



Influence of indigenous galactagogue on performance of sows and piglets and related economics

GANESH KUMAR S¹, MUKESH SINGH², TRIVENI DUTT³, M PATEL⁴, A B MANDAL⁵,
SANJAY KUMAR⁶ and S K MONDAL⁷

Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh 243 122 India

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ABSTRACT

The study was carried out to study the effect of indigenous galactagogue on the body weight gains of sow's body weight and piglets during lactation and to work out on relative economics. Landrace × Desi sows (8) along with their piglets were randomly divided into 2 groups i.e. T₁ and T₂ (control and treated with galactagogue). Each sow of T₁ and T₂ had 14.3 and 13.8 piglets at birth, respectively. Body weight of sows was nonsignificantly influenced by treatment, however, total body weight losses during lactation differed significantly. Feed intake of sows up to weaning was not influenced by the treatment. Wean-to-heat interval was not significantly influenced by the treatment. Effect of galactagogue treatment on litter size and litter weight at birth, at weaning was nonsignificant. However, total litter weight at weaning was lower in T₁ than T₂. Mean weaning weight of each piglet in T₂ was significantly higher than T₁. The treatment influenced feed intake of piglets significantly, while pre-weaning mortality of piglets was not significantly influenced. No significant difference in serum glucose and protein was found between the treatments. Net benefit / sow was ₹ 115.22 and ₹ 587.82 in T₁ and T₂, respectively. It can be concluded that indigenous galactagogue treatment significantly improved weaning weight of piglets and reduced lactational weight loss in sows as well as it was found to be economically advantageous over control group.

Key words: Economics, Galactagogue, Glucose, Lactation, Litter, Pigs, Protein, Weaning

Milk secretion goes down in recently farrowed sows causing high mortality in newborn piglets due to starvation and secondary bacterial infection (Backstorm *et al.* 1984). Sometimes low milk production in sows also adversely affects growth of piglets till weaning. This influences duration of weaning period as well as piglet weight (Hartmann *et al.* 1984). Milk secretion in sows can be improved by using some galactagogue agents (Anonymous 2007). A non-hormonal and non-toxic indigenous preparation has potent galactopoietic and galactokinetic effect. In the light of the fact that relevant information on this aspect is scarce especially under Indian condition, the present study was taken up with the objective to study the effect of indigenous galactagogue on the body weight gains of sow's body weight and piglets during lactation and to work out on relative economics.

MATERIALS AND METHODS

Landrace × Desi sows (8) at Swine Production Farm of

Present address: ¹M V Sc Scholar; ^{2, 4, 7} Senior Scientist (mpatellpm@gmail.com); ³Joint Director (Extension Education, jdee@ivri.nic.up.in); ⁶ Senior Scientist, LES and IT.

⁵Principal Scientist, CARI, Izatnagar.

the institute were used. Based on litter size at birth, the sows along with their respective piglets were randomly divided into 2 equal groups, ie. T₁: 14.3±0.3 (control) and T₂: 13.8±0.3 (treatment). Sows of T₂ group were given indigenous galactagogue (10 tablets/day up to weaning), while those in T₁ were kept as control without this treatment. Piglets were allowed to suckle their dams till 42 days of age and were fed with creep feed from 14 days onwards till weaning in both the groups.

Management of lactating sows and their piglets was kept identical for both the groups throughout the experiment. Standard hygiene and health management was followed during the study. Sows were housed in non-slippery concrete-floored farrowing pens (one for each sow) having a covered area attached to an open run. Each farrowing chamber also had separate feeder, waterer, creep space (1.5 m × 1 m) and guard rails. Sows were given laxative diet 1 or 2 days before the expected date of farrowing with plenty of water to prevent constipation with proper bedding. Sows and their piglets were observed round the clock to reduce loss of piglets by overlaying. Sows were checked for first incidence of oestrus after weaning using a vasectomized boar both in morning and evening.

Lactating sows of both the groups were fed *ad lib.* with dry concentrate mixture containing crushed maize 35 parts, deoiled soybean meal 10 parts, wheat bran 47 parts, fish meal 6 parts, mineral mixture 1.5 parts and common salt 0.5 parts. Piglets of both the groups were provided with creep feed containing crushed maize 60 parts, deoiled soybean meal 20 parts, wheat bran 10 parts, fish meal 8 parts, mineral mixture 1.5 parts and common salt 0.5 parts with addition of vitamin mixture @500g/q of feed from 14 days of age in creep space.

Body weights of sows and piglets were taken at farrowing and thereafter at weekly intervals up to weaning. Sows were fed once daily in morning with weighed quantity of concentrate feed. Daily feed intake was calculated after making correction for feed residues collected at the following day. Similarly, average voluntary daily feed intake was recorded from 14th to 42nd day of age in piglets. Dry matter intake was estimated at fortnightly interval. Wean-to-oestrus interval, litter traits at birth and weaning were recorded in each sow. Blood samples were collected from all sows and from one piglet of each sow on the day of weaning. Samples were analysed for glucose and protein as per standard procedure using standard kits.

