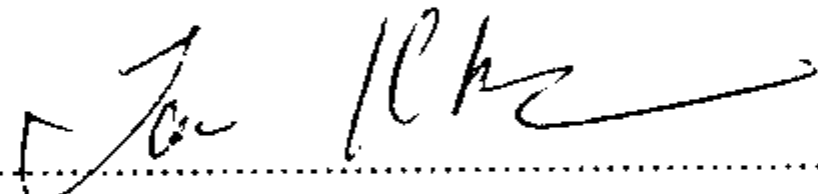
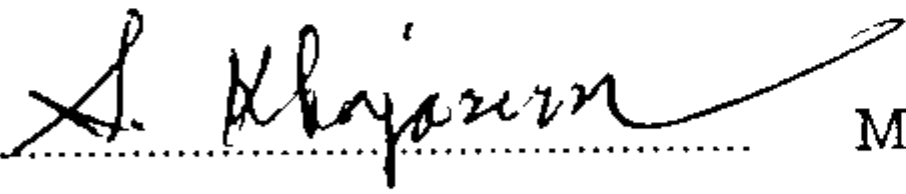


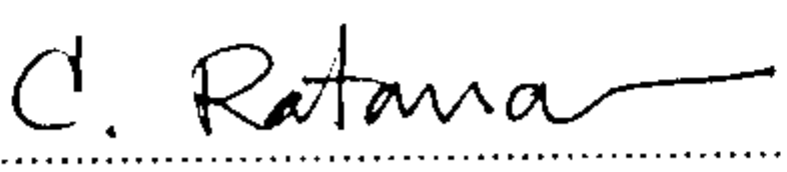
THESIS TITLE: A STUDY ON SUBSTITUTION OF EXTRACTED AND STABILIZED
RICE BRAN FOR RICE BRAN IN BROILER AND QUAIL DIETS

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ABSTRACT

The purpose of this study was to evaluate the chemical composition (proximate analysis) and bulk density of rice bran, extracted and stabilized rice bran and on substitution of extracted and stabilized rice bran for rice bran in broiler and quail diets.

The bulk density of extracted rice bran (477.67 g/l) was higher than stabilized rice bran and rice bran (427.23 and 365.83 g/l, respectively). Extracted rice bran had a higher (15.19 %) crude protein content than stabilized rice bran and rice bran (12.59 and 12.97 %, respectively). Calcium content of rice bran, stabilized and extracted rice bran were 0.25, 0.20 and 0.16 %, respectively and total phosphorus were 2.29, 2.89 and 2.46 %, respectively.

In experiment I, three hundred 3-day-old mixed sex Arbor Acres broiler chicks were divided into three groups with four replications per group and twenty five chicks per replication in a completely randomized design experiment. Extracted and stabilized rice bran were substituted for rice bran at 4.7 % of the diet for the period of 3-24 days of age and 7.0 % of the diet for the 24-45 days period. The results showed that weight gain, feed intake, feed conversion ratio, protein efficiency ratio and mortality were not significantly

different ($P > 0.05$). Similarly, carcass percentage, abdominal fat, visceral fat and carcass quality were not significantly different ($P > 0.05$) among treatments.

In experiment II, four hundred and twenty one-day-old mixed sex Japanese quails were divided in three groups with four replications per group and thirty-five birds per replication in a completely randomized design experiment. At 0-42 days, extracted and stabilized rice brans were substituted for rice bran at 10 % of the diet and 15 % in laying quails (42 days onward) diets. The results showed that weight gain, feed intake, feed conversion ratio, protein efficiency ratio and mortality rate of birds at 42 days of age were not significantly different ($P > 0.05$). Carcass quality of male quail at 56 days of age in terms of carcass percentage, heart, abdominal fat, visceral fat and carcass quality were not significantly different ($P > 0.05$) among dietary treatments. Quails fed extracted rice bran had higher ($P < 0.05$) liver percentage (1.72) than that of the quail fed stabilized rice bran (1.43) whereas those fed rice bran (1.51) were not significantly different ($P > 0.05$) from the extracted rice bran group. The results of laying quail experiment showed that hen-day production, feed intake, yolk color, egg shell thickness, egg mass percentage and egg density were not significantly different ($P > 0.05$). Quails fed stabilized rice bran had better ($P < 0.05$) feed conversion ratio and productive efficiency ratios (2.45 and 2.60, respectively) than that of quail fed rice bran (2.80 and 1.81, respectively) but the formers were not significantly different ($P > 0.05$) from the feed conversion ratio and productive efficiency ratios of the quail fed extracted rice bran (2.54 and 1.99, respectively).

Experiment III. Peroxide and acid values of rice bran, mash and pelleted stabilized rice bran were studied in a split plot in CRD experiment. The results showed that peroxide and acid values of rice bran were higher than mash and pelleted stabilized rice bran ($P < 0.05$). Peroxide values of mash stabilized rice bran as measured weekly throughout the 6-week experiment period were not significantly different ($P > 0.05$) from the pelleted rice bran, but peroxide values of mash stabilized rice bran in the sixth week were higher ($P < 0.05$) than those of pelleted stabilized rice bran. Similarly, the acid value of rice bran was higher ($P < 0.05$) than those of the mash and pelleted stabilized rice bran. Throughout the experimental period, the acid values of mash and pelleted stabilized were not significantly different ($P > 0.05$) from each other.

Rice bran has a wide variation in nutrient content depending on quality of rice mill, location where rice was grown, environmental condition and rice varieties. Peroxide and acid values increase as the time of storage increased. Inherited enzymes in rice bran are very active but the steam heat treatment during stabilizing and extracting processes inhibits essentially all of activity of these enzymes. Extracted and stabilized rice bran can thus be fully substituted for rice bran without adversely affecting the performance of broiler chickens or quails. Furthermore, feed efficiency and productive efficiency ratio of laying quails fed the stabilized rice bran are better than those of laying quails fed rice bran but not significantly different ($P>0.05$) from those quails fed extracted rice bran.