

EFFECT OF PROBIOTIC SUPPLEMENTATION ON THE CARCASS TRAITS AND SENSORY QUALITIES OF SWILL FED PORK

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A study was conducted in a commercial pig farm to document the effect of probiotic supplementation on the carcass traits and sensory qualities of Large White Yorkshire pigs by selecting thirty two weaned piglets at random and divided two treatment groups comprising of sixteen in each group which was subjected to two feeding regimens viz., swill feed alone (control group) and swill feed supplemented with probiotics (treatment group). In the latter group, a commercial probiotic “Biobloom” was fed @ 5g/pig/day. The trial was conducted from 56 to 180 days of age, it was observed that there was a highly significant difference ($P < 0.01$) in carcass weight, dressing percentage, back fat thickness and meat percentage of pigs between swill feed supplemented with probiotics and swill feed fed groups. There was no significant difference in loin eye area and carcass length between the two experimental groups. There was no significant difference in fat and bone percentage between the two experimental groups. Tenderness and juiciness score did not significantly differ among the experimental groups, but the flavour score was better in pig fed with probiotic supplementation (8.67 ± 0.21) than swill feed fed group (7.33 ± 0.21). It was concluded that the probiotic feeding could play an important role in the carcass traits and sensory quality of pork in large scale swine industry.

Key words: Carcass traits, sensory qualities, swill, probiotics, Large White Yorkshire pigs

Feeding of pigs with the locally available food materials and efficient use of agricultural by products and food waste offer the best possibility of reducing the cost of production of pork to a greater extent. Carcass traits are also affected by these type of feeding system. The probiotic supplementation is considered as a viable option in overcoming the negative effects of swill feeding. Probiotics are viable microbial cultures that will help in improving

the growth of gastro-intestinal beneficial bacteria and thereby improve carcass qualities of pork. Hence this study was conducted to document the effect of probiotic supplementation with swill on the carcass traits and sensory qualities of Large White Yorkshire pigs in a commercial farm.

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A trial was designed to study the influence of probiotic supplementation on the carcass traits of Large White Yorkshire pigs. A total of 32 weaned Large White Yorkshire piglets were randomly selected based on their body weights and divided into two groups, each containing 16 piglets. First group fed with swill feed alone as control and second group fed with swill feed supplemented with probiotics. Both groups were fed *ad libitum*. Swill feed which is composed of kitchen waste and table waste without any treatment. Piglets in second group was fed with swill feed supplemented with commercial probiotic "Biobloom" was fed @ 5g/pig/day, a total of 80 g for 16 pigs per day after mixing it with swill feed thoroughly. Animals were fed swill feed two times a day (morning 10-11 am and in evening by 3-4 pm). Slaughter study and sensory evaluation were carried out at the end of the trial (180 days of age). Data collected in this experiment were subjected to student "t" test for the interpretation of results (Snedecor and Cochran, 1994.)

The results of the present study indicate that the difference in carcass weight (Table 1) between probiotic treated and untreated groups was found to be highly significant ($P < 0.01$). This was in agreement with findings Kim (2005) who reported increased carcass weight on piglets fed with meal replaced with *Bacillus* sp and Ceslovas *et al.* (2005) who observed significant ($P < 0.05$) increase in carcass weight in probiotic supplemented piglets.

The probiotic supplemented piglets recorded significantly ($P < 0.01$) higher dressing percentage than the unsupplemented piglets. The higher dressing percentage in probiotic supplemented piglets was also reported by Ceslovas *et al.* (2005), the higher dressing percentage observed in piglets of probiotic supplemented group could be attributed to their increased body weight since most of the carcass characteristics are directly proportional to the body weight at the time of slaughter. Moon *et al.* (2004) reported that the significantly higher dressing

percentage in piglets fed with food waste fermented with probiotic and on the contrary Anna *et al.* (2005) observed no significant difference in carcass per cent between probiotic treated and untreated groups.

The results of the present study revealed no significant difference in carcass length between probiotic treated and untreated groups. In contrast to the present study Anna *et al.* (2005a) observed significantly ($P < 0.05$) higher carcass length in probiotic supplemented group than the non supplemented group.

The difference in loin eye area was found to be not significant between the experimental groups (Table 8). The present results are in agreement with the findings of Anna *et al.* (2005), Jasek *et al.* (1994) and in another study by Anna *et al.* (2005a) who reported insignificant difference in loin eye area between treatment groups.

The results of the present indicate highly significant difference in back fat thickness between the experimental groups. The piglets in the probiotic supplemented group recorded significantly ($P < 0.01$) higher back fat thickness than the piglets in the unsupplemented group. In contrast to the findings of the present study Anna *et al.* (2005a) reported that no significant difference in back fat thickness was found between the two treatment groups.

The findings of the present study revealed significant difference in the per cent of meat between treatment groups, whereas the fat and bone per cent remained the same. Similar trend of increased meat per cent in probiotic supplemented piglets was reported by Anna *et al.* (2005).

The results of the organoleptic studies (Table 2) of moist heat pork revealed no difference in tenderness and juiciness between treatment groups

whereas the difference in the flavour was found to be highly significant ($P < 0.01$). In a similar study on sensory evaluation of pork Ceslovas *et al.* (2005) reported that probiotic supplementation significantly increased the meat tenderness.

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Table 1. Carcass traits of Large White Yorkshire pigs reared under two different Feeding regimens

SI.No.	Carcass	Swill Feed	Swill feed supplemented with Probiotics	F value
1	Carcass weight (Kg)	38.20 ^a ± 1.71	46.53 ^b ± 1.56	3.59**
2	Dressing percentage	68.69 ^a ± 0.14	70.89 ^b ± 0.49	2.98 **
3	Carcass length (Cm)	64.85 ± 1.20	67.56 ± 0.88	1.81 ^{NS}
4	Loin eye area (Cm ²)	20.05 ± 0.36	21.39 ± 0.55	2.03 ^{NS}
5	Back fat Thickness (Inches)	1.43 ± 0.03	1.61 ± 0.05	3.40 **
6	Meat percentage	19.54 ^a ± 0.90	24.75 ^b ± 1.7	2.62 *
7	Fat percentage	7.42 ± 0.44	11.15 ± 0.28	1.94 ^{NS}
8	Bone percentage	1038 ± 0.27	8.54 ± 0.42	1.82 ^{NS}

NS- Not significant

* Significant at five per cent level (P<0.05) ; ** Significant at one per cent level (P<0.01)

Table 2. Tenderness, juiciness and flavour of Large White Yorkshire pigs reared Under two different feeding regimens

SI. No.	Sensory Quality	Swill feed	Swill feed supplemented with probiotics	F Value
1	Tenderness	7.38 ± 0.18	7.88 ± 0.22	1.72 ^{NS}
2	Juiciness	8.13 ± 0.12	8.50 ± 0.18	3.03 **
3	Flavour`	8.25 ± 0.21	8.88 ± 0.21	1.66 ^{NS}

NS- Not significant ; ** Significant at one per cent level (P<0.01)