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GROWTH RESPONSE, ECONOMIC INDICES, BLOOD PROFILE, AND ORGAN WEIGHT OF PIGS FED REJECTED CASHEW KERNEL MEAL FROM WEANER TO GROWING PHASE

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Abstract: Growth response, economic indices, blood profile, and organ weight of pigs (large white x landrace, n=40, average initial weight = 8.67±0.3kg) fed rejected cashew kernel meal RCKM) were examined from the weaner to growing phase. They were randomly allotted to four groups designated as diet 1, 2, 3, and 4 containing 0%, 5%, 10% and 15% rejected cashew kernel meal respectively in a completely randomized design for eighty-four days. Feed intake differs significantly (P<0.05) across the groups. Pigs offered 5% rejected cashew kernel meal had the highest feed intake with a decreasing trend across those given rejected cashew kernel meal. All economic indices were significant across the groups (P<0.05). Moreover, the heart weight was significantly influenced (P<0.05) by the experimental diet. Pigs fed with 15% RCKM had a significantly higher (P<0.05) heart weight compared with those fed other diets (P<0.05). From the outcome of this investigation, it can therefore be concluded that dietary inclusion of RCKM up to 15% did not trigger any deleterious effects in pigs in terms of growth performance, blood profile, reduced feed cost, increased profit, and economics of gain thus RCKM was well tolerated by the pigs without adverse physiological effects, supported optimal growth, health, and wellbeing of pigs from weaner to grower phase.

Key words: performance, cost, hematology, serum biochemistry, organs

Introduction

In modern animal production systems, the efficient utilization of unconventional feed resources is gaining considerable attention due to the need for sustainable and cost-effective livestock production (Pond et al., 2012). As traditional feed ingredients face supply constraints and fluctuating prices, the exploration of alternative feedstuffs has become imperative (Alshelmani et al., 2021). Cashew (*Anacardium occidentale L.*) processing generates substantial by-products, among which rejected cashew kernel is noteworthy. Although, the cashew nut itself is widely recognized for its nutritional value, the kernels that do not meet market quality standards, often referred to as rejected cashew kernel meal, have been underutilized (Ojediran et al., 2021).

The utilization of rejected cashew kernel in animal diets, particularly for growing pigs, presents a significant avenue for enhancing feed resource efficiency (Fanimo et al., 2004). Enriched with proteins, energy, dietary fibre, and essential minerals, rejected cashew kernel meal exhibits the capacity to serve as a viable ingredient for a complete or partial substitute for conventional feedstuffs used in livestock diet formulation (Odunsi, 2002; Akande et al., 2015, Ojediran et al., 2022). The incorporation of rejected cashew kernel into livestock diets has the potential to not only mitigate feed expenses but also provide an environmentally sustainable avenue for addressing the management of by-products stemming from the cashew processing sector (Ojediran et al., 2021).

Despite its apparent promise, the use of rejected cashew kernel meal in pig diets requires comprehensive investigation. Assessing its impact on growth performance, and organ development, and other vital organs is crucial to understanding its suitability as a feed resource. Thus, this study addresses the potential of rejected cashew kernel meal as an unconventional feed resource for pig nutrition by evaluating the growth response, economic efficiency, blood profile, and organ weight alterations in pigs to provide scientific insights that can inform effective and efficient strategies for maximizing the utilization of rejected cashew kernel meal, while ensuring animal health and well-being.

Materials and Methods

Location

This research was conducted at the geographical coordinates are approximately 4° 15' East and 8° 07' North. The elevation ranges from 300 to 600 m above sea level. The region experiences an average annual temperature of approximately 27°C and the yearly average rainfall measures around 1,247mm. The study area is characterized by vegetation typical of the derived savannah zone (Ojedapo et al., 2009).

Preparation of test ingredients

The rejected cashew kernel was bought from a local cashew processing firm. Extraneous materials were removed the cashew reject kernel before being milled and added to other feed ingredients for complete ration formulation.

Experimental animal, management and design

Forty 8-week-old weaned pigs (Large white x Landrace) were dewormed, vaccinated and acclimatized for one week prior to the start of the experiment. The pigs were distributed into four groups with ten replicates each in a completely randomized design with each pig as a replicate. The pigs were offered feed and fresh water without restriction throughout the feeding trial. The experiment lasted for 84 days.

