

## Abstract

### Exsanguination blood lactate as an indicator of pre-slaughter welfare in finishing pigs

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Pre-slaughter handling constitutes novel and potentially stressful experiences for pigs. The concentration of lactate in the exsanguination blood might indicate pre-slaughter stress in finishing pigs. We investigated the relationship between selected *ante mortem* observations and the plasma concentration of lactate (P-LAC) in 80 pigs from four herds as part of an evaluation of welfare in finishing pigs at commercial abattoirs.

At the abattoir, behavioural and handling observations were carried out in the race to the stunning chamber and included slipping, falling, being moved by automatic gates and lifting by other pigs. At sticking, a blood sample was collected for analysis of P-LAC. Behavioural and handling measurements were recorded using one-zero sampling and summarized to scores 0 (no events observed), 1 (1 observed) and 2 (2 or 3 events observed).

A significant relationship between the scores for behaviour and handling in the race and P-LAC was found ( $P = 0.008$ ). Thus, P-LAC might be an indicator of welfare of pigs at the abattoir.

If P-LAC is to be used as an on-site indicator of pre-slaughter welfare at abattoirs access to a fast analysis is necessary. Comparison of the analysis of the concentration of lactate in whole blood (W-LAC) and in plasma using 107 blood samples from sticking blood at abattoirs, showed a correlation of 0.86 suggesting that W-LAC can replace the more elaborate plasma analyses.

Our studies show that there is a relationship between handling and behavior prior to slaughter and P-LAC, thus, P-LAC may indicate pre-slaughter welfare in finishing pigs. Further, our studies show that the faster whole blood analysis is applicable. More research is needed to develop an on-site analysis of W-LAC and to determine the acceptable level of W-LAC.