

PORK QUALITY

Title: Post –Mortem Processes in RSE Pork – **NPB #98-167**

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Abstract

RSE (Red, Soft, Exudative) pork poses a major problem: it is difficult to identify, and its causes are unknown. At an estimated incidence of 30%, costs associated with extra weight loss (due to increased purge) of RSE pork are more than \$ 40 million per yr. Thus, elimination of RSE would result in significant economic savings. In this study, the hypothesis that RSE is a mild form of PSE (Pale, Soft, Exudative), and the hypothesis that sarcoplasmic proteins denature faster (under the mild post-mortem conditions in RSE) than myofibrillar proteins were tested.

A total of 61 samples, 25 RFN (Red, Firm, Non-exudative), 22 RSE and 14 PSE samples, were analyzed. Measures of post-mortem metabolism, R-value and pH-decline, and protein solubility, a measure of protein denaturation, were assessed at various times post mortem. R- and pH-values indicate that, compared to RFN muscle, the post-mortem glycolysis in RSE muscle is accelerated but glycolysis is not as fast as in PSE muscle. Thus, RSE is a mild form of PSE. The increased rate of glycolysis in RSE muscle did not affect protein denaturation. Protein denaturation in RSE and RFN pork was similar. Protein solubility in PSE pork was significantly lower than in RFN and RSE pork.

The increased rate of glycolysis in RSE muscle may be a result of a more >white= fiber type. When selection pigs for faster growth and increased leanness a selection for the faster glycolyzing white fiber type occurs. As it is not known at what critical post-mortem time changes in muscle result in reduction of the water holding capacity, it is not clear if increased chilling rates could reduce or prevent the occurrence of RSE. As RSE pork has a higher glycolytic potential (indicating higher glycogen levels in live pig) than RFN pork, feed withdrawal might be used to reduce the incidence of RSE. However, results of the effect of feed withdrawal are highly variable and prolonged feed withdrawal is associated with reduced carcass weight.

Further research is necessary to determine the cause of the accelerated glycolysis in RSE muscle and to determine the process of water expulsion from RSE muscle.

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