Experimental diet

Four diets were constituted to contain 0%, 5%, 10%, and 15% reject cashew kernel meal (RCKM) designated as diet 1, 2, 3, and 4 respectively. The metabolizable energy of the diets ranges from 2732.14 to 2902.44 kcal/kg while the diets were isonitrogenous with 19% crude protein (Table 1).

Table 1. Composition of the experimental diet

Ingredients (%)	DIET 1	DIET 2	DIET 3	DIET 4
Maize	21.00	18.00	12.00	2.00
Soya bean meal	1.00	4.00	7.50	10.00
Groundnut cake	15.00	10.00	5.00	0.00
RCKM	0.00	5.00	10.00	15.00
Corn bran	11.50	11.50	14.00	21.00
#Fixed ingredients	51.50	51.50	51.50	51.50
Total	100.00	100.00	100.00	100.00
Calculated Nutrients				
M. Energy (kcal/kg)	2732.14	2829.21	2891.76	2902.44
Crude Protein	19.58	19.54	19.69	19.72
Ether Extract	5.09	6.17	8.42	10.02
Crude Fibre	8.26	8.64	8.22	8.59

#Fixed ingredients = Palm kernel cake-50.00%, limestone-1.00%, premix-0.25% and salt-0.25%, M. = Metabolizable.

Data collection

Growth performance

Each pig was individually weighed at the commencement of the experiment and subsequently, on weekly basis throughout the experimental duration. The final weight gain of the pigs was also taken at the end of the experiment for the determination of weight gain as the differentials. Moreover, the total feed intake of pigs fed experimental diets was estimated using the difference in feed supply and the leftover feed. The feed conversion ratio was estimated by dividing the total feed intake by the total weight gain (Ojediran et al., 2017).

Economic indices

The economic indices (feed cost, feed cost/kg weight gain (/kgWG), income/kgWG, profit/kgWG and economic efficiency of growth) were calculated by adopting the methods described by Ojediran et al. (2017).

Blood profile

Four (4) pigs of median weight per treatment group were chosen at the end of the study for blood collection. 5ml of blood samples for hematological examination were drawn into labelled EDTA bottles for subsequent analysis of the following haematological parameters: packed cell volume, haemoglobin concentration, erythrocyte count, leukocyte count, mean corpuscular haemoglobin, and mean corpuscular haemoglobin concentration. An additional set of blood samples were also collected into a plain bottle for the following serum biochemical analysis: alanine transaminases (ALT), aspartate amino transaminase (AST) and alanine phosphate (ALP), total protein, albumin, globulin, cholesterol, triglyceride, high-density lipoproteins, low-density lipoproteins, urea, creatinine, and glucose. Blood samples were analysed by adopting the methods described by Ojediran et al. (2021).

Organ Weight

Pigs used for blood collection were slaughtered and analyzed. Prior to slaughtering the pigs, they were weighed and fasted for 12 hours, weighted, and stunned mechanically to subject them to a state of unconsciousness, to facilitate easy slaughtering, and complete bleeding. After slaughtering, a dissection was done on each animal's abdomen to bring out the Gastrointestinal Tract (GIT) and the internal organs. The GIT and the following organs were weighed using a sensitive scale spleen, kidney, liver, pancreas, lungs, heart, whole, and empty stomach. The weights are expressed as a percentage of the fasted weight.

Statistical analysis

Data collected were subjected to a one-way ANOVA using SAS (2003). Significant means were separated by Duncan`s multiple-range test of the same statistical package.

Results

Growth response of pigs fed diets containing rejected cashew kernel meal (RCKM) is shown in Table 2. Feed intake parameters both final and average differ significantly ($P<0.05$) while other parameters such as final weight, total weight change, and feed:gain ratio were not affected ($P>0.05$).

Pigs given diet 2 consumed more ($P<0.05$) feed than those offered other diets with depressed intake as level of RCKM increased in diets 3 and 4.

Table 2. Growth performance of pigs fed rejected cashew kernel meal

Parameters (kg/p)	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P-Value
Initial weight	8.76	8.60	8.68	8.64	0.33	0.99
Final weight	42.84	46.80	46.20	43.06	1.41	0.69
Total weight gain	34.08	38.20	37.52	34.42	1.14	0.49
Average daily weight gain (/d)	0.41	0.46	0.45	0.41	0.01	0.46
Total feed intake	106.59[c]	121.98[a]	114.12[b]	101.59[d]	1.77	0.00
Average daily feed intake (/d)	1.27[c]	1.45[a]	1.36[b]	1.21[d]	0.02	0.00
Feed:gain ratio	3.26	3.21	3.05	3.01	0.10	0.81

