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The Effects of Self-Sucking on Daily Milk Product, Udder Health and the Form of the Teats of Dairy Cows

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Abstract: In this study, the effects of self-sucking, which is a behavioural defect in dairy cows, on milk product, udder health and on the shape of the udder were examined. In the research, totally 17 cows that self-sucked were used: one of them was a holstein hybrid cow and 16 were Home Breed South-Anatolian Red cows. With respect to the complaints from the owners of the ill cows, these diseases were determined and the data related to the size of the udders and the milk product occuring in 10 days, as well as whether or not there was an injury and mastitis on udder were observed. As a result of the study, it was determined that most of the self-sucking cows (85.71%) sucked particularly just two front teats and very few of them (14.28%) sucked all the four teats. Besides, it was observed that the cows sucking all their teats sucked almost 65% of the daily milk and during this period, mastitis was occurred in 28.57% of these cows. Also, it was determined that, in some of the cows which were sucking only the front teat for a long time, there were size differences up to 0.9 cm between the front and the rear teats. As a result, because of the fact that the act of self-sucking in dairy cows spoils the apperarence of herd, causes injury on udder, mastitis causes the loss of daily milk on a large scale, it was agreed that that this causes serious problems.

Key words: Cattle, self-sucking, teat forms, effects of self sucking

INTRODUCTION

Dairy cows have been breed for past centuries to produce more milk, resulting in many different health problems in dairy herds. These behavioural problems are considered as intersucking, cross-sucking, self-sucking, moving the tongue and chewing in vain. Self-sucking is when a cow sucks on her own teats and it usually includes the swallowing of milk (Boe, 1990; Debreceni and Juhas, 1999).

Such kind of defects can cause great amounts of milk loss, injuries on teats, shape defects and as a result of these serious mastitis rather than spoiling the appearence of the herd. Sometimes, when this happens in the cows and heifers during the last term of pregnancy, it causes the formation of early colostrum. Therefore, it may cause the calves to be born in later weeks not to get colostrum. Moreover, it has been stated in many farms that some cows and heifers can be left out from breeding in early periods due to only such kind of behavioural defects (Debreceni and Juhas, 1999; Elma and Yavru, 1992; Keil *et al*., 2000, 2001; Keil and Langhans, 2001; Lidfors and Isberg, 2003; Veissier *et al*., 2002).

It has been reported that a great majority of the self-sucking cases in cattles are observed among the heifers. In some studies, It is seen that heifers comprise 69% of the cases encountered.

In accordance with the current studies, today the main reason for such behavioural defects in cows cannot be detected. However, there is a common view that the disease in question may have many different causes or much more extensive studies should be carried out in order to clarify the reasons. Similarly, it is seen that the emphasis is given on symptomic treatment choices rather than removing the real reason in the cure of the disease (Bak and Khyn, 2000; Chua *et al*., 2002; De Passille, 2001; Debreceni and Juhas, 1999; Elma and Yavru, 1992; Keil *et al*., 2000, 2001; Keil and Langhans, 2001; Lidfors and Isberg, 2003; Mattiello *et al*., 2002; Suss and Sebestik, 1982; Veissier *et al*., 2002).

MATERIALS AND METHODS

Animals: In Diyarbakır region, in the years 2005 in house-type farms, 16 Red home breed South Anatolian cows (GAK) and 1 Holstein hybrid which are under

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Fig. 1: Self-Sucking a dairy cow

different care and feeding conditions at the age of 5 to 7, 5, determined to have self-sucking complaint were used for the study.

Care and feeding: All the cows under the study were kept in a barn and tied there. They were nourished with wheat straw-bran and wheat-straw-barley. No nourishment program was applied according to the physiologic condition of the cows. In other words, they were always fed by the same rations both in lactation with pregnancy and in dry period. Twice a day, in the morning and in the evening, milking by hand was carried out in all the cows.

Methods: In view of the complaints made, firstly, every case was visited; then, anamnesis was taken and later general examination was performed. With a view to confirming self-sucking, examining teats and the anamnesis data of the animal owners, the cases were followed up during sucking and some of them were taken photos (Fig. 1). Furthermore, as a result of the anamnesis cases and observations it was understood that there were dimensional changes in the shape of udders, depending on the fact that most of the cows suck only their front teats for a long time. In order to indicate the changes in question, the length and width of the front and rear udders were measured via compass. In the meantime, with a suitable method by taking milk samples from the cows determined to have mastitis, which begins during the study period or before, the cultivation was performed in a lab, i.e., in a proper medium. In order to prevent self-sucking of the cows in the study, sublingual mucosa was figured out partially according to the knowledge in literature (Allmacher, 1998; Elma and Yavru, 1992; Lidfors and Isberg, 2003; Mccormack, 1976). Prior to starting the operation, milk measurements were performed to expose the amount of daily milk and milk loss due to self-sucking. To that end, for totally 20 days, 10 days before operation and 10 after the recovery of operation injury, the daily-obtained milk from the cows in the research group was measured again and recorded.

