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预测猪胴体背脂、腹脂、额骨脂肪碘值的模型

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本研究收集已发表的资料建立猪胴体背脂、腹脂和额骨脂肪碘值的模型，并通过试验来评估这些模型的有效性。最终的数据库包括与背脂相关的24篇、腹脂相关21篇、额骨脂肪相关的29篇。在日粮脂肪酸组成有变化的试验中，试验处理开始前的日粮为初始日粮（INT），试验处理开始后的为处理日粮（FIN）。将预测模型的影响因子分为五组：1）日粮脂肪酸组成，初始日粮和处理日粮的C16:1、C18:1、C18:2、C18:3、必需脂肪酸（EFA）、不饱和脂肪酸的含量、日粮碘值（IV）；2）饲喂初始日粮和处理日粮的天数；3）初始日粮和处理日粮的ME或NE；4）生长性能，初重、末重、ADG、ADFI、G:F；5）胴体指标：热胴体重（HCW）和背脂厚。通过SAS的PROC MIXED程序建立回归方程。根据贝叶斯准则评估回归方程的有效性。最佳的预测方程为：背脂IV= 84.83 + (6.87 × INT EFA) – (3.90 × FIN EFA) – (0.12 × INT天数) – (1.30 × FIN 天数) – (0.11 × INT EFA × FIN天数) + (0.048 × FIN EFA × INT天数) + (0.12 × FIN EFA × FIN天数) – (0.0060 × FIN NE) + (0.0005 × FIN NE × FIN天数) – (0.26 × 背脂厚)；背脂IV = 106.16 + (6.21 × INT EFA) – (1.50 × FIN天数) – (0.11 × INT EFA × FIN天数) – (0.012 × INT NE) + (0.00069 × INT NE × FIN天数) – (0.18 × HCW) – (0.25 ×背脂厚)；额骨脂肪IV = 85.50 + (1.08 × INT EFA) + (0.87 × FIN EFA) – (0.014 × INT天数) – (0.050 × FIN天数) + (0.038 × INT EFA × INT天数) + (0.054 × FIN EFA × FIN天数) – (0.0066 × INT NE) + (0.071 × INT 体重) – (2.19 × 日均采食量) – (0.29 × 背膘厚). 动物试验的处理包括一个玉米豆粕型（无油添加）对照组，和3（4%的牛油、4%豆油、2%牛油加2%豆油）×3（饲喂期0-42d、42-84d、0-84d）因子设计。在碘值低于65g/100g时，预测背脂、腹脂、额骨脂肪碘值较高。在实际碘值高于约74g/110g时，或混合油饲喂0-84d和42-84d时，低估了腹脂的碘值。总的来说，除了如上所提示的例外，建立的模型能运用日粮和动物生长性能等指标准确的预测胴体脂肪指标。

Equations generated to predict iodine value of pork carcass back, belly, and jowl fat

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Data from existing literature were used to generate equations to predict finishing pig back, belly, and jowl fat iodine values (IV) and an experiment was conducted to evaluate these equations. The final database included 24, 21, and 29 papers for back, belly, and jowl fat IV, respectively. For experiments that changed dietary fatty acid composition, initial (INT) diets were defined as those fed before the change in diet composition and final (FIN) diets were those fed after. The predictor variables tested were divided into 5 groups: 1) diet fat composition (dietary percent C16:1, C18:1, C18:2, C18:3, EFA, unsaturated fatty acids, and IV product) for both INT and FIN diets, 2) day feeding the INT and FIN diets, 3) ME or NE of the INT and FIN diet, 4) live performance criteria (initial BW, final BW, ADG, ADFI, and G:F), and 5) carcass criteria (HCW and backfat thickness). The PROC MIXED procedure of SAS (SAS Inst., Inc., Cary, NC) was used to develop regression equations. Evaluation of models with significant terms was then conducted based on the Bayesian information criterion. The optimum equations to predict back, belly, and jowl fat IV were backfat IV = 84.83 + (6.87 × INT EFA) – (3.90 × FIN EFA) – (0.12 × INT days) – (1.30 × FIN days) – (0.11 × INT EFA × FIN days) + (0.048 × FIN EFA × INT days) + (0.12 × FIN EFA × FIN days) – (0.0060 × FIN NE) + (0.0005 × FIN NE × FIN days) – (0.26 × backfat depth); belly fat IV = 106.16 + (6.21 × INT EFA) – (1.50 × FIN days) – (0.11 × INT EFA × FIN days) – (0.012 × INT NE) + (0.00069 × INT NE × FIN days) – (0.18 × HCW) – (0.25 × backfat depth); and jowl fat IV = 85.50 + (1.08 × INT EFA) + (0.87 × FIN EFA) – (0.014 × INT days) – (0.050 × FIN days) + (0.038 × INT EFA × INT days) + (0.054 × FIN EFA × FIN days) – (0.0066 × INT NE) + (0.071 × INT BW) – (2.19 × ADFI) – (0.29 × backfat depth). Dietary treatments from the evaluation experiment consisted of a corn–soybean meal control diet with no added fat or a 3 × 3 factorial arrangement with main effects of fat source (4% tallow, 4% soybean oil, or a blend of 2% tallow and 2% soybean oil) and feeding duration (d 0 to 42, 42 to 84, or 0 to 84). The back, belly, and jowl fat IV equations tended to overestimate IV when observed IV were less than approximately 65 g/100 g and underestimate belly fat IV when actual IV are greater than approximately 74 g/100 g or when the fat blend was fed from d 0 to 84 or 42 to 84. Overall, with the exceptions noted, the regression equations were an accurate tool for predicting carcass fat quality based on dietary and pig performance factors.