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RESEARCH PAPER

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Udder and teat measurements influenced by milking, udder shape and texture in gaolao cows

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ABSTRACT

An attempt was made to know the influence of milking process on udder and teat measurement and also judging of udder shape and texture in Gaolao cows. 60 Gaolao cow. (animals) were categorized in two way according to lactation number as upto 3 lactations (L_1) and above 3 lactation (L_2). According to stage of lactation, early stage lactating S_1 mid stage lacteally S_2 and late stage of lactation. Thus, there were six combinations for record of observations. The post milking udder length, width and depth was reduced by 12.94 per cent, 13.32 per cent and 7.06 per cent respectively over pre milking values. Majority of the cows were possessing bowl shaped udder (60 to 90 per cent), while majority of cows 30 to 40 per cent from early stage had medium hard texture.

KEY WORDS : Udder, Measurement, Shape, Texture, Gaolao.

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INTRODUCTION

Indian cattle breeds are described on the basis of colour, shape, body size, horn but very little information is available on udder characteristics. In india, systematic data on type and confirmation on teat and udder are not available for different breeds. Judging of dairy cattle is nearer to perfection. The knowledge of development of different body parts and their association with milk production is necessary. To study udder characteristics with milking process and stage of lactation, present study was done in Gaolao cow.

MATERIALS AND METHODS

The lactation number and stage of lactation was considered while recording the observations on udder development. Lactation number of L_1 for 1 to 3 lactation, L_2 for above 3 lactation and stage of lactation as S_1 early lactating upto 90 days, S_2 mid lactating 91 to 180 days and (S_3) late lactating above 181 days. Thus, there was six combinations for record of observation *i.e.* L_1S_1, L_1S_2, L_1S_3, L_2S_1, L_2S_2 and L_2S_3. It was proposed to record ten observations (animal) in each group making total 10 x 6 = 60 animals. Data were analyzed by using FRBD.

Udder measurements were taken as per Saxena (1973a and b). Udder length was measured with a cloth tape from rear attachment of the udder to the front of udder along with its sole, where fore udder blends smoothly with the body. Udder width was measured with a cloth tape as a distance between two lateral lines of attachment of the udder to the abdominal wall beneath the flank. Udder depth was obtained by taking difference between barn floor to base of udder and distance from barn floor to the lowest point where teats are attached. Teat length was measured from it's basal attachment to opening of teat. Teat diameter was measured at mid point of teat length by vernier caliper. Teat distance between front rear and lateral was taken from base of one teat to base of other teat. Milk vein length was measured using cloth tape and milk vein diameter by using vernier caliper. All observations were taken pre and post milking.

RESULTS AND DISCUSSION

The changes in milking process were more pronounced on teat characters followed by udder characteristics (Table 1). The post milking udder length,

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width and depth was reduced by 12.94 per cent, 13.32 per cent and 7.06, per cent, respectively over pre-milking values. The fore and rear teat length was also reduced by 13.26 per cent and 25.66 per cent, respectively. The fore and rear teat diameters were reduced by the 20.89 per cent and 23.96 per cent. This means the shrinkage of teat diameter became 76 to 79 per cent of the pre-milking values. The shrinkage in fore and rear teat distance was up to 5.54 per cent and 10.57 per cent, respectively. The milk vein length did not respond to milking process while milk vein diameter did respond, the reduction being to the extent of 16.31 per cent.

Table 1 : Udder and teat measurements (cm) in Gaolao cows as influenced by milking process

Sr. No.	Parameters	Pre milking	Post milking	% decrease
A. Udder measurements				
1.	Udder length	33.798	29.425	12.94
2.	Udder width	23.556	20.419	13.32
3.	Udder depth	6.761	6.283	7.06
B. Teat characters				
4.	Fore teat length	7.018	6.088	13.26
5.	Rear teat length	4.651	3.458	25.66
6.	Fore teat diameter	2.495	1.974	20.89
7.	Rear teat diameter	1.845	1.403	23.96
8.	Fore teat distance	7.876	7.440	5.540
9.	Rear teat distance	6.833	6.111	10.57
C. Milk vein characters				
10.	Length	35.250	35.000	0.700
11.	Diameter	2.422	2.027	16.31

The result thus indicated that the changes in udder and teat characters were dependent on the original value of udder and teat characters. Moreover, post milking dimension of udder are closely associated with labour and machine inputs. The results of Mishra *et al.* (1978) are supportive to the present findings, where it was noticed that percentage of decrease was maximum in crossbred followed by Red Sindhi and Haryana cows, indicating that post milking shrinkage was associated with milk production capacities of animal. Similarly Maldhure (1989) also stated that udder and teat measurements (cm) were influenced due to milking in Jersey x Sahiwal crosses, the shrinkage being 4 to 6 per cent in udder length, width and circumference. These observations are supportive in the present trend.

