Short communication

GROWTH PERFORMANCE AND SERUM BIOCHEMICAL PROFILE OF CROSSBRED (LWY X DESI) ENTIRE MALE PIGS FED SHEANUT CAKE DIETS

D.Sudeesh[1], J.Suresh[2], A.Ravi[3], S.Sreedhar[4] and J.V.Ramana[5]

Department of Livestock Production and Management,
College of Veterinary Science, Tirupati

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ABSTRACT

The study was undertaken on 24 crossbred pigs to study the effect of different levels of sheanut cake (SNC) by replacing deoiled rice bran (DORB) (T1-0%, T2-50%, T3-75% and T4-100%) on growth performance and serum biochemical profile of crossbred (Large White Yorkshire X Desi) entire male pigs. There was a significant (P<0.01) increase in the number of days to reach the target weight, average daily gain, feed consumed per day and feed consumed per kg weight gain increased gradually as the level of SNC increased in the diets. The SGOT, SGPT and serum total protein levels were within the normal range while the total cholesterol levels were less than the normal range in pigs fed on diets containing 75% and 100% replaced DORB with sheanut cake and the values were 32.70 , 30.59 g/dl. The study showed that feeding of sheanut cake did not have any effect on the serum levels of SGOT, SGPT, total protein levels but the total cholesterol level will be less than the normal level.

Key words :

MATERIALS AND METHOD

The study was conducted at AICRP on pigs, Tirupati with 24 crossbred male pigs of body weight 15 kg and randomly divided into 4 groups with 6 pigs in each group. The pigs were fed on control ration (T1) containing maize, soyabean, DORB, mineral mixture and salt; while in rations T2 to T4 sheanut cake was incorporated to partly replace DORB and minor adjustments were made in other ingredients to make the rations isonitrogenous . Pigs were fed on grower ration upto 35 kg body weight which contains 18 per cent CP and afterwards shifted to finisher ration which contains 18 per cent CP. Pigs were housed in individual pens and weighed at fortnightly intervals. Two pigs from each group were slaughtered at a target body weight of about 70 kg.

1. Corresponding author Email : urssudeesh@gmail.com

Serum biochemical profile was estimated using biochemical analyzer. The data were subjected to one way ANOVA using SPSS, 2010 trial version.

RESULTS AND DISCUSSION

The overall performance (Table 2) i.e., from 15-70 kg revealed no significant differences in the initial and final body weights and in the body weight gain among treatments. The pigs fed on T-3 or T-4 had taken significantly (P<0.01)more number of days to attain the slaughter weight than those fed on T-1 or T-2 while there was no difference in T-1 or T-2 fed pigs. The ADG of T-4 ration fed pigs was significantly (P<0.01) lower as compared to T-1. The ADG was significantly lower (P<0.01) in pigs fed T-2 to T-4 i.e., rations containing SNC than those fed control ration (T-1) and it might be due to the saponin content in SNC. In the present study, SNC contained 0.33% saponins. Similar to these observations, earlier reports of Ishaaya and Birk (1965) and Livingston *et al.,* (1977), also reported poor growth rate due to saponin content in the feed of pigs. The decreased ADG led to the increased number of days to reach the slaughter weight of 70 kg body weight. The ADG was lowed by 48, 97 and 159 gm in pigs fed on T-2, T-3 or T-4 than those fed T-1, respectively. The average daily feed intake was significantly higher in T-2 or T-3 fed pigs than those fed T-1 or T-4. The feed intake decreased as the inclusion level of sheanut cake increased to 30 percent. The feed/kg gain was significantly higher (P<0.01) in pigs fed rations containing SNC i.e., T-2 to T-4 from those fed T-1 and the values were higher by 1.11, 2.17 and 2.95 in T-2 to T-4 fed pigs than those fed T-1.

The SGOT in serum of pigs fed different rations was within normal range and the values were 47.60, 41.55, 30.31 and 25.87 U/l for pigs fed T-1 to T-4 respectively. SGOT levels were highest (P<0.01) in T-1 fed pigs and were lowest in T-4 fed pigs. There was no significant difference between T-1 or T-2 fed pigs but these values were significantly higher (P<0.01) than in T-3 or T-4 ration fed pigs. There was no significant difference between T-3 and T-4 ration fed pigs.

The SGPT values of pigs fed different rations were within the normal range except in T-4 fed pigs and the values were 62.19, 44.82, 21.33 and 17.17 U/l in pigs fed T-1 to T-4, respectively. The SGPT values of pigs fed T-3 or T-4 were comparable but were significantly lower (P<0.01) in T-1 or T-2 fed pigs.

The SGOT, SGPT values were reduced (P<0.01) in T-3 or T-4 than in T-1 or T-2 fed pigs. However, in all treatments the SGOT values were within the normal range. SGPT value of T-4 ration fed pigs was less than the normal value which indicated that there was effect of SNC on the liver function.

The serum protein values were 8.31, 8.30, 7.93 and 7.86 mg/dl for pigs fed T-1 to T-4, rations respectively. The serum protein levels were also in normal range and there was no significant difference between treatments though the values decrease linearly from T-1 to T-4 rations fed pigs. This was not in agreement with the findings of Olorede and Longe (1999), Elemo *et al.,* (2011) who reported that the total protein levels in serum reduces with the inclusion of SNC.

