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# Effect of weaning age and pre-starter diet on the performance of large white Yorkshire piglets

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**Abstract**
An experiment was carried out at Centre for Pig Production and Research, Mannuthy, Kerala for a period of three months. Weaning of piglets in three treatments T1, T2 and T3 were done at 42, 35 and 21 days respectively. Piglets in T1 were fed with 20 per cent crude protein and 0 per cent lactose, T2 fed with 20 per cent crude protein and 10 per cent lactose and T3 with 22 per cent crude protein and 15 per cent lactose. There was a significant difference in average weaning weight of piglets between the groups (T1- 57.90 ± 5.49$^{a}$**,** T - 50.47 ± 2.49$^{a}$ and T3 -32.45 ± 2.49$^{b}$**).** There was significant difference in average feed intake between the treatments at seven week of age (T1-15.47 ± 0.99$^{b}$**,** T2-18.17 ± 0.81$^{b}$ and T3-22.32 ± 1.00$^{a}$). Feeding of lactose at 0, 10 and 15 per cent to piglets have no significant difference on the average feed intake and growth performance of the piglets at the end of the experiment. The outcome of this study demonstrated that weaning of piglets at 35 days and 21 days of age can be done and suggested a higher inclusion level of lactose to the diet of early weaned piglets.

**Keywords:** Large white Yorkshire, weaning weight, pre-starter diet

## 1. Introduction
Pig is an efficient feed conversion animal which can convert low nutritious diet into protein rich source for human. With an ever increase in human population there is a higher demand for meat protein, so there is a need to increase the production with the existing resources. To meet the demand of the people, better management practice is needed and early weaning is one of the strategies to increase the production. Early weaning of piglet has beneficial effect to meet the ever increasing demand of the people. It reduces the weight loss of sow due to lactation which results in shorter weaning to next service interval (Thaker and Bilkei, 2005) [8]. The performance of piglets weaned at twenty-one and twenty-two days of age is a better managemental practice to increase the performance of piglet (Main *et al.*, 2004) [4]. Early weaning of piglets will result in the increase lifetime production of sows. Studies also suggested that early exposure of piglets to creep ration result in higher consumption of feed post weaning (Sulabo *et al.*, 2014) [7]. Higher feed intake by the piglets post weaning will reduce the incidence of piglet mortality. Hence, the present study is carried out to evaluate the effect of weaning age and pre starter diet on the performance of Large White Yorkshire piglets.

## 2. Materials and Methods
The study was conducted at Centre for Pig Production and Research, Mannuthy, Kerala. Piglets were randomly divided into three treatment groups T1, T2 and T3, weaned at forty-two, thirty-five and twenty-one days respectively. Performance of the piglets was observed from birth to three months of age. Average daily feed consumption and fortnightly body weights of piglets were recorded throughout the experimental period. Piglets weaned at forty-two days of age were fed with 20 per cent crude protein and 0 per cent lactose in the feed, piglets weaned at thirty-five days of age were fed on ration containing 20 per cent crude protein with 10 per cent lactose while piglets weaned at twenty-one days of age were fed on ration containing 22 per cent crude protein with 15 per cent lactose. Piglets in all treatment groups were fed with same ration containing 20 per cent crude protein from forty-two days of age. Ingredients of the ration in three treatments were presented in Table 1.
The data obtained on various parameters were statistically analyzed using SPSS Version 24.

**Table 1:** Ingredient of piglets ration in different treatments (%)

| S. No. | Ingredients | Piglets rations (%) | | |
|---|---|---|---|---|
| | | T1 | T2 | T3 |
| 1 | Yellow maize | 55 | 47 | 37 |
| 2 | Wheat bran | 14 | 7 | 7 |
| 3 | Soya bean meal | 26 | 28 | 33 |
| 4 | Unsalted Dried Fish | 3 | 6 | 6 |
| 5 | Lactose | 0 | 10 | 15 |
| 6 | Mineral mixture | 1.5 | 1.5 | 1.5 |
| 7 | Salt | 0.5 | 0.5 | 0.5 |
| 8 | Total | 100 | 100 | 100 |
| Following ingredients were added to the above mixture | | | | |
| 9 | Hyblend $AB_2D_3K^3$, g | 2 | 2 | 2 |
| 10 | Lysine[5],g | 2 | 2 | 2 |
| 11 | Methionine[6],g | 2 | 2 | 2 |
| 12 | Zinc Oxide[4], g | 20 | 20 | 20 |

