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Effect of genotype and rearing system on chicken behavior and muscle fiber characteristics

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Abstarc :

The effect of the organic production system and genotype onchicken behavior and muscle fiber characteristics was assessed.Three hundred day-old male chicks from slow-growing (Leghorn),medium-growing (Kabir), and fast-growing (Ross 208) genotypeswere assigned to 2 different production systems: conventional,housing in an indoor pen (0.12 m^2/bird); and organic, housingin an indoor pen (0.12 m^2/bird) with access to a grass paddock(4 m^2/bird). Behavioral observations were recorded from 73 to80 d of age in the morning and afternoon. At 81 d of age, bloodsamples were collected to measure lactate dehydrogenase andcreatine kinase, and 20 birds per strain and rearing systemwere slaughtered. Samples of pectoralis major, ileotibialislateralis, and semimembranosus muscles were obtained for histologicalevaluations. Behavioral observations showed that genetic selectionof animals for a better growth rate modified their behavior,reducing kinetic activity. Indeed, Leghorn birds were characterizedby moving activities, whereas Kabir and Ross strains were discriminatedon the basis of their lying, standing, and eating activities,and these activities were strongly associated with energy conservation,growth, and muscle fiber characteristics. Fiber characteristicsand muscle enzyme functions were affected by rearing systemonly in animals adapted to the organic system. Interesting resultsrelative to Leghorn chickens are the presence of -Red fiberin breast muscle and the increased cross-sectional area of theileotibialis lateralis muscle, which together with behavioraldata could affirm that this genotype is the most adapted tothe organic rearing system.

Key Word :
behavior, chicken genotype, muscle fiber, organic rearing system

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