Shape of udder in gaolao cows:

Shape of udder in Gaolao cows has been ascertained on the basis of udder characteristics. The selected cows were categorized in round, bowl, and cup/goat type udder shape. It was observed (Table 2) that majority of the cows were possessing bowl shaped udder (60 to 90 per cent). Though, a substantial number of cows (10 to 30 per cent) had round shaped udder. However, 10 to 20 per cent cows had cup/goat type udder. The past worker like Sharma *et al.* (1983) in Haryana and Tharparkar, Prajapati *et al.* (1995) in Gir and H.F. x Tharparkar crosses, El-Barbary *et al.* (1999) in HF and Chaki *et al.*(1999) in Jersey x Haryana crosses have reported that bowl shape was most common and this shape produced more milk. Present results are the line with the observations of these workers.

Table 2 : Incidence of different shape of udder in Gaolao cows

Sr. No.	Treatment combinations	No. of observations	Type of udder (%)		
			Round	Bowl	Cup/goat
1.	L_1S_1	10	10	80	10
2.	L_1S_2	10	20	70	10
3.	L_1S_3	10	20	70	10
4.	L_2S_1	10	10	90	Nil
5.	L_2S_2	10	30	60	10
6.	L_2S_3	10	10	70	20

The texture of udder was influenced by the lactation numbers and stage of lactation (Table 3). It was observed that the texture of udder felt very hard during advanced stage of lactation as compared to previous lactation period as 50 to 60 per cent cows from S_3 group *i.e.* lactation above 181 days had very hard texture. While majority of

Table 3 : Texture of udder in Gaolao cows

Sr. No.	Treatment combinations	No. of obs.	Texture (%)				
			Very soft	Soft	Moderate hard	Hard	Very hard
1.	L_1S_1	10	10	20	30	30	10
2.	L_1S_2	10	10	10	20	20	40
3.	L_1S_3	10	10	10	Nil	20	60
4.	L_2S_1	10	Nil	30	40	20	10
5.	L_2S_2	10	Nil	Nil	20	30	50
6.	L_2S_3	10	10	10	10	20	50

cows from early stage were having medium hard textures. In general majority of Gaolao cow possessed medium to very hard textured udder. Probably, due to lower milk yield, animals might have developed this situation. In contrast, this situation might have favoured to maintain the udder free from mastitis. As, it was noted that none of the cow was reported to suffer from mastitis.

The udder, teat and milk vein diameter were influenced more due to the milking process. After milking udder get collapsed due to this reason this trend may arrive. There was negligible change in milk vein length. The animal which were in above three lactation number and first stage of lactation (upto 90 days) having bowl shaped udder, means animal in this group gives maximum yield. Similar trend was noted in same group, good yield of animal expected from cows belonging to L_2S_1 group.

LITERATURE CITED

Chaki, E.K., N. Ghosh and S.C. Majumdar (1999): Relationship of udder and teat types to part lactation yield and peak yield in primiparous crossbred cows . *Indian Vet. J.* **76**(1):58-60.

El-Barbary, A.S.A. Mahdy, A.E., El-Shafie, O.M. and Aly, H.M. (1999). Some factors affecting milk production and milk constituents and their relation to udder measurements in pure Friesian cows. *Alexandria J. Agril. Res.,* **44**(1):17-35.

Maldhure, S.G. (1989). Studies on udder measurement and its association with milk production in cows and buffaloes. M.Sc. Thesis Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA, M.S. (India).

Mishra, P.K., Mishra, M. and Nayak, J.B. (1978). Relation to mammary measurements with milk yield in dairy cows. *Indian J. Dairy Sci.,* **31**(3):214-218.

Prajapati, K.B., Ashwar, B.K., Patel, J.P., Patel, J.B. and Singh, D.V. (1995). Size and shape of udder and teats in Kankrej cows. *Indian J. Anim. Prod. Mgmt.,* **11**(1):43-48.

Saxena, H.K. (1973a). Relation between milk yield and udder measurements in Murrah. *Indian J. Anim. Sci.,* **43**(1):1-4.

Saxena, H.K. (1973b): Variation in shape and size of udder in Murrah buffalo. *Indian J. Anim. Sci.,* **43**(6):468-472.

Sharma, B.D., Singh, C.S.P. and Singh, D.K.(1983). Variation in udder biometrics of Tharparkar and Haryana cows. *Indian J. Dairy Sci.,* **36**:272-276.