Relative economics was calculated by taking into account of feed cost during lactation and market price of pork produced (₹ 70.00/kg). The feed cost for a piglet production was calculated @ ₹ 14.28/kg for creep feed and ₹ 12.61/kg for sow feed based on prevailing rate of feed ingredients (as supplied to IVRI, during experimental period). Prevailing market rate of galactagogue (100 tablets/packet) was taken as ₹ 50.00. Data, thus obtained, were analysed using standard statistical procedures described by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

Sows performance: Mean body weights at farrowing (0 day) were 163.5±16.1 and 170.9±19.4 kg in T₁ and T₂, respectively (Table 1). There was a decreasing trend in body weight throughout the lactation in both groups. Sows treated with galactagogue showed significantly (P<0.05) less lactational weight loss as compared to control sows. These

findings were in general agreement with those obtained by Vasseur *et al.* (1997), Vijayakumar (1999), and Yeswanth (2000). However, mean weekly body weight losses of the 2 groups during lactation were not significantly different from each other. Total body weight loss in T₁ was significantly higher than T₂ which might be due to effect of indigenous galactagogue, which marginally increased the feed intake and reduced depletion of body reserve in synthesis of milk.

Average daily feed consumption of the sows in both the groups (Table 1) increased linearly with the advancing lactation in successive weeks which might be a reflection of increased demand for milk exerted by growing piglets. The average daily feed intake increased continuously from week 1 to week 6 in T₁ and T₂. The mean daily feed intake was similar (P>0.05) in both the groups. The findings of Vestergaard and Danielsen (1998) were similar to the present study. However, the present values were lower than those reported by Mahan (1993) which might be due to difference in genotype, climatic factors, litter size and managerial systems. The total feed consumption of sows during lactation under T₁ and T₂ were higher than those reported by Vijayakumar (1999) and Thirumurugan (2003).

The average weaning-to-oestrus interval was not significantly (P>0.05) influenced by the treatment. These values were similar to those reported by Vijayakumar (1999), but higher than those reported by Bhatia *et al.* (1985) and Varley and Cole (1976).

Litter performance: Litter size at birth was observed to be 14.3±0.3 and 13.8±0.3 in groups T₁ and T₂, respectively. A nonsignificant effect of treatment on litter size at weaning was observed. The present values are almost similar to Chhabra *et al.* (1990) and Quesnal *et al.* (2007), but higher than some earlier findings (Mukhopadhyay *et al.* 1992, Thiam 1992, Chhabra *et al.* 1996 and Vijayakumar 1999). Average litter weights at birth in T₁ and T₂ were similar (P>0.05). Average litter weight at weaning was not significantly (P>0.05) influenced by the treatment. The present litter weight at weaning was higher than those reported by Abraham (2001) and Thirumurugan (2003). Higher litter weight in group T₂ might be due to higher litter size at birth,

Table 1. Mean±SE of body weight/ loss (kg) and feed intake/ DM intake (kg) of sows during lactation

Traits	Body weight (body weight loss)		Feed intake (DM intake)	
	Control (T ₁)	Treatment (T ₂)	Control (T ₁)	Treatment (T ₂)
0 day	163.45±16.08(0±0)	170.88±19.37	NA	NA
1 week	158.05±16.06(5.4±0.32)	165.94±18.73(4.93±0.66)	2.67±0.28(2.39±0.25)	3.65±0.30(3.30±0.27)
2 week	153.08±15.85(4.98±0.44)	160.2±17.95(5.73±0.84)	4.69±0.10(4.47±0.08)	5.31±0.12(4.78±0.11)
3 week	149.55±15.62(3.52±0.40)	157.94±17.67(2.26±0.69)	5.72±0.10(5.15±0.18)	5.54±0.09(4.49±0.08)
4 week	145.38±15.46(4.17±0.45)	154.5±18.30(3.43±0.87)	5.88±0.18(5.29±0.15)	5.77±0.09(5.20±0.08)
5 week	141.92±15.51(3.45±0.39)	151.25±18.10(3.25±0.95)	6.04±0.13(5.44±0.11)	5.80±0.09(5.22±0.09)
6 week	138.47±15.69(3.45±0.71)	148.91±18.04(2.33±0.37)	6.21±0.12(5.58±0.11)	5.84±0.10(5.25±0.09)
Overall	-(24.97±0.86 ^a)	-(21.96±2.33 ^b)	5.24kg(-)	5.32kg(-)

Means with different superscripts in a row differed significantly (P<0.05).