In statistical analyses, SPSS packet program and Compare means (Paired-Samples Test) procedure were used.

RESULTS AND DISCUSSION

The studies conducted regarding the behavioral defect in cows indicated that self-sucking cases in dairy cows are quite rare. When the current studies were examined, it was observed that the studies in connection with these subjects focused mostly on those cows which have intersucking problem. In some farms, although there are cows intersucking by 30-40%, it the self-sucking ones in these farms have been reported to be 0.5-1%. However, it has also been suggested that the main reasons in the cows with behavioral defects such as both self-sucking and intersucking may be the same (Passille, 2001; Lidfors and Isberg, 2003).

In this study, on the other hand, it was seen that the rate of the self-sucking cows in some farms was up to 50%. Because, as stated in the material and method part, this study was conducted in family-type farms and in some of these barns, there were only 2 cows. Therefore, it has been seen that the data obtained related to the incidence have not correlated with the data of the researchers mentioned above.

Debreceni and Juhas (1999), Elma and Yavru (1992) and Burmeister (1981) have reported that the self-sucking or intersucking cows which are pregnant can cause to early milk production and the calve has lacked from the colostrum. Naturally, as a result, it has been thought that the calf that cannot get colostrum may become predisposed against infections and may have little chance to survive in the coming process. In this study the results that was not parallel with the ideas put forward by the authors. In this study according to the anamnesis and the data obtained from the observing cows it was determined that the cows have self sucked themselves in dry period; on the contrary, all of them had began to suck themselves especially during the lactation periods when the milk production was high.

Lidfors and Isberg (2003) have stated that self-sucking or intersucking cows absorb nearly 40 or 60 L of milk in a day. In accordance with the data obtained from this study, it was determined that the self-sucking cows absorb normally at least 32% of their daily milk (Table 1). After the operation the milk production get increased.

Table 1: The mean milk production before and after operation for 10 days period

Number of cows	Before operation (day L^{-1})	After operation (day L^{-1})	Diffrence kg	Diffrence (%)
1	7.5	11.1	3.6	32.43
2	6.1	10.8	4.7	43.51
3	7.8	12.8	5.0	39.06
4	5.8	9.4	3.6	38.29
5	6.8	10.0	3.2	32.00
6*	5.4	15.7	10.3	65.60
7	7.8	11.0	3.2	29.09
8	7.1	11.8	4.7	39.83
9	4.6	7.3	2.7	36.98
10*	6.1	17.6	11.5	65.34
11	10.8	16.1	5.3	32.91
12	7.8	11.5	3.7	32.17
13	6.3	11.0	4.7	42.72
14	5.4	8.7	3.3	37.93
15	5.6	9.5	3.9	41.05
16*	3.9	9.6	5.7	59.37
17	6.5	11.2	4.7	41.96

Table 2: The statical results of Table 1

Special feature	The mean of milk production before operation (day L^{-1}) N	Mean	Std. error mean	The mean of milk production after operaton (day L^{-1}) N	Mean	Std. error mean	t	p
Milk production	17	6.547	0.3807	17	11.476	0.6608	8.445	p<0,001

These rates not only show the confirmation of the findings of the so-called authors, but also indicate what kind of a loss the cows with this behavioral defect give rise to economically. Besides, apart from these data, there is also another important point suggesting that the daily milk loss of the cows sucking both the front and rear teats increases by 65% (Table 1). It was seen by statistically significiant (Table 2).

Since, the self-sucking and intersucking cows apply much more pressure on the udder for a long time during sucking, this leads to injuries on udders and causes the portantres to be opened. Moreover, as the teat is sucked at frequent intervals, the udder hole (ostium papillare) remains always open, enabling the microorganisms to enter the teat by preventing the formation of lactosebum which has an important role in the mechanical defense of the teat. Due to such reasons, it has been reported that serious mastitis cases can be shaped (Debreceni and Juhas, 1999; Deveci *et al*., 1992; Hammarberg, 2001).

As Lidfors and Isberg (2003) have stated that, the calves which have sucked their milk from the mastitis shaped teat as a result of intersucking problem, was apperared on their mouth cavity an microorganism which are lead to mastitis.

It has been reported that these factors which are lead to mastitis are mostly Staph. Aureus, Str. Agalactiae and Str. Uberis. Although many researchers (Debreceni and Juhas, 1999; Keil *et al*., 2000, 2001; Keil and Langhans, 2001; Veissier *et al*., 2002) pointed out that serious mastitis cases are seen in the cows having such behavioral defects, it has been seen that they have not provaided to give an numerical data. In this study, mostly Staph. Aureus appears in mastitis cases, also Str. Agalactiae and Str. Uberis were appeared (Table 3). Moreover, it was determined that there has been serious udder injuries in the cows sucking particularly their front teats (Fig. 2, Table 4). However, as Lidfors and Isberg (2003) have pointed out, much more detailed studies are required to be made in order to clarify the real extent of the relationship between self-sucking or intersucking, as well as the injuries of udders and mastitis.