Table 1: Ingredient composition (%) of grower rations

Constituents	Growers				Finishers			
	T-1	T-2	T-3	T-4	T-1	T-2	T-3	T-4
Maize	45.5	45	45	45	54	50	48	45
Soya bean meal	25.5	24	24	22.5	20	18.5	17.5	16
Deoiled rice bran	26.5	14.5	7.5	0	23.5	15	11	6.5
Sheanut cake	0	14	21	30	0	14	21	30
Salt	0.5							
Mineral Mixture	2							
Lysine	0.2	0.34	0.27	0.31	0.14	0.18	0.2	0.25
Meriplex (gm/ 100 kg)	25							
Hyblend (gm/100 kg)	25							
Cost of ration Rs./ Kg.	16.70	16.00	15.70	15.20	16.40	15.50	15.00	14.32

Each gm of Meriplex contains Vit B_1-8 mg, Vit B_6-16 mg, Vit B_{12}- 80mcg, Vit $_{E50}$- 80 mcg, Niacin-120 mg, Calcium D pantothenate- 80 mg, calcium-88 mg and carriers-q.s.

Each gm of Hyblend AB_2D_3K contains Vit A- 82,500 I.U, Vit B2-50 mg, Vit D3- 12,000 I.U, Menaphthone sodium bisulphate (Vit K) -10 mg.

Table 2 : Overall growth performance of pigs fed different experimental rations

Characteristics	T-1	T-2	T-3	T-4
Number of pigs	6	6	6	6
Initial body wt (kg)	15.08±0.28	15.46±0.10	15.22±0.34	15.62±0.09
Final body wt (kg)	70.68±0.29	70.57±0.27	70.57±0.20	70.01±0.12
Weight gain (kg)	55.6±0.53	55.10±0.31	55.35±0.341	54.39±0.14
No. of days**	149±8.86^{c}	167±3.85^{c}	97±4.78^{b}	248±5.75^{a}
Daily gain (g/d)**	379.63±23.31^{a}	331.19±7.88^{b}	282.52±7.09^{c}	220.37±5.29^{d}
Feed consumption (kg/d)**	1.29±0.06^{b}	1.54±0.03^{a}	1.60±0.04^{a}	1.42±0.06^{b}
Feed / kg gain**	3.50±0.30^{d}	4.67±0.12^{c}	5.67±0.11^{b}	6.45±0.27^{a}
Cost of feed/kg wt gain**	57.81±4.99^{c}	73.15±1.97^{b}	86.47±1.69^{a}	94.11±3.83^{a}

^{abcd} Values in a row not sharing common superscripts differ significantly ** P(<0.01)

The total cholesterol in serum was within normal range in pigs fed T-1 or T-2 but less than the normal in T-3 or T-4 fed pigs and there was significant (P<0.01) difference among the groups and the values were 48.68, 40.97, 32.70 and 30.59 g/dl in T-1 to T-4 fed pigs respectively. Total cholesterol level in pigs fed T-1 was significantly higher (P<0.01) than in T-2 fed pigs. The values for pigs fed T-2 ration fed pigs were significantly higher (P<0.01) than T-3 or T-4 rations. There was no significant difference between T-3 and T-4 rations. The decrease in total cholesterol levels than the normal level in case of T-3 and T-4 ration fed pigs might be attributed to the saponins (Malinow *et al.,*1977) and the hypocholesteromic condition in these two ration fed pigs was similar with the findings of Atuahene *et al.,* (1998), Olorede and Longe (1999).

CONCLUSION

It was concluded that the growth performance of pigs decrease as the level of sheanut cake increases in the diet and that sheanut cake did not have any adverse effect on the serum levels of SGOT, SGPT and total protein but the total serum cholesterol level was less than the normal levels.

REFERENCES

Atuahene, C. C.; Donkoh, A.; Asante, F. 1998.Value of sheanut cake as a dietary ingredient for broiler chickens. Animal Feed Science and Technology; **72**: 1/2, 133-142. 36 .

Elemo GN, Oladimeji O, Elemo BO and Ol Erukainure 2011. Biochemical characteristics of rats fed on sheanuts (*Butyrospermum parkii*) meal. J.Basic.Appl.Sci.Res.,**1**(3)124-130,2011

Ishaaya I and Birk Y 1965. Soyabean saponins:IV. The effect of proteins on the inhibitory activity of soyabean saponins on certain enzymes . J. Food Science: **30**: 118-120.

Livingston , A.L., Whitehand, L.C and Kohler , G.O 1977. Microbiological assay for saponin in alfalfa products. J.Assoc.off.Anal. Chem ., **60**:957-960.

Malinow M.R, McLaughlin P, Papworth L, Stafford C, Kohler G.O, Livingston A.L, Cheeke P.R 1977b. Effect of alfalfa saponins on intestinal cholesterol absorption in rats. Am.J.Clin.Nutr. **30**:2061-2067.

Olorede BR and Longe OG 1999. Growth, nutrient retention , hematology and serum chemistry of pullet chicks fed Sheanut cake in the humid tropics. Applied Arch, Zootech . **49**: 441-444.