[a b c] Means within rows for different groups with different superscripts differ (P < 0.05)
Diet 1: 0% rejected cashew kernel meal; Diet 2: 5% rejected cashew kernel meal; Diet 3: 10% rejected cashew kernel meal; Diet 4: 15% rejected cashew kernel meal; SEM: Standard error of means

Table 3 revealed the economic indices of pigs fed rejected cashew kernel meal (RCKM). All the parameters were affected (P<0.05). The feed cost for the control diet was significantly higher than the feed cost for the treatment diets: there was a linear feed cost reduction as the inclusion level of RCKM increased. Consequently, feed cost/kg weight gain followed the same trend as the feed cost. Furthermore, pigs given diet 1 had the highest income/kg weight while the lowest was observed in pigs offered diet containing 5% RCKM (2) while others compared favorably. Furthermore, a similar trend was observed in profit/kg weight gain, and economic efficiency of gain as the lowest values for these parameters were observed in pigs presented the diet 1, while there was an increase in the values of these parameters as the inclusion levels of RCKM increased.

Table 3. Economic indices of pigs fed rejected cashew kernel meal (RCKM)

Parameters	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P-Value
Feed cost (kg)	74.28[a]	69.19[b]	64.34[c]	57.85[d]	1.55	0.00
Feed cost/kg weight gain	240.80[a]	221.83[ab]	196.24[bc]	173.65[c]	8.46	0.04
Income/kg weight gain	755.53[a]	734.49[b]	738.77[ab]	749.62[ab]	3.51	0.01
Profit/kg weight gain	514.52[b]	512.66[b]	542.52[ab]	575.96[a]	9.02	0.03
EEG	223.37[b]	232.36[b]	277.31[ab]	339.34[a]	14.24	0.01

[a b c] Means within rows for different groups with different superscripts differ (P < 0.05)
Diet 1: 0% rejected cashew kernel meal; Diet 2: 5% rejected cashew kernel meal; Diet 3: 10% rejected cashew kernel meal; Diet 4: 15% rejected cashew kernel meal; SEM: Standard error of means; EEG= Economic efficiency of gain

The hematological parameters of pigs fed rejected cashew kernel meal (RCKM) are shown in Table 4. All the parameters were significant (P<0.05) across the treatment groups except for hemoglobin concentration. The white blood cell and lymphocyte count in pigs fed diet containing 10% RCKM (3) was higher than what was observed in diet 1. Similar red blood cell count was noted in pigs given 0% and 5% RCKM, however, the red blood cell count reduced significantly ($P < 0.05$) as levels of RCKM increased. Moreover, significantly ($P <0.05$) higher PCV of 33.60% was recorded in pigs fed 5% RCKM compared to 28.90% recorded in those offered 0% RCKM, while the lowest PCV values of 25.60% and 21.65% were recorded in pigs fed 10% and 15% RCKM respectively. Mean Corpuscular Volume (MCV) values from pigs fed 5% and 15% RCKM were similar, these values however differ ($P < 0.05$) significantly from the MCV recorded in pigs offered 0% and diet containing 10% RCKM. Furthermore, similar values of 28.75 pg and 28.40 pg were recorded for Mean Corpuscular Haemoglobin (MCH) in pigs fed diets containing 10% and 15% RCKM respectively, these values were higher ($P < 0.05$) than values of 21.00 pg and 23.00 pg which were reported in pigs given 0% and diet containing 5% RCKM respectively. The Mean Corpuscular Haemoglobin Concentration (MCHC) in pigs fed diet containing 10% RCKM was higher ($P < 0.05$) than the similar MCHC values recorded in pigs fed the control diet and diet containing 15% RCKM, while the lowest MCHC value was recorded in pigs fed diet containing 5% RCKM. Values recorded for platelets were significantly ($P < 0.05$) higher in animals offered the RCKM diets compared to the value recorded for pigs fed the control diet.