Table 2. Mean±SE of body weights (kg) and creep feed intake (g) of piglets

Age (in wks)	Body weight		Creep feed intake	
	Control (T ₁)	Treatment (T ₂)	Control (T ₁)	Treatment (T ₂)
0	1.09±0.03 (57)	1.14±0.04 (55)	-	-
1	2.02±0.08 (45)	2.03±0.07 (47)	-	-
2	2.98±0.11 (45)	2.92±0.10 (46)	-	-
3	4.05±0.15 (45)	4.14±0.17 (46)	8.30±0.04 ^a (45)	7.55±0.02 ^b (46)
4	5.12±0.19 (45)	5.43±0.21 (46)	35.60±0.06 ^a (45)	28.70±0.05 ^b (46)
5	6.01±0.20 ^b (45)	6.82±0.21 ^a (46)	48.90±0.90 ^a (45)	42.62±0.85 ^b (46)
6	7.20±0.25 ^b (45)	8.19±0.22 ^a (46)	75.55±1.16 ^a (45)	68.55±1.13 ^b (46)
Overall feed intake/piglet			1200±8.40	1050±5.35

Means with different superscripts in a row differed significantly (P<0.01); figures in parenthesis indicate the number of observations.

creep feed intake, survival rate and higher feed intake of sows during lactation.

Piglet performance: Mean body weight of piglets at birth was 1.09±0.03 and 1.14±0.04 in T₁ and T₂, respectively (Table 2), similar to earlier reports (Mukhopadhyay *et al.* 1991). From the end of week 4 till weaning, piglets in T₂ maintained significantly higher body weight than T₁. This might be attributed to their higher birth weight and higher

feed intake of them as well as of nursing sows. The above findings were in conformity with those of Everts (1991), Matte *et al.* (1992), and Yeswanth (2000). The results also revealed that the sex difference in body weights was not significantly affected by treatment given to sows. The influence of indigenous galactogogue on sow's milk production in T₂ appeared to be significant, as the growth rate of piglets reared by treated sows was significantly (P<0.01) higher than T₁ during week 6 of age. Total creep feed intake per piglet was 1200±8.40 and 1050±5.35 g in T₁ and T₂, respectively (Table 2), confirming the previous observation by Thirumurugan (2003). Pre-weaning mortality in the groups T₁ and T₂ were 21.1 and 16.4% and there was non-significant (P>0.05) difference in mortality between the groups. Overall pre weaning mortality in the present study was similar to earlier reports (Chhabra *et al.* 1991, Thirumurugan 2003).

Serum glucose and protein profile: Serum glucose level in sows of both the groups ranged between 80.5±0.4 and 112.4±3.2 mg/dl which were within the normal range of 85–150 mg/dl. Serum glucose level in piglets did not differ significantly between the groups at the day of weaning (108.8±1.3 vs. 112.4±3.2 mg/dl). Similar findings were reported by Ravi (2007). Serum protein concentration in sows of both the groups ranged between 4.2±0.12 and 5.4±0.1 which were within the normal range. Total serum protein was also not influenced by treatment (P>0.05), the values being in general agreement with Thirumurugan (2003). Serum glucose level (mg/dl) did not differ significantly in sows at the day of weaning.

Relative economics: On the basis of prevailing market price of ingredients, the average feed cost per pig up to 6

Table 3. Relative economics of rearing of nursing sows and sucklers using indigenous galactogogue

Attributes	T ₁	T ₂
Average feed consumed by sow during lactation (kg)	220.45	223.75
Average creep feed consumed by piglets (kg)	13.5	12.07
Weight loss by sows during lactation (kg)	24.97	21.96
Live weight obtained by piglets (kg)	83.81	94.21
(A) Input (feed cost)		
(a) Total feed cost/sow @ ₹ 12.61/kg	2781.15	2822.78
(b) Cost of creep/litter @ ₹ 14.28 /kg	192.87	172.51
(c) Galactogogue tablets for 42 days @ ₹ 50/100 tablets	0	210.0
Total input feed cost (₹) (a+b)	2974.02	3205.30
(B) Output cost		
(a) Loss of value in terms of live weight /sow (rate/kg live weight @ ₹ 52.5/kg) i.e. @75% dressing percentage	1310.76	1152.90
(b) Value of weaned piglets /litter (rate /kg live weight @ ₹ 52.5/kg) i.e. @75% dressing percentage	4400.02	4946.01
Total output/sow (b-a)	3089.25	3793.12
(C) Net benefit/sow (B-A)	115.22	587.82
(D) Input output ratio	1: 1.03	1:1.26
(E) Feed cost/kg of pork produced	50.54	44.36
(F) Feed cost/piglet weaned	264.35	278.72

weeks, feed cost per kg pork produced and net benefit per sow were worked out (Table 3). The average feed cost per pig up to 6 weeks was ₹ 264.35 and 278.72 and feed cost / kg pork produced was ₹ 50.54 and 44.36 in T₁ and T₂, respectively. Net benefit per sow was ₹ 115.22 and 587.82 in T₁ and T₂, respectively. Therefore, there was a saving of ₹ 472.59 per sow in indigenous galactagogue fed group (T₂) over the control group (T₁) during a lactation period of 42 days. From the present study, it can be concluded that use of indigenous galactagogue not only improved the performance of sow and piglets but also reduced the cost of rearing in nursing pigs.

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