Growth performance of weaned pigs fed raw, cold-pelleted, steam-pelleted, or extruded field pea

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Field pea can be an alternative starch and protein source for swine. However, pigs fed raw field pea immediately after weaning have reduced feed efficiency. Whether heat processing can increase nutritive value of field pea for weaned pigs remains unclear. To explore, field pea ingredient was ground (Hammer mill; 10/64" screen), or processed using cold-pelleting (70-75°C), steam-pelleting (80-85°C), or extrusion (115°C), and then re-ground (Hammer mill; 8/64" screen). Diets contained 40% raw, cold-pelleted, steam-pelleted, or extruded field pea replacing 30% soybean meal (SBM) and 10% wheat grain, and were formulated to provide 2.4 Mcal net energy (NE)/kg, 1.2% standardized ileal digestible Lys, and other amino acids were balanced for ideal ratio. A total of 236 pigs (initial body weight: 10.0 kg; weaned at 20 d) housed in 60 pens in 4 nursery rooms, were blocked into 5 pens per block, and fed 1 of the 5 diets starting 2 wks post-weaning for 3 wks. Overall (d 0–21), the average daily feed intake (869–878 g/d) for pigs fed diets containing raw, cold-pelleted, or extruded field pea was greater ($P < 0.05$) than pigs fed SBM diet (807 g/d). The average daily gain of pigs fed SBM or field pea diets did not differ. Consequently, feed efficiency (gain:feed; 0.61–0.62) for pigs fed diets containing raw, cold-pelleted, or extruded field pea was lower ($P < 0.05$) than that of pigs fed SBM diet (0.67). Final body weight of pigs fed raw, cold-pelleted, steam-pelleted or extruded field pea, or SBM diets were 21.3, 21.2, 21.4, 21.5, and 21.5 kg, respectively, and were not affected ($P > 0.05$) by feeding field pea and/or processing.

Implications: Weaned pigs fed 40% raw field pea can maintain growth, but not feed efficiency compared to SBM. Raw, cold-pelleting, steam-pelleting, or extrusion could not ameloriate the reduced feed efficiency. Results indicate that steam-pelleted off-grade field pea could be a feed substitute for 30% SBM and 10% wheat grain to reduce feed cost without affecting growth performance in weaned pigs.