

and 8 gilts), 30 victimized pigs (21 barrows and 9 gilts), and 28 control pigs (14 barrows and 14 gilts) were identified for blood sampling. Total serum protein and IgG concentrations were analyzed using the spectrophotometric method. Data were analyzed using the Glimmix model of SAS (SAS Inst. Inc., Cary, NC). Compared with control and victimized pigs, tail biters had lower total serum protein ($P = 0.01$; Table 018) and IgG concentrations ($P = 0.01$), suggesting poor immunity. There were no differences in total serum protein or IgG concentrations between control and victimized pigs. These preliminary results suggest that tail biters may experience compromised immunity.

Key Words: immunity, pigs, tail biting

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019 An assessment of swine marketed through

buying stations and development of fitness for transport guidelines. M. McGee^{1,*}, A. K. Johnson², A. M. O'Connor¹, K. R. Tapper^{1,3}, S. T. Millman^{1,3},
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Culled breeding animals represent 3% of swine slaughtered in the United States. Pigs are culled for multiple reasons including body condition, injury, and poor performance. There are concerns that culled pigs face higher risks of becoming fatigued or nonambulatory during marketing and transport. The objectives of this study were to 1) explore the welfare of culled swine marketed through buying stations, 2) characterize the prevalence of different types of compromised swine, and 3) identify potential risk factors associated with fatigued and nonambulatory pigs. A survey was conducted at integrated and independent buying stations in 2014. Fifteen individual buying stations were enrolled, representing 4 marketing companies with locations in the United States. Detailed animal assessments were conducted at the time of unloading on all incoming trailer loads with every pig on each load assessed. Pigs were scored for condition on arrival (nonambulatory, fatigued, or dead) as well as body condition, injuries, hernias, skin lesions, vulva lesions, tail bites, lameness, abscesses, and prolapses. Pigs that were segregated from their cohorts by buying station employees due to health and welfare concerns were further evaluated based on their final outcome (rested and recovered, euthanized, or died). The number of trailers per day ranged from 1 to 12 incoming loads. Animals per load ranged from 9 to 177, including culled sows, breeding gilts, boars, and market pigs. A total of 7105 pigs and 122 trailer loads were evaluated. Three pigs were dead on arrival (0.04% of total population). Sows and boars made up 86% of the fatigued animals (total population fatigued = 16%), 73% of the lame pigs (total population lame = 5%), and 82% of the animals with a BCS of 1 (total population with BCS of

1 = 4%). Market pigs made up 9% of those with abscesses (total population abscesses = 6%) and 79% of those with hernias (total population with hernias = 3%). Follow-up assessments were conducted on 119 pigs segregated from their cohort, of which 79 were euthanized (66%). Prevalence ratios of fatigue, severe skin lesions, severe abscesses, and poor BCS were greater in sows and gilts than in market pigs (2.18 [confidence interval {CI} 1.84–2.58], 8.48 [CI 3.99–18.05], 3.22 [CI 1.78–5.85], and 2.36 [CI 1.61–3.46], respectively; $P < 0.01$ for all). The opportunity to identify at-risk pigs that fail to cope with transport and handling stressors can assist decision making about fitness for transport, with implications for humane endpoints and mitigating production losses.

Key Words: culled pigs, transportation, welfare

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020 Aversion to carbon dioxide gas in pigs using approach–avoidance and conditioned place avoidance paradigms.

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Weaned pig responses to CO₂ were examined using approach–avoidance and conditioned place avoidance paradigms. A preference-testing device was designed with 2 identical chambers separated by a sliding door and an exhaust sink. Twelve cross-bred pigs were individually trained for 5 consecutive days to enter the treatment chamber (TC) when the sliding door was opened to obtain a food reward and had 6 min to move freely between the chambers before the test concluded. The same methods were used during the testing phase, with CO₂ concentrations in the TC maintained at 1 of 3 levels: 10, 20, and 30%. Tests concluded when loss of posture occurred or after 6 min. Pigs experienced each of the CO₂ treatments on gas day (G), preceded by ambient conditions on 1 baseline day (B) and on 1 wash out day (W) during 3 rounds. We hypothesized that pigs would display avoidance at higher CO₂ levels and that when aversion occurred, conditioned place avoidance would be observed on the W for that round. Behavior was collected using live observations and video recordings. Latency data were analyzed using PROC GLIMMIX in SAS 9.4 (SAS Inst. Inc., Cary, NC) and are presented as least squares means ± SEM. During testing, 2 pigs failed to enter the TC on any of the days and were removed from the analysis. Of the 10 remaining, all pigs entered the TC on all B, G, and W. Loss of posture was displayed by 0, 5, and 4 pigs at 10, 20, and 30% CO₂, respectively (192 ± 23 s for 20% CO₂ and 78 ± 6 s for 30% CO₂). Latency to enter the TC was greater on G than on

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