



University of Zabol
Faculty of Agriculture
Department of Animal Science

A Thesis

Submitted in Partial Fulfillment of the Requirements for the Degree of
PHD in Animal Nutrition

Title:

**Investigating the use of rapeseed meal instead of soybean meal in
Japanese quail diets**

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Abstract

The present study was conducted in order to evaluate the effects of using rapeseed meal instead of soybean meal in Japanese quail diet with 675 pieces of Japanese quail in the form of a completely randomized design with 9 treatments, 5 replications and each replication with 15 pieces of quail. The treatments included the control of corn and soybean meal, rapeseed meal replaced by 25, 50, 75 and 100% with soybean meal, and the same treatments with the addition of probiotic protoxin (200 mg/kg) in the diet, which was used at the age of 7 to 35 days. they got. Birds that were fed with 75% and 100% rapeseed meal instead of soybeans had lower feed consumption than the control group ($P<0.05$), and also less weight gain than the groups fed with 25% and 50% rapeseed meal instead of soybeans with Protoxin probiotic. They were reared in the fourth and fifth weeks ($P<0.05$). Birds that were fed with 25 and 50% rapeseed meal instead of soy along with Protoxin probiotic had a better conversion rate than the 75 and 100% rapeseed meal instead of soybean group in the period of 7-35 days ($P<0.05$). The use of 25% and 50% levels of rapeseed meal along with Protoxin probiotic in the diet improved the amount of weight gain and conversion factor in the period of 14-21, 21-28 and 35-28 ($P<0.05$). The birds that were fed with 25% rapeseed meal replacement had more antibodies than the 100% rapeseed meal replacement group ($P<0.05$). Cholesterol and triglyceride levels were lower in birds fed with 75% and 100% rapeseed meal without probiotics compared to control groups and 25% rapeseed meal with probiotics ($P<0.05$). The treatment of 25% rapeseed meal with probiotic compared to other treatments had the highest water holding capacity, the lowest cooking loss, and the highest lactobacillus count ($P<0.05$). High levels of replacing rapeseed meal with soybean meal caused a significant decrease in relative breast weight and carcass yield ($P<0.05$). The relative weight of heart and liver increased significantly in treatments that were fed with 75 and 100% rapeseed meal instead of soy ($P<0.05$). The results showed that the treatments had no effect on the acidity of quail meat and its hypothermia, and rapeseed meal without probiotics had no effect on quail meat quality ($P<0.05$). Also, control and 25% rapeseed treatments with probiotics had the lowest amount of malondialdehyde, and 25% and 50% rapeseed treatments with probiotics had the lowest *Escherichia coli* bacteria counts ($P<0.05$). Also, the treatment of 25% rapeseed meal with probiotic had the highest intestinal villus length and the lowest crypt depth compared to other treatments ($P<0.05$). Considering the positive effects of feeding rapeseed meal instead of soybean meal with and without Protoxin probiotic supplement on performance, meat quality, and immune system of Japanese quail, these available and cheap protein sources can be used in the diet of Japanese quail.

Keywords: Japanese quail, *probiotic protoxin*, rapeseed meal, soybean meal