The evaluation of bone composition and carcass quality traits on back fracture in pigs stunned using electrical system

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The objective of this study was to identify and evaluate the role of bone composition, carcass quality traits and proud position on percentage of pigs with back fracture after electrical stunning. The percentage of pigs with back fracture and weight lost by fracture were evaluated during commercial conditions. Composition of back bone (% calcium and phosphor in dry matter), carcass quality traits (carcass weight, carcass length, loin length, ribeye area, backfat and fat area) and position of cardiac electrode (front, middle and back) were evaluated in 192 pigs distributed into two groups (non-fractured - NF vs. fractured - F) and stunned by electrical system. Identification of back fracture was done at slaughter line right after stunning. Carcass quality traits evaluations, identification of position of electrode contact and collection of back bones for resistance to break analysis were done at cooler. Data was analysed by variance analysis using T test ($P \leq 0.05$). A percentage of 2.59 of pigs with back fracture and a loss of 1.92 kg per fracture were found. In a routine of 4.300 pigs slaughter/day, it means a loss of 214 kg/day, which may reach losses close to 56 carcass/month (214 kg*22 slaughter days). No difference between NF and F for bone composition in dry matter (calcium: 16.9 vs. 17.0%; phosphor: 7.9 vs.7.8%, respectively, $P \geq 0.05$ for both) and resistance to break (77 vs. 74 kgf, respectively, $P \geq 0.05$) was found. Carcass quality traits such as fat area (16.4 vs. 13.7 cm^2), muscle thickness (61.9 vs. 59.6 mm) and backfat (15.2 vs. 13.94 mm) were lower ($P \leq 0.05$ for all) for F pigs. Except for the middle position, there was an effect ($P \leq 0.05$) of cardiac electrode position on percentage of back fracture. Usually, the cardiac electrode is positioned adequately in the middle of chest (73%, $P \geq 0.05$). However, a greater percentage of cardiac electrode positioned on the back (9.5 vs 19.6 %, $P \leq 0.05$) and lower on the front (7.20 vs. 16.8 %, $P \leq 0.05$) was found for the F group. Therefore, there is no influence of bone composition in back fracture, and the position of cardiac electrode may be the cause of greater incidence of back fracture. Based on the reduction of fractures, the middle position for cardiac electrode seems to be the correct position.

Key Words: bone, carcass, electrical stunning, losses