Feeding behaviour patterns do not explain the observed variation on lipid and protein gain in growing pigs fed ad-libitum

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Abstract

Large variability on the proportion of lipids and protein of the body composition is observed in pigs fed and raised in similar conditions. Part of this variation might be explained by changes on feeding behaviour due to its effect on metabolic hormones associated with energy regulation and protein metabolism. Therefore, this study focused on the creation of an index to describe feeding behaviour patterns and to study its relationship with body composition in growing pigs. Feeding behaviour and body composition information of 165 pigs during the last 28 d of the growing phase from three studies was used. For each pig, the sum of the areas between the observed relative cumulative feed intake (RCFI) and the calculated line obtained with a regression model of the evolution of RCFI over time was used to calculate a new index that illustrates the irregularity of feed intake (IFII). Correlations of IIFI with number of daily meals (NDM; $r = -0.44$; $P < 0.001$), duration of meal (DUM; $r = 0.42$; $P < 0.01$) and, feed intake per meal (FIM; $r = 0.40$; $P < 0.01$) indicate that pigs with high IFII have fewer meals of longer duration and higher feed intake compared with pigs having small IFII. It demonstrates that IFII integrates information of several components of the feeding behaviour of the pig. However, correlations between IFII and the % of protein and lipid of the body gain were weak and only significant in one study and accounted only for 12% of the total variation of body composition. In conclusion, other factors than feeding behaviour modulate body composition of growing pigs fed ad libitum. Nevertheless, the IFII obtained in this study combine different characteristics of the feeding behaviour, which allows studying in a more objective manner the relationship of the dynamic of the feed intake with other aspects of the animal performance, growth or health.

Key words: feeding behaviour, body composition, precision farming