TECHNICAL RESEARCH REPORT

JEFO PROTEASE ON LOW DENSITY DIETS FOR BROILER CHICKENS

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OBJECTIVE

To evaluate the performance of broiler chickens supplemented with **Jefo Protease** in diets with reduced density.

MATERIALS AND METHODS

A total of 1000 Cobb male chickens were distributed in 50 pens of 20 birds and divided in 5 treatments with 10 replicates each. All diets contained phytase and b-mannanase and were pelleted (80°C, 1 minute). Information about the diets is available on Tables 3 and 4.

Table 1. Treatments distribution

	Protease Supplementation	Feed Formulation
T1	-	Standard: Regular feeding program from a large integrator in the USA
T2	-	5% reduction CP and digestible lysine[1]
T3	Jefo Protease (125g/t)	5% reduction CP and digestible lysine
T4	-	8% reduction CP and digestible lysine[1]
T5	Jefo Protease (125g/t)	8% reduction CP and digestible lysine

[1]The ratio of the other essential amino acids to lysine was kept the same as in the Standard Diet.
CP: crude protein.

RESULTS

Table 2. Zootechnical Performance

	Standard Diet	5% Nutritional Reduction Diet		8% Nutritional Reduction Diet		
	No protease	No Protease	+ Jefo Protease	No protease	+ Jefo Protease	*P*-value
0-19 days						
BWG, kg	0.555^{a}	0.519^{b}	0.524^{b}	0.529^{b}	0.529^{b}	0.04
FC	1.404^{a}	1.466^{b}	1.441^{ab}	1.485^{b}	1.458^{b}	0.04
0-35 days						
BWG, kg	1.904^{a}	1.789^{c}	1.875^{ab}	1.788^{c}	1.843^{b}	< 0.001
FC	1.602^{a}	1.671^{cd}	1.627^{ab}	1.686^{d}	1.652^{bc}	< 0.001
0-42 days						< 0.001
BWG, kg	2.424^{a}	2.339^{bc}	2.419^{a}	2.319^{c}	2.395^{ab}	0.01
FC	1.690^{a}	1.743^{cd}	1.708^{ab}	1.767^{d}	1.730^{bc}	
Mortality, %	1.0	3.5	3.0	2.5	12.5.0	-
Mortality, kg	1.650	4.273	2.440	2.578	3.247	-
EPEF	338	308	327	305	321	-

Feed Intake: There was no significant difference in feed intake among all treatments (P>0.25).
^{a,b,c,d}Values with different superscripts are different (P<0.05).
BWG: body weight gain; FC: feed conversion.
EPEF: European Production Efficiency Factor = $\frac{\text{Body Weight, kg x Livability, \%}}{\text{Age, days x Feed Conversion}} \times 100$

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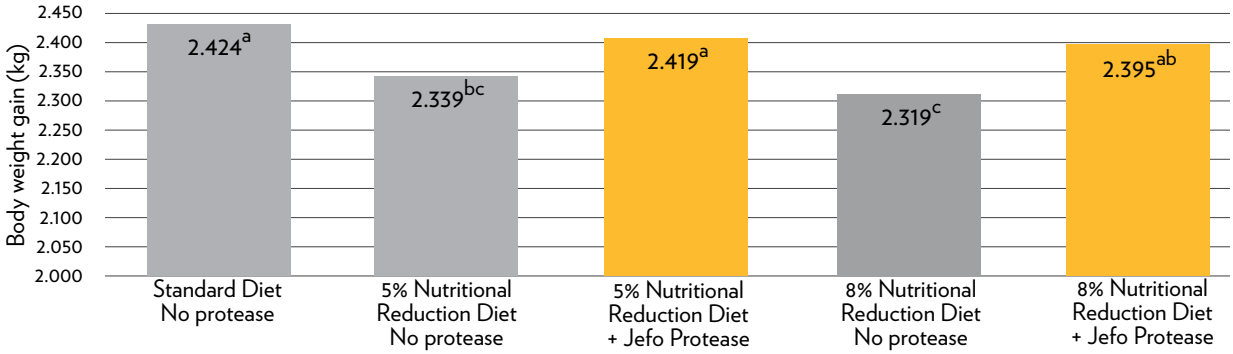

Figure 1. Average body weight gain at 42 days. [a,b,c]Values with different superscripts differ (*P*<0.001).

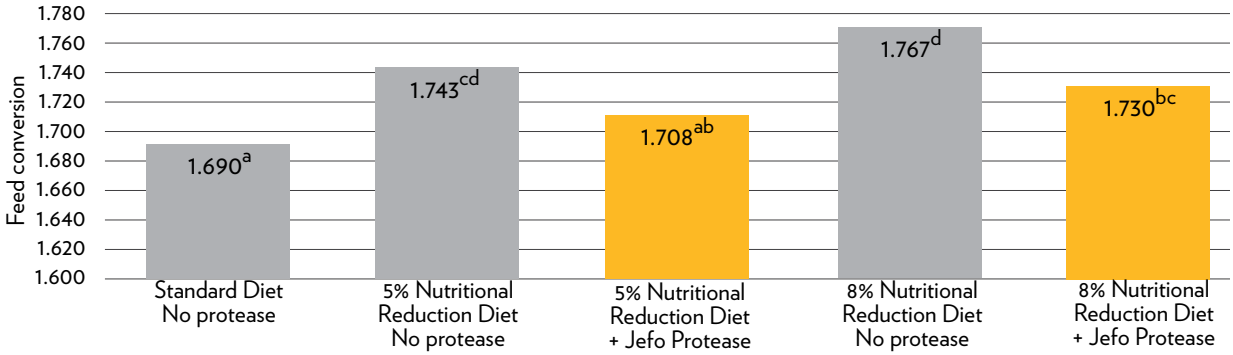

Figure 2. Average feed conversion ratio from 0 to 42 days. [a,b,c,d]Values with different superscripts differ (*P*<0.001).

Table 3. Digestible lysine (Dig Lys) and percentage of lysine reduction in the diets with nutritional reduction in relation to the Standard Diet

	Standard Diet	5% Nutritional Reduction Diet		8% Nutritional Reduction Diet	
Feeding Period	Dig Lys, %	Dig Lys, %	Lys Reduction, %	Dig Lys, %	Lys Reduction, %
Starter (0-19 d)	1.21	1.15	4.96	1.11	8.26
Grower (19-35 d)	0.96	0.91	5.21	0.88	8.33
Finisher (35-42 d)	0.81	0.77	4.94	0.75	7.41

Table 4. Inclusion level of the major ingredients in the Standard Diet

	Ingredient, %		
Feeding Period	Corn	Soybean Meal	Corn DDGS
Starter (0-19 d)	61	31	3
Grower (19-35 d)	67	23	2
Finisher (35-42 d)	74	17	4

CONCLUSION

-Reduction in diet density (crude protein and amino acids) resulted in poorer growth performance (comparison between "Standard Diet", "5% Nutritional Reduction Diet" and "8% Nutritional Reduction Diet" without protease supplementation).

-**Jefo Protease** was able to improve zootechnical performance of broilers when supplemented to low density diets.