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Effect of Ground Perilla Seed Cake Supplementation in Pig Diets on Intramuscular Fat of Crossbred Pig

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Abstract

Ground perilla seed cake (GPC) is a by-product of *Perilla frutescens* oil extraction. It has a high content of crude protein and is a source of enriched omega⁻³ polyunsaturated fatty acids. Thus, GPC has a potential as an additive in pig feed to improve the intramuscular fat (IMF) content. However, the effect has not been sufficiently researched. The measurement of IMF requires to kill the animals for meat analysis. The use of real-time ultrasound to measure backfat thickness and loin muscle area represents a low-cost alternative which is accurate, safe and delivers data instantaneously. This study aimed to determine IMF in live pigs that received GPC feed supplements using real-time ultrasound.

Twenty-one crossbred pigs (Chiang Mai Black Pig) with an initial average weight of 73.91 kg, were divided into three groups. Three dietary treatments were fed during an experimental period of 12 weeks: (a) control (CON): basal diet, (b) treatment 1 (GPC 2.5): basal diet with 2.5% supplemented by GPC, and (c) treatment 2 (GPC 5): basal diet with 5% supplemented by GPC. Every four weeks the pigs were scanned with an ultrasound device to determine IMF percentage, backfat depth, loin area, and loin dept at the 10th to the 13th rib.

The ultrasound measurements did not exhibit significant differences between the dietary groups during week 0, 4, and 8. At week 12, both groups which had received a diet supplemented with GPC had a significantly higher IMF percentage as compared to the control group ($p < 0.05$). Also, the loin area results similar to the IMF result: The GPC 2.5 and GPC 5 were significantly higher than in the control group ($p < 0.05$). Simultaneously, no significant differences were found between GPC 2.5 and GPC 5 on the IMF and loin area.

In conclusion, real-time ultrasound is a suitable technology for monitoring the effects of feed supplements in live pigs, providing reliable data throughout the feeding experiment without the need for slaughtering the animals. It was shown that the supplementation of GPC in pig diets improves the intramuscular fat. However, more research is required to determine the suitable level of supplementation.

Keywords: Ground perilla seed cake (GPC), longissimus dorsi, pork quality, real-time ultrasound

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