## 3. Results and Discussion

Feeding of piglets with lactose at an inclusion level of 10 and 15 per cent to piglets weaned at 35 and 21 days does not show any significance difference in feed intake and body weight at the end of the experiment. However, Gahan *et al.* (2009) [2] reported that feeding higher level of lactose (250 g/kg) to piglets result in better daily feed intake, average daily gain and feed conversion efficiency compared to lower inclusion of lactose (60 g/kg), (150 g/kg) in feed. And the observation made by Dillon *et al.* (2010) [1] on 24-day old weaned piglets revealed that greater proportion of lactose in the feed (250 g/kg) result in higher daily gain and gain to feed ratio by increased digestibility of the feed with reduced population of *E. coli* in gut compared to lower lactose level in feed (159 g/kg).

The average weekly feed consumption of piglets in three groups were presented in Table 2. There was significant difference ($P<0.01$) on average feed consumption at seven weeks of age with piglets weaned at 21 days compared to 35 and 42 days weaned piglets. This is in agreement with Sulabo *et al.* (2014) [7] who observed that early exposure of piglets to creep ration result in higher consumption of feed post weaning. However, irrespective of weaning age, no significant difference in feed intake from 8 weeks was observed. Similar findings were reported by Wellock *et al.* (2009) [9] who stated that there was no difference in average daily feed intake when all the piglets were fed with same quality diets after fourteen days post-weaning.

**Table 2:** Average weekly feed intake of piglets maintained on different rations (Kg)

| S. No. | Days | Treatments | | | F value | P value |
|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | | |
| 1 | $42^{nd}$ - $48^{th}$ | $15.47 \pm 0.99^{b}$ | $18.17 \pm 0.81^{b}$ | $22.32 \pm 1.00^{a}$ | 13.46** | 0.001 |
| 2 | $49^{th}$ - $55^{th}$ | 22.89 ± 2.69 | 26.65 ± 0.70 | 28.08 ± 1.20 | $2.34^{ns}$ | 0.13 |
| 3 | $56^{th}$ - $62^{nd}$ | 34.88 ± 3.30 | 34.75 ± 0.99 | 34.00 ± 1.55 | $0.05^{ns}$ | 0.95 |
| 4 | $63^{rd}$ - $69^{th}$ | 42.53 ± 4.01 | 40.25 ± 1.41 | 39.67 ± 1.52 | $0.34^{ns}$ | 0.72 |
| 5 | $70^{th}$ - $76^{th}$ | 48.62 ± 4.44 | 47.15 ± 1.33 | 46.17 ± 1.77 | $0.19^{ns}$ | 0.83 |
| 6 | $77^{th}$ - $83^{rd}$ | 54.95 ± 4.85 | 52.28 ± 1.46 | 52.67 ± 1.68 | $0.22^{ns}$ | 0.81 |
| 7 | $84^{th}$ - $90^{th}$ | 52.90 ± 5.17 | 50.33 ± 1.38 | 51.42 ± 1.19 | $0.17^{ns}$ | 0.85 |

ns – Non-significant ($P> 0.05$); **significant at 0.01 level; Means having different letters as superscript within a raw differs significantly

Average fortnightly body weight and performance of piglets in T1, T2 and T3 were presented in Table 3 and 4. There was no significant difference in birth weight of piglets between the groups. Average weaning weight of piglets in T1, T2 and T3 were 7.73 ± 0.40, 6.38 ± 0.36 and 4.43 ± 0.28 respectively. There was significant difference ($P<0.01$) in body weight of piglets in T3 with T1 and T2 at the time of weaning. Similar finding was reported by Ravi *et al.* (2013) who found that piglets weaned at 28 days of age have lower body weight compared to piglets weaned at 56 days of age due to early weaning. Fortnightly average body weight of piglets in three groups was presented in Table 3. There was no significant difference in fortnightly average body weight between the groups during the growing phase which is in agreement with Whang *et al.* (2000) [10], Gondret *et al.* (2005) [3] and Skinner *et al.* (2014) [6] who reported that growth performances of piglets were akin during the grower and finishing phase irrespective of body weight and nutritional quality of feed.

