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Journal Name:	Asian Journal of Advances in Agricultural Research
Manuscript Number:	Ms_AJAAR_34883
Title of the Manuscript:	Effects of feeding soaked-toasted Tallow (<i>Detarium microcarpum</i> , Guill and Sperr) seed meal as replacement for soybean meal on organ weights, haematology and serum biochemical indices of broiler chickens
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	There are several grammar, stylistic and syntax errors that should be corrected. In some cases, these errors negatively influence the understanding of the text. Please check composition of diets in Table 1. The sum of the components concentration is not 100%. At the same time, please indicate the period of feeding (in days) with the starter and finisher diet. According to the authors (page 3), feed intake was weekly recorded. Are these results presented? Please show these data or delete this sentence. Abbreviations should be explained before their first use in text.	1. Table 1 is moved to end of references and corrections effected and highlighted black. 2. Birds were fed starter diet from day 0-28 day before switched to finisher phase at 29-56 days. 3. birds were weighed on weekly basis while feed intake was measured on daily basis
<u>Minor</u> REVISION comments	Abstract: "The effect of feeding graded levels of soaked-toasted Tallow seed meal (STTSM) as replacement of soybean meal on the organ weights, haematological and biochemical indices of broiler chicks was evaluated. Three hundred and sixty (360) day- old broiler chicks of the Amo Strain were used. The experimental layout was a completely randomized design with three treatments, each with three replicates (40 birds/replicate). The inclusion levels of STTSM in the diets were 0, 10 and 20 % (w/w). The parameters measured were live body weight, organ weights, haematological and biochemical indices. ANOVA showed that final body live weight was higher ($P < 0.05$) in broilers fed the control diet compared to that fed with the STTSM formulated diets. The substitution of STTSM in broiler chick diets did not significantly affected the organ weights of liver (30-40g), heart (8-10g), kidney (2g), pancreas (5-7g), proventriculus (9-10g) and gizzard (39-65g). The fat deposit of birds fed with the control diet (65g) was significantly ($p < 0.05$) higher compared to that fed with the STTSM (39g) based diets. The values of the haematological and biochemical indices were not affected ($P > 0.05$) by the incorporation of STTSM in the diets. As it can be concluded, tallow seeds meal can be incorporated in broiler chickens rations up to 20% with no adverse effects on organ weights and	Abstract corrections accepted and adopted as reviewed. Reflected in text..



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	haematological and biochemical indices of broiler chicks.” Introduction P1-1st paragraph: “Nowadays, conventional sources of protein (groundnut cake, soybean meal, fish meal etc.) and energy (maize etc.) for monogastric animals are expensive and frequently unavailable due to the competition between human and livestock [1]. This fact has...” P1-2nd paragraph: “...the family of Caesalpinoideae and is located mostly in savannah zones with a high productivity yield of seeds embedded in the fruits [3,4,5]. Previous investigations on the proximate composition of D.microcarpum seed [6, 7,8, 9 10] have reported that it has a various content in crude protein (8.8-37.20%), crude fibre (1.1-5.6%), ash (1.5-3.2%), fat (1.5-14%) and carbohydrate (35-58%) with energy values of 5.53Kcalg⁻¹ [11], similar to that reported in soybean (5.52Kcalg⁻¹) [12]. P2-1st paragraph: “In contrast with the high nutritive and energy value of the seeds, anti-nutritional factors such as phytic acids, oxalate, saponin, tannin appear to affect performance parameters of animals [7, 8]. Negative effects on performance of broilers were observed when they were fed single processed mucuna bean [13,14] and D. microcarpun seeds [9]. Integrated processing methods of legumes’ seeds (soaking-cooking, cooking-fermentation and toasting-soaking) have been ...” P2-2nd paragraph: “Haematological, biochemical and enzymes parameters are indicators of metabolites and other constituents, which provide a valuable medium for assessment of health and nutritional status of animals [16], especially when they are fed with toxic diets that affect the functionality of the organs and the transport of the molecules across organs [17]. This study was therefore designed to investigate the implications of feeding broiler chickens with soaked-toasted Tallow seed meal on organ weights, haematological and biochemical indices.” 2.2 Collection and processing of seed meal: “Dry Tallow fruits were collected from Wukari area in Taraba State. The fruits were mechanically opened to remove the seeds. The raw seeds were cleaned of dirt, soaked in water...”	Introduction 1. Nowadays corrected in text. 2. This fact has--- corrected in text 2nd paragraph suggestion agreed and reflected in text. Corrections adopted and reflected in text. The suggested comment and contributions have been agreed and reflected in text.
