

The on-farm slaughter procedure leads to increased animal welfare in pigs

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Animal loading, unloading, and transport before slaughtering are important critical points through the whole process of pigs production. Several studies showed that the effect of transport on animal welfare depends on a combination of stressors. It's possible to significantly decrease the suffering and stress level of animals before slaughter by eliminating the transportation phase (from farm to abattoir) by killing animals directly on the farm. Nowadays, in Europe on-farm slaughter is not allowed as a routine method, but it is used only for emergencies; thus, more studies to verify its effectiveness as a routine method are needed.

The trial aimed to compare the effect of a traditional slaughter procedure (T) versus an on-farm slaughtering system (F) on pigs, focusing on welfare, meat safety, and meat quality parameters. The research was carried out on 32 pigs of the Cinta Senese breed reared according to organic European rules in Tenuta di Paganico farm. Pigs were equally and randomly allotted to two groups according to the above-mentioned slaughter procedures. Animals were slaughtered about 130 kg of live weight at about 13 months. Group T was transported alive to the abattoir (about 20 km away from the farm) 2 hours before slaughtering. Group F was stunned and bled directly on-farm, then carcasses were transported to the slaughterhouse by a refrigerated trailer: that procedure followed the Local Veterinary Health Unit guidelines. The animal's welfare was assessed by blood sampling at exsanguination: creatinine kinase, lactate dehydrogenase, total protein, albumin, glucose, and serum cortisol were determined.

Preliminary results on 22 pigs seem to indicate no significant differences between T and F for any parameter evaluated, except for serum cortisol (13.41 ± 1.61 ng/mL vs 19.52 ± 1.49 ng/mL, $P = 0.01$, in F and T respectively). This data suggests that the F procedure was effective in reducing animals' stress. Moreover, we also considered microbial meat contamination, which thus can affect negatively meat safety, especially in on-farm slaughter systems. Aerobic Mesophilic Colony and Enterobacteriaceae Counts and, *Staphylococcus aureus*, *Salmonella*, and *Listeria* presence were detected (Zoo-prophylactic Institute of Lazio and Tuscany, (Pisa - Italy). Our preliminary results seem to demonstrate that the kind of slaughter procedure does not negatively affect meat safety; in fact, we found no differences between the slaughtering procedure in all of the aforementioned parameters. Finally, meat technological and physic characteristics were analyzed: pH (at 48 hours after slaughter), colour, and water holding capacity. Our preliminary results showed no significant difference in all parameters. In conclusion, our trial seems to indicate that the on-farm slaughtering procedure is able in limiting the animals' stress without getting worse the meat safety and quality.