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Carcass composition in Romanov and crossbred male lambs from 10 to 34 weeks of age and its association with testosterone concentration

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Abstract

Changes in testosterone concentration (T), carcass composition and tissue distribution were studied in 42 Romanov (R) and 42 Booroola-DLS (DLS is a new synthetic breed) crossbred lambs (B-DLS) slaughtered at 4 wk intervals from 10 to 34 wk of age. The carcasses were divided into leg, loin and shoulder cuts and the left side of each was dissected into lean, fat and bone tissues. T increased linearly ($P < 0.01$) with age in R lambs starting from 3.8 ng mL^{-1} at 10 wk of age to reach 13 ng mL^{-1} at 34 wk. The corresponding figures for the B-DLS lambs were 0.8 and 8.0 ng mL^{-1} , respectively. The difference between the two genotypes in T was significant ($P < 0.05$) at all ages except at 14 wk. Romanov lambs had higher shoulder (about 2%) and lower loin and leg proportions than B-DLS, however, most of these differences were non-significant. With advance in age in both genotypes, a tendency was observed for the proportion of the loin cut in the carcass to increase (2%), and that of leg to decrease (2%), whereas the proportion of shoulder varied within a narrow range. The ratios of carcass cuts (shoulder/loin, shoulder/leg and leg/loin) were consistently higher in R than in B-DLS lambs especially at younger ages, however, most of the differences were non-significant. Romanov lambs had consistently higher lean, lower fat ($P < 0.05$) and similar bone proportions at various ages as compared with B-DLS lambs. Muscle/fat ratio was higher in R throughout the growth period and particularly at younger ages ($P < 0.001$). The two genotypes differed with increase in age only in the proportion of loin in the carcass ($P < 0.05$) and fat in the shoulder ($P < 0.01$). The regression on T levels showed a significant genotype difference for all the traits studied, except for the proportion of carcass leg cut. T affected fat and bone ($P < 0.01$) but not lean proportions in the carcass and wholesale cuts. The correlations of T with total fat, bone and lean were 0.49 ($P < 0.01$), -0.46 ($P < 0.01$) and -0.24 for R; and 0.49 ($P < 0.01$), -0.50 ($P < 0.01$) and -0.18 for B-DLS, respectively. It is concluded that the morphological and anatomical differences in carcass and tissue composition observed between R and B-DLS cross cannot be explained by differences in T concentrations. Other factors, probably of genetic origin, are responsible for these differences, since they are manifested at a very young age and do not change with advance in age. © 1997 Elsevier Science B.V.

Keywords: Romanov sheep; Carcass composition; Carcass development; Testosterone

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