

kg, and between 1 and 2.5 SD less than the mean litter birth weight) were supplemented with 1 or 3 doses of 5 mL DMR. A sham control group (20-sec drenching with an empty syringe, once or twice) and a no-intervention control group were included. All LBW piglets ($n = 310$) were randomly allocated to one of the five groups. The study was performed at two farms with a low ($n = 160$) or high ($n = 150$) perinatal care to evaluate the effect of farm management. Bodyweight, skin lesions, and mortality were registered on days 1, 3, 9, and 2 days post-weaning. Linear mixed models were used to evaluate any effect. No effect of treatment was observed on any of the parameters. However, mortality ($P < 0.001$) and risk of more severe skin lesions ($P < 0.001$) were significantly higher at the farm with limited perinatal management. These results suggest that good monitoring and hygiene during farrowing and the early postnatal period significantly affect pre-weaning mortality and welfare, whereas drenching DMR has negligible effects on the LBW piglets' resilience.

P111. A simple laboratory method for estimating the standardised precaecal digestibility of crude protein and amino acids in pigs

Valérie Schumacher^{*}, Saskia Kehraus, Karl-Heinz Südekum

University of Bonn, Bonn, Germany

^{*}Corresponding author: Valérie Schumacher.

E-mail: vschu@itw.uni-bonn.de.

The adequate protein supply for pigs to secure performance and animal health can be determined in vivo from standardised precaecal digestibility (spcD) values of crude protein (spcDCP) and amino acids (spcDAA). Until now, only a costly and time-consuming multi-enzyme in vitro method (MenzM) is available to estimate spcD values from laboratory measurements without in vivo experiments. Therefore, the objective was to develop and establish a rapid and cost-effective laboratory method for estimating spcDCP and spcDAA based on the determination of neutral- or acid-detergent insoluble crude protein (NDICP, ADICP) and amino acids (NDIAA, ADIAA). This approach is based on knowledge that, e.g., the acid-detergent insoluble fraction contains indigestible N-compounds such as Maillard products and N bound to tannin and phytate complexes.

A unique, large sample pool of straight feeding stuffs (differently heat-treated legumes, cereal grains) was available on which in vivo spcDCP and spcDAA were determined on pigs. Crude protein ($N \cdot 6.25$) in feed-stuffs and ND and AD residues of feedstuffs was determined by Kjeldahl-analysis. The concentrations of ND and AD soluble CP were calculated by difference, i.e., $CP - NDICP$ and $CP - ADICP$. Amino acid concentrations in the detergent residues were determined by HPLC. These values were then used to estimate in vivo standardised precaecally digestible CP (spcdCP) and AA (spcdAA) concentrations (g/kg dry matter [DM]) as follows.

Cereal grains: $spcdCP = 1.316 (\pm 0.085) x - 53.11 (\pm 9.813)$

$R^2 = 0.888$ ($N = 32$), x : ND soluble CP (g/kg DM);

Protein feeds (legumes): $spcdCP = 0.9528 (\pm 0.040) x - 67.17 (\pm 21.08)$

$R^2 = 0.938$ ($N = 40$), x : AD soluble CP (g/kg DM).

Determination of NDICP and ADICP is a routine analysis for protein evaluation and, therefore, the fast and cost-effective laboratory method is an alternative to the in vitro MenzM to estimate spcDCP and spcDAA values from routinely available chemical feedstuff characteristics.

P112. Influence of removing serosal and outer muscle layers on estimates of intestinal permeability in everted sac segments

Lonneke Noorman^{a,*}, Sonja de Vries^b, Bart van der Hee^c, Myrthe Gilbert^b, Walter Gerrits^b

^aDepartment of Population Health Sciences, Faculty of Veterinary Medicine, Utrecht University, Utrecht, The Netherlands,

^bAnimal Nutrition Group, Department of Animal Sciences, Wageningen University and Research, Wageningen, The Netherlands,

^cHost-Microbe Interactomics, Department of Animal Sciences, Wageningen University and Research, Wageningen, The Netherlands

^{*}Corresponding author: Lonneke Noorman.

E-mail: al.noorman@uu.nl.

Intestinal barrier integrity plays an essential role in preventing the passage of pathogens and toxins through the paracellular space, while allowing the absorption of nutrients. The everted gut sac technique is an ex-vivo technique to study permeability in relatively large gut segments. Usually, intact intestinal segments are used. As blood vessels are located medial to the seromuscular layer and serosa, this may result in an underestimation of the gut permeability. Hence, we studied the effect of stripping jejunal segments on permeability to Fluorescein isothiocyanate-dextran (FITC, 4 kDa) and Tetramethylrhodamine isothiocyanate-dextran (TRITC, 40 kDa) and on glucose-, lysine-, and methionine absorption in 80 piglets at 7 days post weaning, housed under high or low sanitary conditions and fed one of two diets, varying in indigestible protein content. No interaction was found between sanitary conditions and diet x stripping, hence data within these groups were pooled. Data were analysed using a general linear model with stripping and batch as fixed effects. Stripping the serosa and outer muscular layer increased the passage of FITC-dextran by 24% (53.6 ± 1.6 vs. 66.3 ± 2.0 pmol/cm², $P < 0.001$); no effect was observed for TRITC-dextran. Although glucose uptake was limited, possibly related to glucose metabolism in enterocytes, glucose transport was more than doubled in stripped intestines (1.1 ± 0.07 vs. 2.4 ± 0.14 nmol/cm², $P < 0.001$). Furthermore, lysine and methionine absorption in stripped intestines was increased by 30 and 45% (117 ± 3.1 vs. 152 ± 3.8 μ mol/cm² and 165 ± 5.9 vs. 240 ± 8.9 μ mol/cm², $P < 0.001$). Overall, the use of intact everted gut sac segments results in an underestimation of intestinal permeability to small molecules (< 4 kDa) and glucose-, lysine-, and methionine absorption. As the coefficient of variation in intact and stripped intestines was similar, removal of the serosal and outer muscle layer is preferred to study intestinal permeability or absorption.

P113. Can the texture variety in feed influence the diet acceptability and pig [StQuote] s emotional states?

Jaime Figueroa^{a,*}, Savka Aldunate^b, Elizabeth Huenul^a, Rocío Palomo^c, Daniela Luna^b

^aUniversidad de O'higgins, San Fernando, Chile

^bPontificia Universidad Católica, Santiago, Chile

^cUniversidad de Chile, Santiago, Chile

^{*}Corresponding author: Jaime Figueroa.

E-mail: ajaime.figueroa@uoh.cl.

Minimising hunger and enabling eating to be a pleasurable experience for animals is a vital component of providing good animal welfare. We hypothesized that texture monotony may negatively impact feed acceptability and heart rate variability (HRV), as a non-invasive indicator of emotions in pigs. Thirty-two pigs (35 days old, 8.4 ± 0.9 kg BW), housed in pairs, were tested during two consecutive daily tests (10 minutes), to assess their acceptability for commercial pelleted feed after being exposed to the same (pelleted) or different (powder) texture for 10 minutes. Concurrently, HRV parameters (the root mean square of successive R – R interval differences, RMSSD; the standard deviation of all R – R intervals, SDNN; the high-frequency band, HF; and the RMSSD/SDNN ratio) were measured in half of the animals (1 pig/pen) by using a heart rate monitor. Animals had the same experience with both textures from weaning to the start of the experimental trials. Data were