

4.3 Balance trial preweaning

Ten animals were initially used for this experiment. In course of the trial one piglet died during surgery and two had to put down a few days later. The decision for euthanasia was made due to the impaired health condition of these two animals, as apparently they couldn't cope with the aftermath of the cannulation procedure. Therefore the entire experiment was accomplished with seven piglets in total. Data are given as least square means \pm standard error of these seven animals.

Body weight of piglets was 2.52 ± 0.29 kg at beginning of the trial and 5.45 ± 0.66 kg at the end. Daily feed intake increased during the entire period and amounted to 68.4 ± 3.6 g DMI/kg BW^{0.75} at collection period of ileal digesta. N-intake was 2.8 ± 0.1 g/kg BW^{0.75} and 0.2 ± 0.02 g/kg BW^{0.75} nitrogen was excreted in ileal digesta. Besides N we estimated also AA-intake and excretion for the calculation of apparent digestibility (Appendix).

Apparent ileal digestibility of nitrogen and amino acids ($AID_{N/AAtotal}$) was calculated according to the given equation 5. AID_N (%) was 94.1 ± 0.5 and $AID_{AAtotal}$ (%) amounted to 97.2 ± 0.2 .

Endogenous nitrogen losses were estimated by measurement of ¹⁵N enrichment in urine and calculation according to equation 6. For this experiment we choose urine as a precursor due to technical considerations, as we did not have the licence to fit constant venous catheters in the piglets *V. jugularis*. Thus we were not in the position to obtain sufficient blood samples. Apart from this we used milk replacer, which means that protein utilisation would be very high and non-utilised N very low. Thus non-utilised nitrogen – generally the reason for the biased use of urine as precursor - was not to be expected in urine.

Based on this urine was collected over the entire period on a 24-h basis and ¹⁵N enrichment was measured. Endogenous nitrogen value was 71.04 ± 6.3 % and for comparability with literature we expressed it also per DMI and CPI (0.65 ± 0.1 g/100g CPI; 0.17 ± 0.03 g/100g DMI). Taking endogenous losses into account we calculated real ileal digestibility (Equation 7) as well. RID_N was 98.18 ± 0.4 % for piglets fed with milk replacer before weaning. In respect to the calculation of RID_{AA} we encountered the same situation like in the balance trial postweaning, that endogenous amino acid determination couldn't be finished in time and analysis is still in progress. However, bacterial nitrogen was estimated as 11.6 ± 1.5 % of total nitrogen (0.11 ± 0.1 g/100g CPI; 0.03 ± 0.0 g/100g DMI) in ileal digesta of unweaned pigs. With regard to these components we estimated the exogenous nitrogen proportion as 17.33 % of total nitrogen.