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# The Impact of Dietary Brassica Carinata Meal Inclusion on the Growth, Feed Efficiency, Carcass Merit, and Lean Quality of Finishing Pigs

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## Objectives

Brassica Carinata is an oilseed crop that shows potential to produce jet fuel. The byproduct remaining after the oil is extracted is a high quality protein meal. Carinata meal supplementation has been documented to improve the growth of developing heifers. However, protein meal inclusion is a rather small percentage of the supplementation of ruminants. If Brassica carinata oil production is to become cost effective, more opportunities to utilize this high protein meal by product will need to be identified. The objective of this study was to evaluate the impact replacing soybean meal with Brassica Carinata meal (BCM) on the growth, feed efficiency, carcass merit, and lean quality of finishing pigs.

## Materials and Methods

Over a 42-d trial period, 30 crossbred pigs were blocked by weight and placed in 15 mixed-gender pens, each including 1 barrow and 1 gilt. Pigs were fed 1 of 3 diets: a corn soybean meal control diet (CON; $n = 10$), or the same diet with carinata meal replacing 25% (25; $n = 10$), or 50% (50; $n = 10$), of soybean meal. The pH of the LM and the semimembranosus muscle (SM) was measured between the 10th and 11th rib with a temperature-compensating pH meter. At 24-h postmortem, left carcass sides were fabricated into primal cuts. loins were ribbed between the 10th and 11th rib and LM area, 10th rib fat thickness, subjective marbling scores, lean color (NPPC, 2000), and lean firmness scores (NPPC, 1991) were taken at the 10th rib. Additionally, LM objective lean color (L*, a*, b*; CIE, 1978) were measured using a Minolta Chroma-Meter CR-310. LM chops were fabricated from the 10th-11th rib interface and used to record 24 h drip loss. After 7 d of storage, posterior loin section reweighed to measure purge loss. Longissimus muscle chops for Warner Bratlzer shear force analysis were cooked to internal temperatures of 71°C. LM Chops were allowed to cool then six 1.3-cm diameter cores were removed and sheared using a Warner-Bratzler shear head attached to an Instron Universal Testing machine. Longissimus muscle chops used for sensory panel evaluation were cooked using the same procedures as for Warner Bratlzer shear force. A trained sensory panel evaluated all samples for tenderness, juiciness, pork flavor intensity, connective tissue, and off-flavor and firmness.

## Results

Dietary treatment did not influence average daily gain ($P = 0.86$) or any measurement of carcass composition ($P \geq 0.17$). Pigs fed 50 tended to have greater liver weights ($P = 0.07$) than pigs fed the CON and 25. Inclusion of BCM in the diet had no effect ($P \geq 0.15$) on any measurement of intramuscular pH or fat color. Chops from CON pigs tended ($P = 0.09$) to have greater marbling scores than chops from pigs fed experimental diets. Loin roasts from pigs fed 25 had greater 7d loin purge loss ($P = 0.04$) than pigs fed the other 2 diets. Boneless loin chops from CON carcasses had more reddish pink lean color scores ($P = 0.003$) and had lower (darker) L* values across retail display than pigs fed experimental diets. Loin chops from pigs fed 25 or 50 had greater trained sensory tenderness scores ($P < 0.01$), when compared to CON.

## Conclusion

Overall, replacing up to 50% of soybean meal with BCM is a viable option for in the diets of finishing pigs. However, more research is needed to determine BCM's impact on lean color, water holding, and tenderness.

 