Table 4. Haematological parameters of pigs fed Rejected cashew kernel meal (RCKM)

Parameters	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P-Value
White blood cell (10^3ul)	10.25^{b}	15.05^{ab}	25.45^{a}	11.95^{b}	2.39	0.04
Red blood cell (10^6ul)	3.02^{a}	3.02^{a}	2.46^{ab}	1.88^{b}	0.18	0.04
Haemoglobin (g/dl)	6.35	6.95	7.05	5.30	0.31	0.18
PCV (%)	28.90^{ab}	33.60^{a}	25.60^{b}	21.65^{b}	1.64	0.03
MCV (fl)	96.45^{b}	111.25^{a}	106.00^{ab}	115.30^{a}	2.57	0.01
MCH (Pg)	21.00^{b}	23.00^{b}	28.75^{a}	28.40^{a}	1.06	0.00
MCHC (Pg)	21.80^{ab}	20.95^{b}	27.35^{a}	24.70^{ab}	0.89	0.01
Platelet (10^4ul)	1267.0^{b}	1577.0^{ab}	2002.0^{a}	1522.0^{ab}	1.78	0.01
Lymphocyte (%)	9.70^{b}	17.70^{ab}	24.75^{a}	11.40^{b}	2.34	0.02

$^{a\ b\ c}$ Means within rows for different groups with different superscripts differ ($P < 0.05$)
Diet 1: 0% rejected cashew kernel meal; Diet 2: 5% rejected cashew kernel meal; Diet 3: 10% rejected cashew kernel meal; Diet 4: 15% rejected cashew kernel meal; PCV = Packed cell volume; MCV = Mean corpuscular volume; MCH = Mean corpuscular haemoglobin; MCHC = Mean corpuscular haemoglobin concentration; SEM: Standard error of means.

The serum biochemical parameters of pigs fed rejected cashew kernel meal (RCKM) are presented in Table 5. Alanine aminotransferase (ALT) was significantly influenced (P<0.05) by the dietary treatment, pigs fed diet 3 had the highest ALT value of 52.53 IU/L compared to 49.98IU/L that was observed in pigs given diet 1, while significantly lower (P<0.05) ALT values of 46.77IU/L and 41.68IU/L were recorded in pigs fed with diets containing 5% and 15% RCKM respectively. Moreover, the level of Alkaline phosphatase (ALP) was significantly higher (P<0.05) in pigs offered diet 1. A slight reduction in the ALP level was observed in those offered diets 2 and 4, and the lowest ALP level was recorded in pigs fed diets 3.

Significantly higher cholesterol values of 160.87mg/dl and 143.48mg/dl (P<0.05) were recorded in pigs fed diet 3 (10% RCKM) and the control diet (0% RCKM) respectively, while the lowest cholesterol level was observed in pigs offered with diet with 15% RCKM. The highest level of low-density lipoprotein (LDL) was recorded in pigs given diet 3 while the lowest LDL was recorded in pigs offered diet 4. Pigs fed diets 2 and 3 had the highest values (P<0.05) of glucose while the least glucose was in pigs offered diet 4.

Table 5. Serum biochemistry parameters of pigs fed rejected cashew kernel meal (RCKM)

Parameter	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P-Value
ALT (IU/L)	49.98^{ab}	46.77^{b}	52.53^{a}	41.68^{c}	1.34	0.00
AST (IU/L)	117.11	111.05	120.79	118.42	2.95	0.74
ALP (IU/L)	48.77^{a}	45.65^{ab}	33.25^{b}	42.66^{ab}	2.56	0.04
Total Protein (g/dl)	5.39	5..33	6.97	4.78	0.20	0.19
Albumin (g/dl)	2.26	2.52	2.70	2.33	0.74	0.14
Globulin (g/dl)	3.12	2.81	3.28	2.45	0.15	0.21
Cholesterol (mg/dl)	143.48^{a}	123.05^{ab}	160.87^{a}	96.52^{b}	8.91	0.03
Triacylglycerol (mg/dl)	43.73	38.63	43.23	43.03	1.92	0.26
LDL (mg/dl)	97.74^{ab}	84.41^{ab}	117.64^{a}	62.49^{b}	7.87	0.04
HDL (mg/dl)	10.22	5.29	4.38	8.76	1.02	0.12
Urea (mg/dl)	4.61	5.11	5,68	4.71	0.19	0.15
Creatinine (mg/dl)	1.10	1.35	1.27	1.02	0.11	0.73
Glucose (mg/dl)	95.38^{ab}	112.57^{a}	107.36^{a}	84.50^{b}	4.36	0.04

$^{a\,b\,c}$ Means within rows for different groups with different superscripts differ (P < 0.05)
Diet 1: 0% rejected cashew kernel meal; Diet 2: 5% rejected cashew kernel meal; Diet 3: 10% rejected cashew kernel meal; Diet 4: 15% rejected cashew kernel meal; ALT = Alanine aminotransferase; AST = Aspartate aminotransferase; ALP = Alkaline phosphatase; HDL = High-Density Lipoprotein; LDL = Low-Density Lipoprotein; VLDL = Very Low-Density Lipoprotein. SEM: Standard error of means

Table 6 shows the organ weight of pigs offered rejected cashew kernel meal. Heart was significantly affected (P<0.05). Pigs offered diet 4 had the highest weight, while pigs fed the control diet (diet 1), diets 2, and 3 had a statistically similar weight of the heart, significantly lower (P<0.05) than the value recorded for pigs fed diet 4.