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	2.3 Birds, diets and experimental design: "...Oyo State for this study. Birds were weighed and randomly assigned to three treatments. Each treatment had three replicates of 40 birds under a completely randomized design. Three diets were formulated to contain soaked-toasted Tallow seed meal (STTSM) at 0, 10 and 20% (starter and finisher phases), by the partial replacement of soybean in the diets (Table 1). The diets were formulated according to standard requirements recommended by Olomu [20]. The brooder house was thoroughly cleaned, washed, disinfected, allowed to rest for a week before the arrival of chicks and artificial light provided to encourage the birds to eat in the night. Feed and water were provided ad libitum. All management procedures were according to that described by Olomu [20]. The birds were weighed and feed intake was weekly recorded for the estimation of the average daily weight gain and cumulative feed intake. The duration of the experiment was 56 days." 2.4.1 Organ weights: "...per replicate were randomly selected for organ weight evaluation after overnight fasting. The..." 2.4.2 Blood assay: "...vein from three birds per replicate by using a 24-gauge needle in separate screw-type tubes for obtaining plasma and serum. Each blood plasma collection...", "...clinical methods described by Bauer et al. [21].", "by centrifugation for 5 minutes at 2000rpm. Blood biochemical...", "...biodiagnostic kits and spectrophotometric methods [22,23]." 2.5 Proximate Analysis: "...protein, ash, fat and crude fibre according to AOAC [24]." 2.6 Statistical analysis: "variance (ANOVA) for completely randomized design (CRD) using the Statistical Package for Social Sciences (SPSS for windows), Version 20. Means were compared by using the Duncan Multiple Range Test [25]." 3.1 Live weight and organ weights-1st paragraph: "The results of the live body and organ weights are shown in Table 2. The organ weights of broilers (liver, pancreas, proventriculus, kidney, heart and gizzard) were	Comments are positive and reflected in text Its addressed in the text. Corrected and reflected in text Its corrected as reviewer observed Corrected in text.
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	similar ($p>0.05$) among the dietary treatment groups. The results for the abdominal fat deposits showed that birds on 0% STTSM diet had significantly ($p<0.05$) higher fat deposit compared to that of the birds fed with 10 or 20% STTSM based diets." 3.1 Live weight and organ weights-2nd paragraph: "The decrease in the final live weight with the increasing levels of STTSM in the diets could be attributed to the poor nutrient utilization of STTSM based birds. The similar weights ($p>0.05$) of organs (liver, heart, kidney, proventriculus, pancreas and gizzard) is an indication of healthy chicks, suggesting that soaked-toasted processing method may have rendered the anti-nutritional factors (ANFs) inactive as it can be hypothesized by no signs of inflammation observed in liver and pancreas. The similar weights of visceral organs observed in this study are in agreement with previous observations [15] where integrated processing methods (cooking and fermentation) render ANFs inactive and enhanced nutritive value. The resulted slight depressed organ weight of birds (apart from heart) with increased STTSM based diets is in agreement with previous researchers [27] who stated that the live weight and the external surface area of birds determine the amount of feathers and visceral organs required. This result is in line with previous reports [28,29] where the similarity of liver, gizzard and heart weights reveals no adverse effects of the residual anti-nutritional factors. The breast and abdominal fat components of broilers are regarded as very important parts in assessing quality. Broilers with well developed breast meat are considered superior while high deposit of fat indicates poor finishing [30]. From the results of this study, broilers fed with a tallow seed meal based diet seem to have lower levels of fat compared to that fed full fat soybean based diets." Please delete the sentence "The present results are in agreement with earlier observations by [8] that residual toxic substances were not completely eliminated using single processing method of soaking, cooking and toasting detarium seeds.", since is not related with your findings concerning fat deposit. 3.2 Haematological indices of experimental birds-1st paragraph: "The results on Table 3 present the examined haematological indices of broiler chickens. Haematological indices of packed cell volume (PCV), red blood	Corrected in text. Corrected and reflected in text. Suggestion okay. It has been deleted from text.
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	cell (RBC), haemoglobin (Hb), white blood cell (WBC) and its differentials (lymphocytes, neutrophils, basophils, monocytes, eosinophils) were not significantly ($P > 0.05$) different among the experimental groups.” 3.2 Haematological indices of experimental birds-2nd paragraph: “The similarity ($p > 0.05$) in haematological indices observed in this study were all within the normal range [31], a fact that indicates the better utilization of the nutritional sources. Haematological values could offer baseline information about the physiology and health status of farm animals [32]. The lack of discrepancy in the values of these parameters is an indication that the treatment of tallow soaking-roasting eliminates the toxic metabolites by rendering them inactive. The PCV values were within the normal range of 27 – 33% [33], which indicated that the birds were neither dehydrated nor anaemic. The RBC, WBC, and Hb values obtained in this study were within the normal range of $2.5 - 3.2 \times 10^6 / \text{mm}^3$, $9 - 31 \times 10^3 / \text{mm}^3$ and 6.5 – 11 g/dl, respectively [33,34]. The PCV, Hb, and RBC levels of broiler chickens fed with the experimental diets were similar ($P > 0.05$), a finding that suggests absence of dysfunction in blood haemopoiesis. The differential lymphocytes, monocytes, eosinophils and basophils also showed no significant ($P > 0.05$) differences among the treatment groups, and the observed values were within the normal range [35]. This is an indication of adequate production of anti-bodies and no bacterial or viral infection, since blood parameters could act as a pathological reflector of the status of exposed animals to toxicant and other conditions [36]. According to Egbunike et al. [37], changes in haematological parameters are often used to determine health status and monitor possible adverse effects due to environmental, nutritional and/or pathological factors. 3.3. Biochemical indices of experimental birds-1st paragraph: “The results of the biochemical indices are shown in Table 4. There were no significant differences ($P > 0.05$) among the treatment groups in serum total protein, albumin, glucose, urea, cholesterol; globulin, AST, ALT, calcium, magnesium, sodium and potassium of birds fed 10 or 20% of STTSM as replacement for soybean.” 3.3. Biochemical indices of experimental birds-2nd paragraph: “The lack of	Corrected in text. Corrections effected in text. Corrections reflected and highlighted in text.
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