AWN-017

CARDIAC LESIONS AND HEART WEIGHTS OF MARKET PIGS AS RISK FACTORS FOR IN-TRANSIT LOSSES

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Introduction

Individual pig factors are likely more of a significant cause of in-transit losses than commonly considered risk factors such as elevated temperatures, over-crowding, inappropriate handling, or long transport times. The objective of this study was to determine if pre-existing cardiac pathology predisposes market pigs to death during transit.

Materials and Methods

Hearts were collected from one of the two largest swine abattoirs in Ontario, Canada between June 2012 and April 2015. Hearts collected from the processing line (N=388, non-ITL /control hearts) were examined and compared to ITL hearts (N=70, from hogs found dead on the truck). Hearts were examined grossly and histologically for the presence or absence of lesions. Comparison of the weights and weight ratios of the intact heart (THW), the left ventricle and septum (LV+S), the right ventricle (RV) and the body (BW) weights were performed.

Results

The hearts of ITL pigs had significantly greater THW/BW, LV+S/BW and RV/BW than non-ITL pigs ($p \leq 0.0001$). ITL hearts had a greater frequency of dilation of the aorta and pulmonary artery (59% vs 1.5%), dilated atria (67% vs 0.5%), dilated RV chamber (100% vs 5%), thickened LV walls (97% vs 64%) and thickened atrioventricular valves (50% vs 3.6%) over non-ITL hearts ($p \leq 0.0001$). Medial hyperplasia of the coronary arteries, nuclear rowing, and irregular bundles of hypertrophic myocardial fibres were present with variable severity in both ITL and non-ITL hearts.

Discussion and Conclusions

ITL hogs have cardiac lesions which predispose them to acute heart failure during transport. Commonly described transport-risk factors for ITL pigs (handling, ramp inclines, stocking density and temperature) increase the cardiac workload of pigs resulting in insufficient cardiac output in pigs with cardiac pathology. This study indicates the importance of examining the hearts of ITL hogs for specific gross pathologies when investigating in-transit losses of market hogs.