

EFFECT OF DIETARY INCORPORATION OF COOKED BARLEY WASTE AND SPENT GRAPES ON LITTER PERFORMANCE IN LARGE WHITE YORKSHIRE SOWS

Sachin Tripura^{1*}, K. Shyama², K. Ally³, K.S. Ajith⁴ and A.P. Usha⁵

¹⁻⁴Department of Animal Nutrition, ⁵Centre for Pig Production and Research, College of Veterinary and Animal Sciences, Mannuthy, Thrissur, Kerala - 680 651

*Corresponding author: sachin21227@gmail.com

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ABSTRACT

An experiment was conducted to study the effect of dietary incorporation of cooked barley waste and spent grapes as energy source in Large White Yorkshire (LWY) sows. Fifteen LWY pregnant sows which were three weeks prior to their expected date of farrowing, were selected for this study and they were divided into three groups of five each and randomly allotted to three dietary treatments. T1 (18 per cent CP and 3265 Kcal/kg ME), T2 (25 per cent maize in control ration replaced with cooked barley waste), T3 (25 per cent maize in control ration replaced with spent grapes). Data on litter size at birth, litter weight at birth, litter size at weaning and litter weight at weaning were recorded from animals belonging to the three dietary treatment groups. From the results, it could be observed that there was no significant difference among T1, T2 and T3 in litter size (11.20, 10.60 and 9.60, respectively), average litter weight at birth (1.35, 1.45 and 1.46 kg, respectively), average litter size at weaning (7.00, 9.00 and 8.80, respectively), average litter weight at weaning (8.87, 8.25 and 8.88 kg, respectively) and average

daily gain (179.13, 161.92 and 176.66, respectively).

Keywords: Cooked barley waste, spent grapes, weaning, litter weight, litter size

INTRODUCTION

Pig production has a high potential to contribute to high economic gain among all domesticated species of animals due to its low investment for farming, quick returns, higher fecundity, better feed conversion efficiency, early maturity, short generation interval and relatively small space requirement. Feed cost comprises about 75 per cent of the variable costs of pig production. The lower availability and increasing price of maize, necessitate an alternative energy source for incorporation in the swine feed. Alternate ingredients such as cooked barley waste and spent grapes are available in plenty as byproducts of ayurvedic pharmaceuticals in Kerala. Hence this study was aimed at evaluating the litter performance by incorporation of cooked barley waste and spent grapes in diets of Large White Yorkshire (LWY) sows.

MATERIALS AND METHODS

Fifteen LWY pregnant sows belonging to Centre for Pig Production and Research, Mannuthy which were three weeks prior to their expected date of farrowing, were used as experimental animals. The sows were divided into three groups of five each and randomly allotted to three dietary treatments. All sows were maintained under uniform farm management conditions throughout the experimental period of 63 days. The sows were randomly allotted to three dietary treatments as follows, T1 (18 per cent CP and 3265 Kcal/kg ME as per NRC, 2012), T2 (ration containing cooked barley waste; replacing 25 per cent maize in control ration) and T3 (ration containing spent grapes; replacing 25 per cent maize in control ration). Data regarding the ingredient composition of experimental rations are presented in Table 1. Data on litter size at birth, litter weight at birth, fortnightly body weight of piglets, litter size at weaning and weight at weaning were recorded throughout the experimental period. Data collected on various parameters were statistically analysed by Analysis of Variance (ANOVA) method as described by Snedecor and Cochran (1994). Means were compared by Duncan Multiple Range Test (DMRT) using Statistical Product and Service Solutions (SPSS) software (Version 24).

Table 1. Ingredient composition of experimental rations

Ingredients, %	Treatments		
	T1	T2	T3
Yellow maize	71	55.5	55
Soya bean meal	27	24	28
Cooked barley waste	-	18.5	-

Spent grapes	-	-	15
Salt	0.5	0.5	0.5
Mineral mixture	1.5	1.5	1.5
Total	100	100	100
To the above mixture following ingredient was added			
Calcite (gm)	1.6	1.6	1.6

RESULTS AND DISCUSSION

Data regarding the litter size and litter weight at birth, litter size at birth and litter size at weaning, average daily gain (ADG) of piglets of sows given with the three experimental rations T1, T2 and T3 are presented in Table 2. The average litter weight at birth was 1.35, 1.45 and 1.46 kg and litter weight at weaning was 8.87, 8.25 and 8.88 kg, for the piglets of sows in T1, T2 and T3, respectively and there was no significant difference among the treatments. Contrary to this study, Maupertuis *et al.* (2017) reported that the proportion of total piglets born heavier at birth (> 1250 g) was higher (60 vs. 50 per cent) for sows receiving 10 per cent grape pulp supplementation than the control diet. They also reported that the litter weight at weaning was heavier (105.6 vs. 93 kg) for sows fed with grape pulp diet than the control diet.