Table 6. Organ weight of grower pigs fed rejected cashew kernel meal

Parameters (%)	Diet 1	Diet 2	Diet 3	Diet 4	SEM	P-value
Spleen	0.14	0.14	0.13	0.14	0.01	0.86
Kidney	0.32	0.37	0.41	0.42	0.02	0.25
Liver	2.33	2.48	2.92	2.75	0.11	0.25
Whole stomach	3.52	2.86	2.85	3.12	0.13	0.22
Empty stomach	0.98	0. 87	0.88	0.82	0.03	0.39
Lungs	0.68	0.72	0.69	0.77	0.02	0.52
Heart	0.39^{b}	0.41^{b}	0.40^{b}	0.55^{a}	0.02	0.01

$^{a\ b\ c}$ Means within rows for different groups with different superscripts differ (P < 0.05)
Diet 1: 0% rejected cashew kernel meal; Diet 2: 5% rejected cashew kernel meal; Diet 3: 10% rejected cashew kernel meal; Diet 4: 15% rejected cashew kernel meal; SEM: Standard error of means

Discussion

This study revealed noteworthy implications for the growth performance of growing pigs when rejected cashew kernel meal was introduced into their diets. Notably, the weight gain (ADG) and feed:gain (FCR), do not vary significantly unlike the feed intake in response to the dietary treatments. This was consistent with the findings of Fanimo et al. (2004) and Oddoye et al. (2011) that reported feeding cashew nut meal to weaner pigs had no significant effect on ADG and FCR. Although, Fanimo et al. (2004) reported a reduction in feed intake in response to the increasing dietary inclusion of cashew nut meal in weaner pigs, while Oddoye et al. (2011) reported similar feed intake in pigs fed cashew kernel meal-based diets and those fed the control diet. It is worthy of note that the elevated feed intake recorded in pigs given diet containing 5% rejected cashew kernel meal (RCKM) may be due to the level of ether extract in RCKM (Ojediran et al., 2021). Consequently, 5% inclusion of RCKM in pig’s diet resulted in a moderate level of lipids in the diet which can improve palatability thereby, increasing feed consumption (Kerr et al., 2015). However, high dietary inclusion levels of lipids can result in depressed feed intake (Lin et al., 2013) as seen in pigs fed with diets containing 10 and 15% RCKM respectively.

Economic analysis is a critical factor in evaluating the cost-effectiveness of RCKM inclusion in growing pig diets. From the result of this study, dietary inclusion of RCKM resulted in a concomitant reduction in feed cost. Consequently, this also resulted in reduction in cost per body gain. This findings coincide with that of Nwakpu et al. (1999), Dritz (2012) and Rauw et al. (2020) that the inclusion of alternative feed resources in swine ration significantly reduces feeding cost in swine production, thereby resulting in huge financial returns. Moreover, the initial reduction in income and profit observed in diet 2, and the subsequent increase in these parameters gave credence to the results of Ojediran et al. (2021) who observed similar trend in income per kilogram weight gain and profit per kilogram weight gain of weaned pigs fed with cashew kernel reject meal. Furthermore, the economic efficiency of gain also increase significantly as the level of RCKM increased in the diet, indicating that dietary inclusion of RCKM in swine ration resulted in improved economic efficiency in line with the finding of Akande et al. (2015) who reported improve production efficiency in laying chickens. The use of alternative feedstuffs with reduced cost and economic gain has been reported (Ojediran et al., 2019).

