

In vivo digestibility of *Vigna unguiculata* grain meal in broilers

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1. INTRODUCTION

Investigating alternative feed of broiler chickens for small producers, the coefficient of apparent digestibility of milled *Vigna unguiculata* grain in raw and cooked form was determined using male chickens in the finisher phase.



Table 1. Nutritional composition of each diet.

Content	Treatments		
	T0 CONTROL	T1 RAW	T2 COOKED
DM % of FM	89.21	89.09	89.74
CP % of DM	21.16	22.34	23.60
ME Kcal/Kg	2888	2530	2483
EE % of DM	4.54	3.66	4.08
CF % of DM	2.56	2.93	4.99
ASH % of DM	7.50	5.98	6.33

DM Dry Matter, CP Crude Protein, ME. Metabolizable Energy, EE Ether extract, CF Crude fiber.

In crude protein, the digestibility did not differ significantly (Table 2), while in metabolizable energy the digestibility of T0 and T2 was similar, and higher than T1. The three treatments differed significantly in the digestibility of the crude fiber (48.1%, 31.9% and 62% for T0, T1 and T2 respectively).

2. MATERIALS & METHODS

A completely randomized design with three treatments and six repetitions was applied, substituting weight for weight and using male chickens (line COOB 500) in the finisher phase. They were confined in metabolic cages with 8 days acclimatization to the ambient and 5 days to the experimental diet previous to the measurement of digestibility (10 days). The following treatments were applied: T0 control diet (balanced, non-commercial), T1 70% control diet and 30% raw *V. unguiculata* grain, and T2: 70% control diet and 30% cooked (5') *V. unguiculata* grain. The apparent fecal digestibility of the meal of raw and cooked grain was determined, as well as of single nutrients of the diet.

3. RESULTS

The coefficients of apparent dry matter (DM) digestibility of milled raw and cooked grains of *V. unguiculata* were 67 and 73 %, respectively (Figure 1). The apparent DM digestibility of the complete diets (Table 1 and figure 2) did not show significant differences between T0 (78.3%) and T2 (76.6%), nor between T2 and T1 (74.9%) ($P>0.05$) (Table 2).

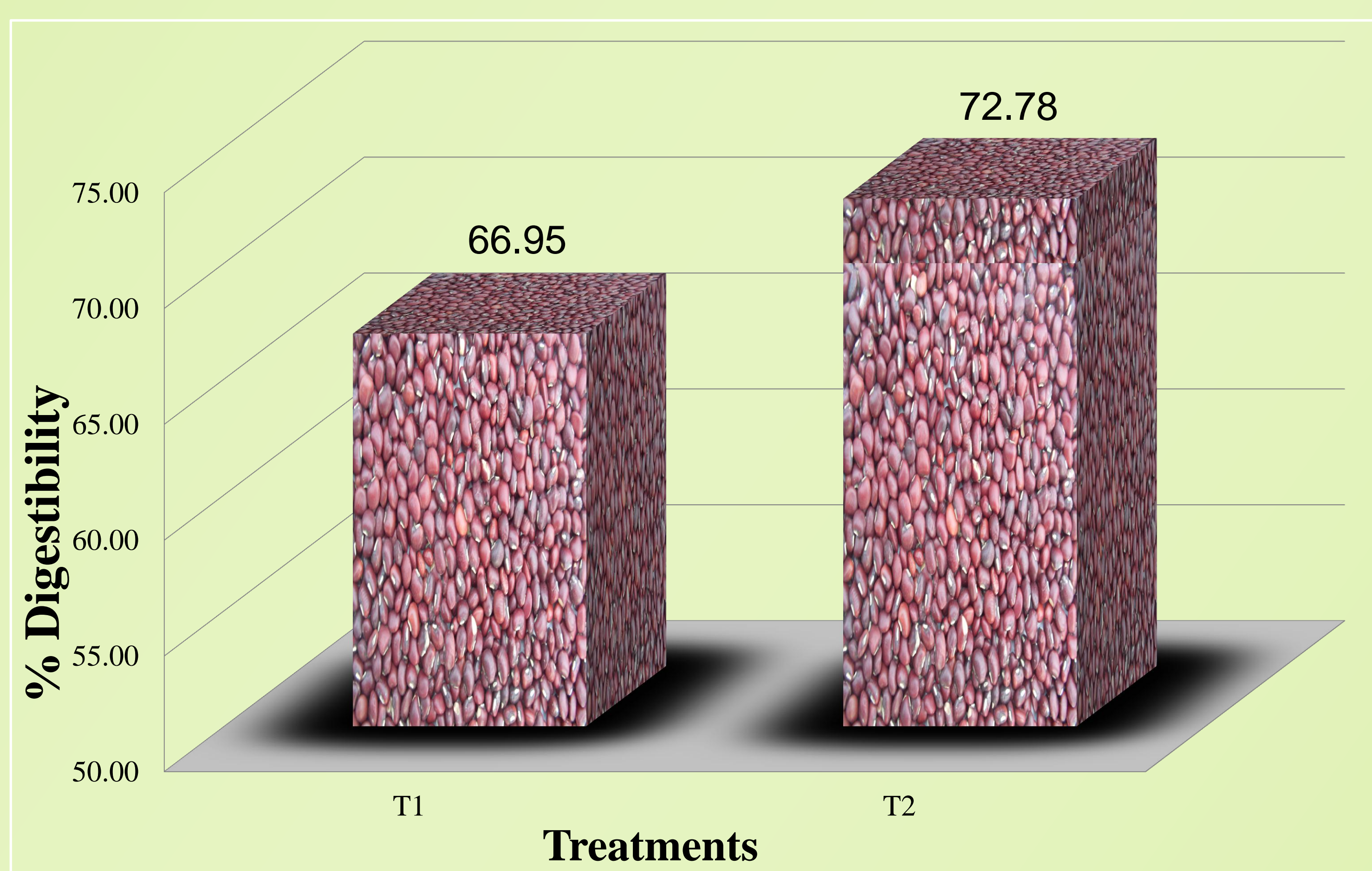


Figure 1. In vivo digestibility of the meal of raw (T1) and cooked (T2) cowpea in broilers

