate. Positive genetic correlation estimates varying from 0.19 (%P/MP) to 0.95 (MY/MP) were obtained among the traits. Milk yield, milk components, and mozzarella production in Murrah buffaloes have enough genetic variation for selection purposes. We conclude that selection to increase milk yield would be effective in improving mozzarella production.

Key words: *Bubalus bubalis*; Milk composition; Gibbs analyses

