

MUSCLE METABOLISM AND MEAT QUALITY OF PIGS AND POULTRY

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Abstract. Structural and functional properties of the skeletal muscle determine the meat quality in agriculturally used animals. Post-mortem changes of these properties vary among individual animals and can eventually lead to occurrence of poor meat quality depending on environmental conditions at slaughter. In pigs, as well as in poultry species, the PSE meat condition [pale, soft, exudative meat] predominates among meat quality alterations. Pigs genetically predisposed for PSS (porcine stress syndrome) and suffering stress before slaughter are characterized by an accelerated post mortem glycolysis. The ryanodine receptor gene [RYR1] was shown to bear the causal mutation for the PSS. Research on structure and function of skeletal muscle in pigs with different RYR1 – genotypes demonstrated differences in the diameter of all three muscle fiber types. In stress susceptible animals an increased diameter of the fibers can be observed. Chicken and turkey underwent a comparably intense selection for high meat yield like pigs. As a result, the breast muscle consists of more than 90% of white [i.e., glycolytic fibers] with higher diameters in turkey than in *M. longissimus* of pigs. It is suspected that this provides the basis for the occurrence of PSE - like conditions in meat from chicken and turkey. Besides the described structural and biochemical alterations, the so-called extracellular matrix gains more attention in current research. The analysis of the genome and of its translation into messages and proteins will increase our knowledge about muscle biology and may finally lead to selection criteria for favourable meat quality.

Keywords: meat quality, muscle structure, muscle function, pig poultry.