## GENETIC ASSOCIATIONS BETWEEN SCROTAL CIRCUMFERENCE AND BODY WEIGHT MEASURED AT DIFFERENT AGES IN CANCHIM CATTLE

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Scrotal circumference (SC) is a useful indicator of reproductive traits and it has been used in selection indices in beef cattle breeding programs. This trait is easily measured, responds to selection, and it can be genetically correlated with body weight. The aim of this study was to estimate genetic associations between body weight (BW) at weaning (WW), at yearling (YW), and at 18 months of age (BW18) with scrotal circumference at weaning (SCW), at yearling (SCY) and at 18 months of age (SC18) in Canchim cattle. A total of 12,803, 11,315, 9,731, 1,732, 1,966, and 2469 records for WW, YW, BW18, SCW, SCY, and SC18, respectively, from the Canchim herd of Southeast-Embrapa Cattle (animals born from 1943 to 2013) were considered in analyses. The contemporary group (CG) for all body weight was composed by the significant effects ($P < 0.05$) of sex of the animal, season and birth year, and feeding regime (excepted for WW); for SC the CG was composed by season and birth year. Genetic parameters were estimated using the Average Restricted Maximum Likelihood method under animal model (two-trait analyses). Analyses were conducted using the software WOMBAT considering the convergence criterion of $10^{-9}$. The model for the traits studied included the fixed effects of CG and age of dam at calving as a linear and quadratic covariate; and random direct additive genetic, random maternal genetic (for WW, YW and BW18), and random residual. The averages for direct heritability estimates (and respective standard errors) were 0.27 (0.02) for WW, 0.26 (0.02) for YW, 0.28 (0.02) for BW18, 0.43 (0.05) for SCW, 0.40 (0.05) for SCY, and 0.46 (0.05) for SC18. We can infer that there is a high influence of genes of additive action on the studied traits, which is responsible for the genetic variability. The maternal heritability for WW, YW, and BW18, respectively, were 0.19 (0.02), 0.11 (0.01) and 0.12 (0.01), indicating that the performances of calves were also influenced by the genetic potential of the dam. The genetic correlations between WW with SCW, SCY and SC18, respectively, were 0.49 (0.07), 0.32 (0.08), and 0.24 (0.08), for YW with SCW, SCY and SC18 were 0.56 (0.08), 0.47 (0.05), and 0.30(0.05), respectively, and for BW18 with SCW, SCY and SC18 were 0.54 (0.09), 0.38 (0.08), and 0.36 (0.08), respectively. For all estimates of genetic correlations obtained in this study, it is expected that the selection towards BW increase SC. These traits are responding to direct and indirect selection process in this Canchim herd. The genetic improvement through selection for BW and SC measured in different ages will be efficient in the Canchim breed.