



Research Article

THE EFFECT OF SUCKLING TRAITS ON GROWTH RATE OF CALVES IN GIR CATTLE

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Abstract- The present study was conducted to study the effect of suckling traits on growth rate of calves in Gir cattle. Growth rate due to duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time. A total of 13 observations of growth rate, each at 15, 30 and 45 days from four different Gir cattle farm were recorded in calves due effect of various suckling traits in Gir cattle. Average growth rate (Kg) at 15, 30 and 45 days due to effect of duration from placing the calf nearby cow to holding of teat by the calf was significantly ($P<0.05$) higher at 45 days than at 15 and 30 days. Effect of number of attempts to teat seeking on growth rate was significantly ($P<0.05$) higher at 15 days than at 30 and 45 days. The average growth rate due to number of strokes made during suckling for letting down was significantly ($P<0.05$) higher at 15 days as compared to 30 and 45 days. The mean growth rate due to let down time was significantly ($P<0.05$) higher at 15 days than at 30 and 45 days. Highest growth rate was due to number of strokes made during suckling for letting down and lowest growth rate was due to effect of duration from placing the calf nearby cow to holding of teat by the calf, at 15, 30 and 45 days. No significant correlations were observed among duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time, at 15 and 30 days. However, a significant positive correlation ($P<0.05$; $r = 0.65$) was recorded between effect of duration from placing the calf nearby cow to holding of teat by the calf and number of strokes made during suckling for letting down at 45 days. It is concluded that suckling traits affect the growth rate of calves in Gir cattle at various days of age. Number of strokes made during suckling for letting down lead to highest growth rate in calves.

Keywords- Suckling traits, Calves, Growth rate, Gir, Cattle.

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Introduction

Growth rate of calves is one of the important traits affecting net income of dairy and rearing enterprises. Calf growth is determined by the genetic potential of the calf for growth, the amount of milk received from the dam and suckling behaviour of calf. Moreover, growth rate of calves is indicative to suckling behaviour of calves. Suckling behaviour of calves is difficult to measure there by making any highly correlated trait an important tool in practical selection in dairy production. The neonatal link with the mother is an important ethological phenomenon [6]. Scanty information is available on correlation between suckling behaviour of calves and growth rate of calves. The milk ejection time in early weaned, late weaned and un-weaned buffaloes was 133.00 to 172.5 seconds, 84.6 to 100.0 seconds and 97.5 to 104.0 seconds, respectively [2]. Average let down time in Murrah buffaloes was 106 seconds and that un-weaned buffaloes had a lower let down time 100 seconds than weaned buffaloes 109 seconds, while the oxytocin treated buffaloes had let down time of 148 seconds [1]. A significant difference in the elapsed time before the first suckling attempts by calves from cows 78 minutes and heifers 32 minutes and the first suckle cows 203 minutes vs heifers 221 minutes [3]. [5] Reported that the let-down time during morning, noon and evening milking was 33.1, 49.3 and 25.3; 39.6, 48.1 and 23.8; and 39.3, 47.9 and 28.9 seconds in Sahiwal, Brown Swiss x Sahiwal (50 per cent exotic inheritance) and Brown Swiss x Sahiwal (about 50 per cent exotic inheritance) breeds of cows,

respectively. The interval from birth to the first suckling attempts were significantly longer for male calves 17.31 ± 75.3 minutes than female calves 90.5 ± 41.0 minutes [4]. [7] Observed the suckling behaviour of calf and found that the female calves made significant more number of attempts for teat seeking than the male calves. Suckling traits are one of the main traits in characterizing calves. Hence, it is important to identify major suckling traits associated with growth rate of calves. There was no documented information as to the level of association between suckling traits of calves and growth rate of calves for Gir cattle. The aim of this study was therefore, to evaluate the effect of suckling traits on growth rate of calves in Gir cattle.

Materials and Methods

The data on suckling behaviour to evaluate effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time on growth rate (Kg) of Gir calves at 15, 30 and 45 days was recorded from 0 to 45 days of age from four different Gir cattle farm with 13 new born Gir calves in each farm. Managerial and feeding practices of different categories of calves were adapted as per technical standard. Weaning was not practiced and calves were allowed to suckle their dams up to 3 months of age.

1. Effect of Duration from Placing the Calf nearby Cow to Holding of Teat by the Calf on growth rate of calves:

The time taken by the calves for first suckling was counted in first suckling and analysed for growth rate of calves.

2. Effect of Number of Attempt to Teat Seeking on growth rate of calves:

The capability of each calf for searching of teat is different. In order to determine the teat seeking capability on growth rate of calves, the total attempts made by calves on different body parts of dam (like dewlap, brisket) was counted and analysed.

3. Effect of Number of Effort (Strokes) Made during Suckling for Letting Down on growth rate of calves:

The letting down of milk, however, is a trait of parturated cow, but the calves might have its role in early or late letting down time of milk. To find out the role focal on letting down time, the duration of letting down of milk was calculated and analysed for growth rate of calves.

4. Effect of Let down Time on growth rate of calves:

The let down time (in minutes) was taken as time interval from touching of teat by calf to the first drop of milk drawn in pail and analysed for growth rate of calves. It was attempted for first time to determine the effect of suckling traits, such as effect of duration from placing the calf nearby cow to holding of teat by calf (min.), effect of number of attempt to teat seeking, effect of number of strokes made during suckling for letting down of milk and effect of let down time (sec.) on growth rate of the Gir calves from birth to 45 days. The weight of calves was taken at fortnight interval at 15th, 30th and 45th days.

