

Growth Performance and Visceral Histopathological Assessment of Broiler Chickens fed processed *Senna occidentalis* L. meal-based diets

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INTRODUCTION & AIM

- Poultry production remains a vital and affordable source of animal protein (Doyin and Akinfala, 2023)
- However, the increasing cost of conventional feed ingredients remains a major challenge in the industry (Sajid *et al.*, 2023)
- Senna occidentalis* (L.) seeds contain about 20–30% crude protein and may serve as an alternative protein source (Kontan *et al.*, 2019)
- Their use in poultry diets is limited due to anti-nutritional factors that interfere with nutrient utilisation and reduce feed efficiency (Abbas and Ahmad, 2018)



Fig. 1: *Senna occidentalis* seeds

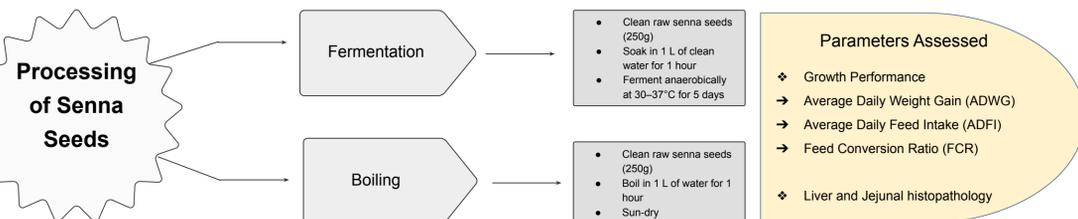
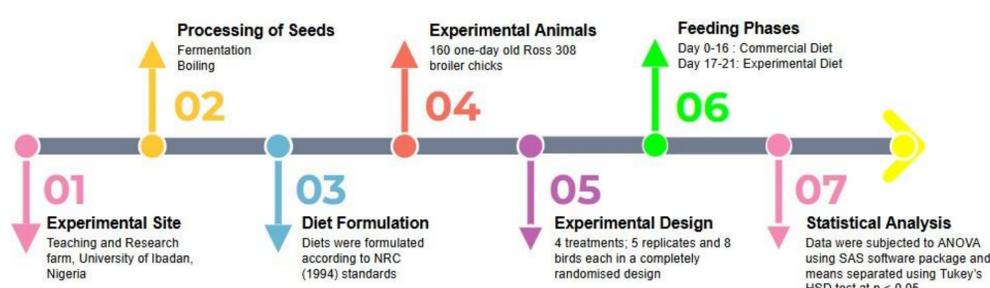


Fig. 2: *Senna occidentalis* leaves

Objectives

- To evaluate the effects of processed *Senna occidentalis* seed meal on the growth performance in broiler chickens
- To assess the effects of processed *Senna occidentalis* seed meal on liver and jejunal histopathology

METHOD



RESULTS & DISCUSSION

Table 1: Performance indices of birds fed raw and processed *Senna occidentalis* seed meal diets

Parameter (%)	HDP	RSSM	FSSM	BSSM	SEM	P-Value
ADWG (g/b)	23.77 ^b	15.89 ^b	14.89 ^b	34.80 ^a	2.31	0.001
ADFI (g/b)	38.33 ^b	35.97 ^b	28.61 ^b	58.19 ^a	2.90	0.001
FCR	1.67	2.28	2.00	1.74	0.09	0.076

^{a,b} Means on the same row with different superscripts are significantly ($P < 0.05$) different, HDP = Highly Digestible Protein, RSSM = Raw Senna Seed Meal, FSSM = Fermented Senna Seed Meal, BSSM = Boiled Senna Seed Meal, FCR = Feed Conversion Ratio, SEM = standard error mean, ADWG = Average Daily Weight Gain, ADFI = Average Daily Feed Intake

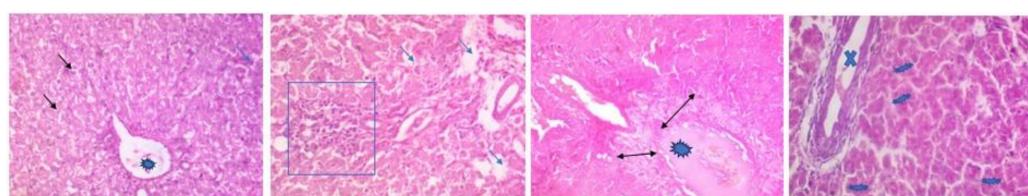


Plate 1.1 shows the liver section of birds on Highly Digestible Protein (HDP) diet with mild diffuse hepatocellular atrophy and inflammation (H&E 400x). Plate 1.2 shows the liver section of birds on Raw Senna Seed Meal (RSSM) diet with severe hepatic alterations (H&E 400x). Plate 1.3 shows the liver section of birds on Fermented Senna Seed Meal (FSSM) diet with mild periportal fibrosis (H&E 400x). Plate 1.4 shows the liver section of birds on Boiled Senna Seed Meal (BSSM) diet with no observable lesions (H&E 400x).

Plates 1.1 - 1.4: Photomicrographs of liver sections of broiler chickens fed raw and processed senna seed meal diets

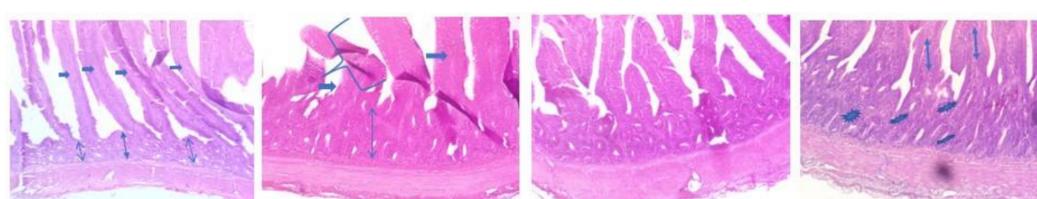


Plate 1.5 shows the jejunal section of birds on Highly Digestible Protein (HDP) diet with no observable necrosis (H&E x100). Plate 1.6 shows the jejunal section of birds on Raw Senna Seed Meal (RSSM) diet with no observable inflammation (H&E x100). Plate 1.7 shows the jejunal section of birds on Fermented Senna Seed Meal (FSSM) diet with goblet cell hyperplasia (H&E x100). Plate 1.8 shows the jejunal section of birds on Boiled Senna Seed Meal (BSSM) diet with mild hyperplastic within the lamina propria (H&E x100).

Plates 1.5 – 1.8: Photomicrographs of jejunal sections of broiler chickens fed raw and processed senna seed meal diets

CONCLUSION

- Boiling improved the nutritional quality of *Senna occidentalis* seed meal which resulted in enhanced growth performance, and preserved hepatic and intestinal integrity
- The inclusion of 10% processed *Senna occidentalis* seed meal is considered as a viable and promising alternative protein source for broiler chickens.

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