The average litter size at birth was 11.20, 10.60 and 9.60 and the litter size at weaning was 7.00, 9.00, and 8.80 in the sows fed with three rations viz., T1, T2 and T3, respectively and there was no significant difference among them.

The average daily gain of piglets of sows belonging to T1, T2 and T3 did not have significant difference (179.13, 161.92 and 176.66, respectively). In contrary to

this result Nasir *et al.* (2015) reported that piglets fed with low quality barley ration had greater ADG than those fed with wheat based ration (ADG: 430 vs. 366 g/day) for the entire trial period of day one to 21 and Kafantaris *et al.* (2018) also reported that

ADG was increased by 22.79 per cent in the piglets fed with grape pomace ration compared to those fed with control ration during 20 to 35 days of trial period (237 vs. 193 g/day).

Table 2. Litter performance of sows maintained on three dietary treatments

Parameters	Treatments ¹			P value
	T1	T2	T3	
Litter size at birth	11.20±1.24	10.60±0.68	9.60±0.81	0.50 ^{ns}
Litter weight at birth, kg	1.35±0.09	1.45±0.17	1.46±0.07	0.74 ^{ns}
Litter size at weaning	7.00±0.84	9.00±0.32	8.80±0.73	0.11 ^{ns}
Litter weight at weaning, kg	8.87±0.28	8.25±0.09	8.88±0.90	0.66 ^{ns}
Average daily gain, g	179.13±5.00	161.92±5.39	176.66±19.86	0.57 ^{ns}

ns - non-significant at 5 per cent level

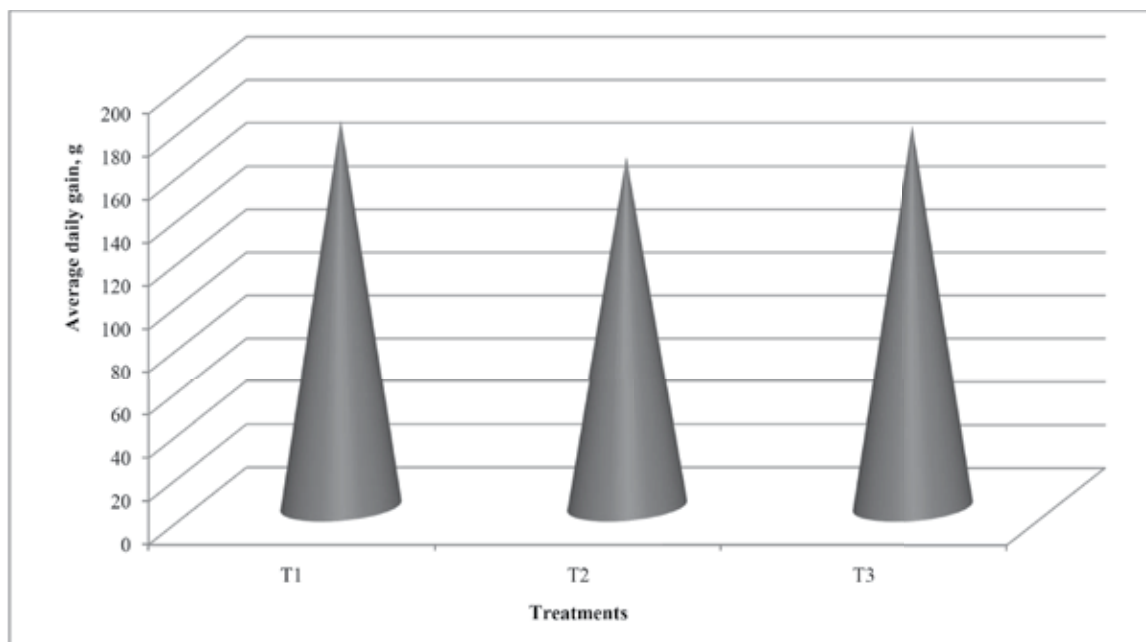


Fig. 1. Average daily gain of piglets maintained on the three experimental rations, g/day

SUMMARY

An evaluation of the results obtained in the current experiment indicates that sows fed with ration containing cooked barley waste and spent grapes showed similar

litter performance to those fed with control ration. The average daily gain of piglets of sows fed with cooked barley and spent grapes was also similar to those fed with control diet. Hence cooked barley and spent

grapes can be effectively incorporated as energy source by partial replacement of maize in the diet of LWY sows without affecting their performance.

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