

EFFECT OF GHEE RESIDUE INCLUSION ON SENSORY EVALUATION OF PORK OF LARGE WHITE YORKSHIRE PIGS

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ABSTRACT

Pig farming is increasing trend because of increasing protein demand to cater to the needs of the growing human population. Inclusion of unconventional feed will reduce the cost of production. Hence, ghee residue could be used as a potential alternate unconventional feed ingredient in pig rations which is a good source of energy, protein and minerals. The study has been designed to expose the effect of different inclusion levels *viz.*, 5%, 10% and 15% of ghee residue feeding on pigs carcass characteristics. The recorded values in pork meat for appearance, flavour, juiciness, tenderness and overall acceptability in the four treatment groups are 6.16, 6.27, 6.26 and 5.93; 6.40, 6.93, 7.60 and 6.80; 5.98, 6.00, 7.13 and 5.10; 6.20, 6.26, 6.56 and 5.38; 6.81, 6.78, 7.26 and 5.26, respectively. Thus inclusion of ghee residue in swine diets did not influence sensory parameters henceforth ghee residue could be safely used as feed ingredient for swine ration formulation.

Key words: Ghee residue, Sensory evaluation and Large White Yorkshire

INTRODUCTION

Swine production is in increasing trend due to the large litter size, increased weight gain with high feed conversion efficiency makes pig farming a profitable venture. Earlier, pigs were reared only by socio-economically poorer sections of society to get profit with low/no input, i.e. scavenging system of feeding with no intensive system of concentrate feeding. As per the 19th livestock census (2012), the total population of swine in India is 35,24,014. Tamil Nadu state possesses 1,83,983 heads of pigs and ranks 15th in India in pig population. Almost 28 per cent of country's total pig population

exists in North-Eastern region. India produces about 2.36 million tons of pig meat (pork). The per capita availability of meat in India is about 5.2 kg per annum in which pork share is 0.4 kg. During 2012-13, pork production in India was 0.45 million tons with an average meat yield of about 39 kg / animal, which is lower than the world average (79 kg/ animal). The share of pork is around 8 per cent of total meat production (DARE, 2014). There is a need for encouraging pig production because of increasing protein demand to cater to the needs of the growing human population which can be met only by supplying pork in addition to chicken, mutton, and beef. Pork products are most popular throughout the world in meeting global food requirements and nutritional adequacy (FAO, 2012). Ghee residue, the charred light to dark brown residue is a by-product of ghee industry and is obtained on the cloth strainer after the ghee is filtered and is available at cheaper cost. It is not only a good source of protein and energy, it is rich in source of minerals especially calcium and phosphorus. Ghee residue could be used as a potential alternate unconventional feed ingredient in pig rations. Ghee residue is available at a cheap cost throughout the year. However, studies on utilizing ghee residue as a feed ingredient in pigs are scanty. Hence, this study has been proposed to study the effect of ghee residue feeding on pigs and consumer acceptance of pork .

MATERIALS AND METHODS

The sensory evaluation of pork from the ghee residue fed pigs was conducted at the Post Graduate Research Institute in Animal Sciences, Kattupakkam. The study has been designed to expose the effect of different inclusion levels viz., 5%, 10% and 15% of ghee residue feeding on pigs and the pork acceptability by the consumer.

Sensory evaluation

The sample of loin eye muscle (8th to 10th rib level) was collected and stored at 0°C. The samples were thawed at room temperature (37 °C) and cut into 1.2 x 1.2 x 1.2 cm cubes. Finally the samples were cooked at 15 lb pressure for 20 minutes. The cooked samples were served to the taste panel members for assessing the tenderness, juiciness and flavour on a nine point hedonic scale scorecard (Ramaswamy *et al.*, 1992).

RESULTS

The sensory evaluation of meat samples among the various treatment groups observed by the taste panel is presented in Table 4. The recorded values for appearance, flavour, juiciness, tenderness and overall acceptability in the four treatment groups are 6.16, 6.27, 6.26 and 5.93; 6.40, 6.93, 7.60 and 6.80; 5.98, 6.00, 7.13 and 5.10; 6.20, 6.26, 6.56 and 5.38; 6.81, 6.78, 7.26 and 5.26, respectively. The results indicate that there is no statistical variation in appearance of meat in spite of adding ghee residue up to 15 per cent level in pig diets. However, the flavour, juiciness and overall acceptability in meat were statistically higher ($p < 0.05$) in 10 per cent ghee residue supplemented group than in the other groups. The tenderness of meat fed 15 per cent ghee residue diets in pigs is statistically lower ($p < 0.05$) than the other treatment groups. Comparative literature on sensory evaluation in pigs fed ghee residue is meagre. However, the results are in agreement with that of Elanchezhian *et al.* (2014) who supplemented animal fat at 5 per cent level and reported better score for flavour, juiciness, tenderness and overall acceptability in pigs.

Table 1: Sensory evaluation in Large White Yorkshire pigs fed control and experimental rations containing graded levels of ghee residue (Mean \pm SE)

Sensory parameters	Ghee Residue			
	0% (T1)	5% (T2)	10% (T3)	15% (T4)
Appearance ^{NS}	6.16 \pm 0.20	6.27 \pm 0.20	6.26 \pm 0.11	5.93 \pm 0.09
Flavour*	6.40 ^a \pm 0.17	6.93 ^a \pm 0.18	7.60 ^b \pm 0.13	6.80 ^a \pm 0.13
Juiciness*	5.98 ^b \pm 0.14	6.00 ^b \pm 0.13	7.13 ^c \pm 0.10	5.10 ^a \pm 0.10
Tenderness*	6.20 ^b \pm 0.14	6.26 ^b \pm 0.11	6.56 ^b \pm 0.12	5.38 ^a \pm 0.11
Over all acceptability*	6.81 ^b \pm 0.15	6.78 ^b \pm 0.16	7.26 ^c \pm 0.22	5.26 ^a \pm 0.10

Each value is a mean of fifteen observations

*Mean values bearing different superscripts in a row differ significantly ($p < 0.05$)

DISCUSSION

The recorded values for flavour, juiciness, tenderness and appearance in the present study were between 5.10 and 7.60 in Hedonic scale cutting across the treatment groups. Values higher than 5.00 in the 9.00 point Hedonic scale are considered to be of desirable feature. It could be inferred from the present study that though the sensory parameters evaluated in meat in all the treatment groups had values of desirable feature, the meat of 10 per cent ghee residue supplemented group is better than the meat of 15 per cent ghee residue supplemented group.

CONCLUSION

Inclusion of ghee residue up to 10 per cent in swine diets did not influence sensory parameters. Hence the nutrient rich ghee residue can be used as potential alternative feed ingredient in pig ration.

ACKNOWLEDGEMENT

The authors acknowledge the facilities and financial support given to this research by Tamil Nadu Veterinary Animal Sciences University, Madhavaram, Chennai – 51

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