**Table 3:** Average fortnightly and $90^{th}$ day body weight of piglets in different treatments (Kg)

| S. No. | Days | Treatments | | | F value | P value |
|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | | |
| 1 | Birth weight | 1.21 ± 0.07 | 1.37 ± 0.07 | 1.33 ± 0.09 | $1.22^{ns}$ | 0.32 |
| 2 | 14 | 3.43 ± 0.32 | 4.02 ± 0.33 | 3.22 ± 0.28 | $1.74^{ns}$ | 0.21 |
| 3 | 28 | 5.67 ± 0.35 | 5.68 ± 0.34 | 4.51 ± 0.39 | $3.24^{ns}$ | 0.07 |
| 4 | 42 | 7.70 ± 0.39 | 7.27 ± 0.41 | 7.03 ± 0.37 | $0.77^{ns}$ | 0.48 |
| 5 | 56 | 10.05 ± 0.14 | 10.99 ± 0.82 | 9.98 ± 0.52 | $1.00^{ns}$ | 0.39 |
| 6 | 70 | 13.96 ± 0.32 | 14.56 ± 0.82 | 13.52 ± 0.74 | $0.61^{ns}$ | 0.56 |
| 7 | 84 | 19.37 ± 0.31 | 19.67 ± 0.81 | 19.39 ± 0.52 | $0.08^{ns}$ | 0.92 |
| 8 | 90 | 19.94 ± 0.29 | 20.57 ± 0.78 | 19.91 ± 0.60 | $0.40^{ns}$ | 0.68 |

ns – Non-significant ($P> 0.05$)

**Table 4:** Litter performance of piglets in different treatments

| S. No. | Parameters | Treatments | | | F value | P value |
|---|---|---|---|---|---|---|
| | | T1 | T2 | T3 | | |
| 1 | Litter size at birth (No.) | 10.18 ± 1.17 | 10.00 ± 0.58 | 10.33 ± 0.49 | $0.04^{ns}$ | 0.958 |
| 2 | Litter weight at birth (kg) | 12.11 ± 1.29 | 13.76 ± 1.19 | 13.82 ± 1.26 | $0.61^{ns}$ | 0.557 |
| 3 | Litter size at weaning (No.) | 7.67 ± 0.99 | 8.00 ± 0.52 | 7.33 ± 0.67 | $0.19^{ns}$ | 0.823 |
| 4 | Litter weight at weaning (kg) | $57.90 \pm 5.49^{a}$ | $50.47 \pm 2.49^{a}$ | $32.45 \pm 2.49^{b}$ | 10.34** | 0.002 |
| 5 | Litter size at 90 days (No.) | 7.50 ± 0.99 | 7.83 ± 0.48 | 6.50 ± 0.81 | $0.78^{ns}$ | 0.478 |
| 6 | Litter weight at 90 days (kg) | 148.64 ± 17.92 | 160.98 ± 0.95 | 129.75 ± 16.61 | $1.04^{ns}$ | 0.379 |

ns – Non-significant ($P > 0.05$); **significant at 0.01 level; Means having different letters as superscript within a raw differs significantly

## 4. Conclusion

In the present study, non-significant effect of lactose might be due to the inclusion level at only 10 and 15 per cent. Thus, to get a better outcome from feeding of piglets with lactose, higher inclusion level is suggested. There was increased feed intake in piglets of T3 during the seven week of age this might be due to early exposure of piglets in T3 to feeds. Significant difference in body weight at the time of weaning in three treatment groups was due to early weaning of piglets in T3. There was no significant difference in average feed intake and average body weight at the end of the experiment. Thus weaning of piglets as early as 21 and 35 days of age can be carried out for more piglets' production per sow.

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