Statistical analysis

Data were statistically analyzed by two-way ANOVA and results were expressed as mean \pm SD. Means were compared using Tukey's multiple comparisons test. Pearson's correlation coefficient was calculated as per standard procedure. The statistical package of Graph pad prism, San Diego, USA was used for analyzing the data.

Results and Discussion

Effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time on growth rate (Kg) of calves at 15, 30 and 45 days is mentioned in [Table-1]. Growth rate (Kg) at 15, 30 and 45 days due to effect of duration from placing the calf nearby cow to holding of teat by the calf was 0.0241 ± 0.00 , 0.0236 ± 0.00 and 0.067 ± 0.00 , respectively. The growth rate was significantly ($P < 0.05$) higher at 45 days than at 15 and 30 days. Growth rate (Kg) due to number of attempts to teat seeking was 0.274 ± 0.00 , 0.106 ± 0.00 and 0.017 ± 0.00 , respectively at 15, 30 and 45 days. Significantly ($P < 0.05$) higher growth rate was observed at 15 days than at 30 and 45 days. The average growth rate due to number of strokes made during suckling for letting down was 0.491 ± 0.00 , 0.412 ± 0.00 and 0.197 ± 0.00 , respectively at 15, 30 and 45 days. The growth rate was significantly ($P < 0.05$) higher at 15 days as compared to 30 and 45 days. The mean growth rate due to let down time was 0.14 ± 0.07 , 0.047 ± 0.00 and 0.022 ± 0.00 , respectively at 15, 30 and 45 days, being significantly ($P < 0.05$) higher at 15 days than at 30 and 45 days.

At 15, 30 and 45 days, growth rate was significantly ($P < 0.05$) highest due to number of strokes made during suckling for letting down than other suckling traits. Lowest growth rate was recorded due to effect of duration from placing the calf nearby cow to holding of teat by the calf.

Correlation among growth rates due to effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time at 15, 30 and 45 days is presented in [Tables-2, 3 and 4], respectively. At 15 and 30 days of age, no significant correlations were observed among duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let

down time. However, at 45 days, a significant positive correlation ($P < 0.05$; $r = 0.65$) was recorded between effect of duration from placing the calf nearby cow to holding of teat by the calf and number of strokes made during suckling for letting down.

Table-1 Effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time on growth rate (Kg) of Gir calves at 15, 30 and 45 days.

Days	15	30	45
Duration	0.0241 ± 0.00^{bD}	0.0236 ± 0.00^{bD}	0.067 ± 0.00^{aB}
Seeking	0.274 ± 0.00^{aB}	0.106 ± 0.00^{bB}	0.017 ± 0.00^{cD}
Strokes	0.491 ± 0.00^{aA}	0.412 ± 0.00^{bA}	0.197 ± 0.00^{cA}
Let down time	0.143 ± 0.07^{aC}	0.047 ± 0.00^{bC}	0.022 ± 0.00^{bC}

Means bearing different superscripts in lower case letters (a, b & c) in row and upper case letters (A, B, C & D) in column differ significantly ($P < 0.05$)

Table-2 Correlation among growth rates due to effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time At 15 days

	Duration	Seeking	Strokes
Duration			
Seeking	0.05		
Strokes	0.42	-0.16	
Let down time	-0.39	-0.24	-0.18

Table-3 Correlation among growth rates due to effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time At 30 days

	Duration	Seeking	Strokes
Duration			
Seeking	0.11		
Strokes	-0.15	0.00	
Let down time	-0.12	0.16	-0.23

Table-4 Correlation among growth rates due to effect of duration from placing the calf nearby cow to holding of teat by the calf, number of attempts to teat seeking, number of strokes made during suckling for letting down and let down time At 45 days

	Duration	Seeking	Strokes
Duration			
Seeking	0.44		
Strokes	0.65*	0.29	
Let down time	-0.16	0.24	-0.31

*Correlation is significant at 5 % ($P < 0.05$)

Conclusion

It is concluded that suckling traits affect the growth rate of calves in Gir cattle at various days of age. Number of strokes made during suckling for letting down lead to highest growth rate in calves.

Conflict of Interest: None declared

References

- [1] Dash P.C., Basu S.B., Sharma K.N.S. and Sharma P.A. (1976) *Indian J. Dairy Sci.*, 29(1), 41-45.

- [2] Gupta S.C., Gangwar P.C. and Kooner D.S. (1974) *Indian J. Dairy Sci.*, 44 (5), 334.
- [3] Herman E. and Stenum N. (1982) *J. P. Signorel, ed. Welfare and Husbandry of calves. Martinus Nijhoff Publisher, The Hague, Boston, London.* 3-23
- [4] Houwing H., Hurnik J.F. and Lewis N.J. (1990) *Can. J. Anim. Si.*, 70(3), 355.
- [5] Ludri R.S., Singla S.K. and Tomar O.S. (1982) *Indian J. Anim. Sci.*, 52(1), 4-8.
- [6] Rawat N.S. Mishra A.K., Gaur A.K. and Baghel K.K.S. (2015) *Int. J. Agric. Sc & Vet. Med.*, 3(1), 91-94.
- [7] Yadav A.K., Pramanik P.S. and Kashyap S.S. (2009) *Indian J. Anim. Prod. Mgmt.*, 24(3-4), 8-11.