Table 2. Digestibilities and feed conversion

Variable	Mean by Treatment %		
	T0	T1	T2
Feed digestibility	78.35 a	74.95 b	76.68 ab
Protein digestibility	70.68 a	65.18 b	70.18 a
Digestibility of metabolizable energy	84.27 a	80.53 b	82.92 a
Feed conversion, final stage	2.27 a	2.59 b	2.40 ab

T₀. Control diet, noncommercial, T₁. 70% of control diet and 30% of raw *V. unguiculata* and T₂: 70% of control diet and 30% cooked *V. unguiculata*. Different letters within the same row mean significant differences between treatments ($P<0.05$).

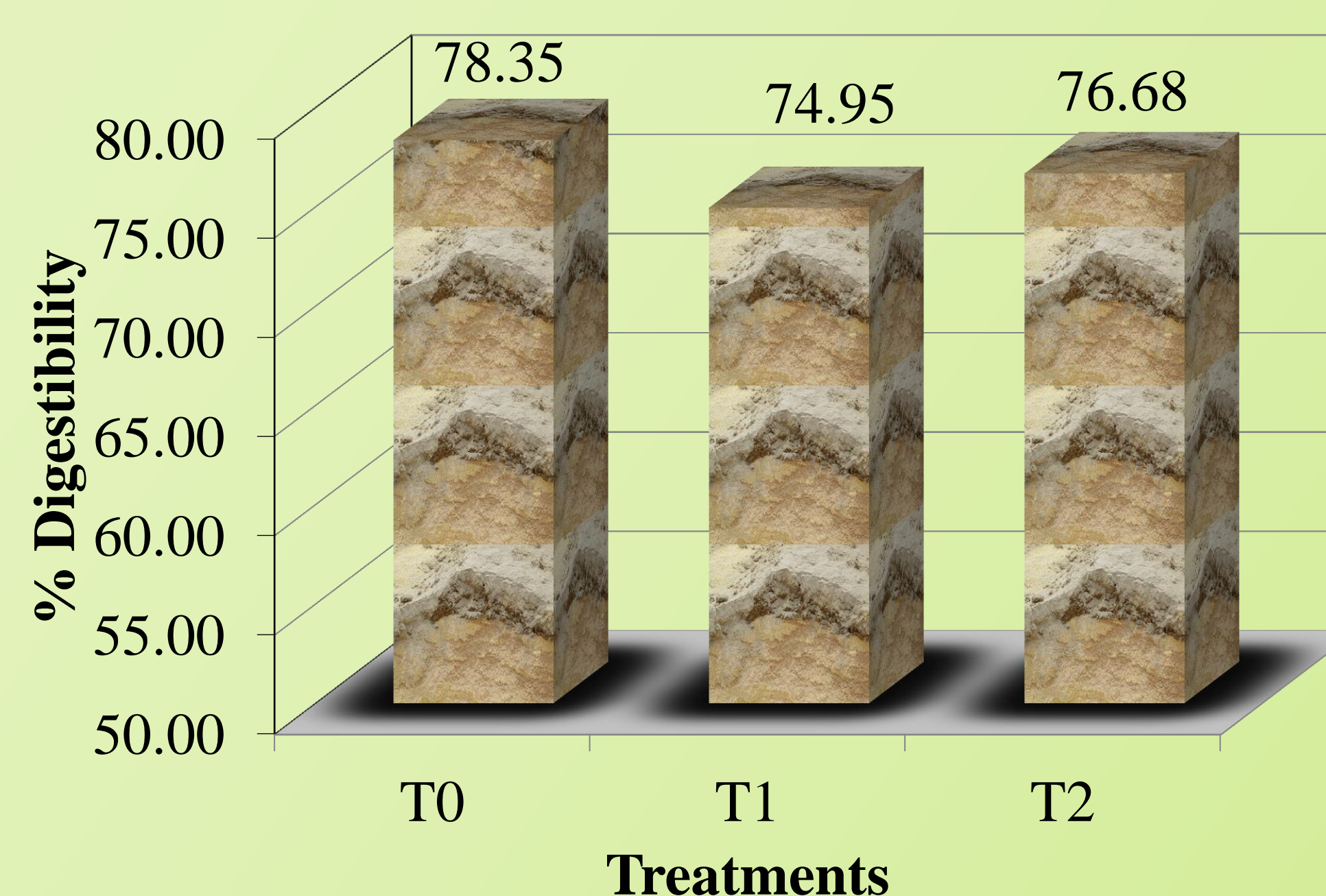


Figure 2. Apparent Dry Matter digestibility of the complete diets

4. CONCLUSION

The similarity observed for the digestibility and consumption of *V. unguiculata* grain compared to control suggests it as an excellent supplement of diets in unconventional broiler farming systems. The comparison of cooked and raw grain suggests a slightly better utilization of the cooked one by broilers.