WBC count obtained from this study ranges between 10.25 * 10^3ul – 25.25 * 10^3ul, while the lymphocyte level was between 9.70% and 24.75%: these values were within the established reference range for healthy pigs (Semiadi et al., 2009; RAR, 2009; Merck, 2023a). This is an indication that the experimental diet did not compromise the immune system of the experimental animals and the animals are immune competent to ward off any disease-causing pathogens they may come in contact with. Moreover, the red blood cell count and heamoglobin concentration recorded in this study falls within the reference range reported for healthy domestic pig by past researchers (Mitruka and Rawnsley, 1977; Etim et al., 2014; Rothwell et al., 2009). This signifies that the experimental diet is rich in essential minerals required in the synthesis of these vital haematological parameters. Furthermore, the PCV, MCV, and MCH were well synthesized in the experimental animal as reflected in the assay of these parameters from this study. This suggests that the experimental animals were not anaemic and that nutrients, oxygen and carbon dioxide were sufficiently circulated throughout the system of the pigs.

Alanine amino transaminase ALT), Aspartate transferase and Alkaline phosphatase (ALP) are liver enzymes that serve as markers used in the determination of liver function. These enzymes are produced by the liver and released into the bloodstream in the event of liver damage or inflammation. (Center, 2007; Derosa and Maffioli, 2017). The level of these liver enzymes recorded in this study were within the reference range for healthy domestic pigs (Okoro et al., 2020; Merck, 2023b). This finding is an indication that feeding rejected cashew kernel meal did not trigger hepatotoxicity in the experimental animals. Moreover, total protein, albumin, and globulin levels which were not influenced by the dietary treatments in the current study imply that RCKM has a rich amino acid profile that supports optimal protein metabolism and tissue regeneration in the experimental animals (Busher, 1990; Meyer and Harvey, 2004). Triacylglycerol level in this study was not affected by including RCKM in swine ration, this is an indication that the energy in the experimental diet is well balanced thereby resulting in effective energy metabolism in growing pigs (Jensen et al,. 1989). Moreover, the level of serum low-density lipoprotein and high-density lipoprotein from this study is statistically similar across all the treatment groups suggesting optimal lipid metabolism in the test animals, also the test animals are not at risk of cardiovascular disease (Cox et al., 1990).

Organ weight is a valuable parameter that provides insights into the physiological status, growth, development, health, and nutritional efficiency of animals (Li et al., 2021). The relative organs weight obtained from pigs fed with RCKM-based diets and those fed with the control diet are similar and the values were within the range given for normal healthy grower pigs (Amaefule et al., 2020; Elefson et al., 2021). This is an indication that the dietary inclusion of RCKM did not trigger any deleterious physiological response in the experimental animals.

Conclusions

Rejected cashew kernel meal can be included in pigs' diets up to 15% without any deleterious effect on growth performance, blood profile, and organ weight. Also including RCKM in pig's diet up to 15% resulted in the improved economic efficiency of production.

Porast, ekonomski indeksi, profil krvi i težina organa svinja koje su od odbijanja do faze rasta hranjene obrokom sa odbačenim jezgrom indijskog oraha

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Rezime

Ispitivani su porast, ekonomski indeksi, profil krvi i težina organa svinja (jorkšir x landras, n=40, prosečna početna težina = 8,67±0,3 kg) hranjenih brašnom odbačenog zrna indijskog oraha od faze odbijanja do faze rasta. Oni su nasumično raspoređeni u četiri grupe označene kao obrok 1, 2, 3 i 4 koje sadrže 0%, 5%, 10% i 15% odbačenog jezgra indijskog oraha, respektivno, u potpuno randomizovanom dizajnu tokom osamdeset četiri dana. Unos hrane se značajno razlikovao ($P<0,05$) između grupa. Svinje kojima je ponuđeno 5% brašna odbačenog jezgra indijskog oraha imale su najveći unos hrane sa opadajućim trendom u odnosu na sve grupe koje su dobijale obrok odbačenog jezgra indijskog oraha. Ekonomski indeksi su bili značajni između grupa ($P<0,05$). Eksperimentalna ishrana je značajno uticala na težinu srca ($P<0,05$). Svinje hranjene sa 15% RCKM imale su značajno veću ($P<0,05$) težinu srca u poređenju sa onima hranjenim drugim obrocima ($P<0,05$). Iz rezultata ovog istraživanja, može se zaključiti da uključivanje RCKM u ishranu do 15% nije izazvalo nikakve štetne efekte kod svinja u smislu performansi rasta, krvnog profila, smanjene cene hrane, povećanog profita i ekonomičnosti rasta. RCKM su svinje dobro tolerisale bez štetnih fizioloških efekata, podržavao je optimalan rast, zdravlje i dobrobit svinja od odbijanja do faze rasta.

Ključne reči: performanse, cena, hematologija, biohemija seruma, organi

Conflict of interest
The authors declare that they have no conflict of interest.

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