Table 3: The microorganisms are isolated from the self-sucking cows which have mastitis

The No. of the cows	The microorganism which was isolated	The teat of isolated microorganims
4	*Staph. Aureus*	Left front
6	*Str. Agalactiae*	Right front and right rear
8	*Str. Uberis*	Right front
14	*Staph. Aureus*	Left front

Table 4: The cows which have a lesion on the udder

The No. of cows	Front teat	Rear teat
1		
2		
3		
4	X	
5	X	
6*	X	X
7		
8	X	
9		
10*		
11		
12		
13		
14	X	
15		
16*		X
17		

*The cows which have self-sucking problem in front and rear teat together

Normally, in older cows, the udders are 6-8 cm. in length and their thickness is about 3 cm. it is not desirable that the udders should be longer or shorter, or thicker than the values mentioned, because this leads to milking problems and predisposition for mastitis (Grunert, 1984; Senunver and Kirsan, 1995; Wendt *et al*., 1986).

According to Kuczaj (2003), as the milking period lasts longer due to the age of the cows, the extention and thickening of udders increases. Again, according to the researcher, as the lactation number increases, the dimension difference between the front and rear udders increases as well in favor of the rear teats. Also, the udders of cows which are in 3 lactation periods have more thicker teat and the percentage is abaut 11,11-16,08%. Velazques (2000) reported that, as the lactation number increases, the length of the udder get longer, long udders

Fig. 2: The lesion on the thicker udders

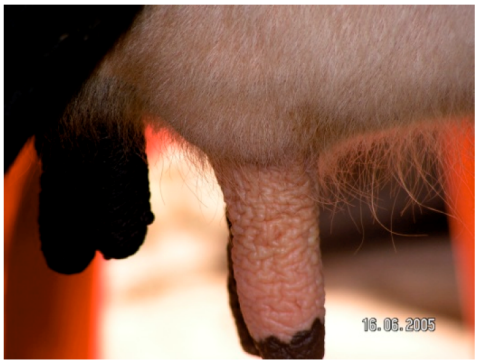

Fig. 3: The assimetry of front udders which are exposed to self-sucking

Fig. 4: The udders which are exposed to self-sucking have thicker and defeater teats than the rears

creates predisposition for mastitis and for this reason, there appears, to exist a correlation of 0.15-0.18 between mastitis and the length of the udder.

Although, there is a commonly held view among the researchers concerning the fact that the self-sucking

Table 5: The length of teats

The No. of cows	The mean lengths of front teats (cm)	The mean lengths of rear teats (cm)
1	4.4	4.1
2	5.6	5.2
3	5.1	4.8
4	7.3	6.9
5	5.7	5.3
6*	5.1	5.0
7	5.8	5.5
8	9.5	8.6
9	6.3	6.0
10*	4.0	4.0
11	5.7	5.4
12	5.9	5.2
13	6.4	6.0
14	9.2	8.4
15	5.4	5.1
16*	6.1	6.0
17	5.5	5.3

* The cows which have self-sucking problem in front and rear teat together

Table 6: The thickness of teats

The No. of cows	The mean thickness of front teats (cm)	The mean thickness of rear teats (cm)
1	2.1	2.0
2	3.1	3.1
3	2.7	2.6
4	3.6	3.1
5	3.3	3.3
6*	3.2	3.1
7	3.5	3.2
8	4.2	3.8
9	3.4	3.2
10*	2.0	2.0
11	3.3	3.0
12	3.1	2.9
13	3.1	2.9
14	3.1	2.9
15	2.7	2.5
16*	2.8	2.7
17	3.3	3.1

* The Cows which have self-sucking problem in front and rear teat together

cows or the ones sucking themselves cause great economic losses in the enterprise and lead to deformations particularly on the udder tissue, it has been observed that there are not detailed studies about their shapes and extents. Because the researchers referred to have been contented only with investigating the possibility that there are economic losses and some deformations in the cows seen to have behavioral defects such as self-sucking and intersucking (Bak and Khyn, 2000; Chua *et al*., 2002; De Passille, 2001; Debreceni and Juhás, 1999; Elma and Yavru, 1992; Suss and Sebestik, 1982). In this study, it was obtained the results confirming the ideas of the authors mentioned above. It was also observed that such self-sucking cows usually absorb their front teats and very few of of them suck both the front and rear teats. Considerable changes were determined in the extension and structure of the udders of cows sucking only their front teats for a long time (at least 2 lactation period) (Fig. 3 and 4).

Table 7: The statical results of the datas given by the Table 5 and 6

	Front teat			Rear teat				
Special feture	N	Mean	Std. error mean	N	Mean	Std. error mean	T	P
The length of teat	14	6.271	0.3906	14	5.843	0.3454	7.536	p<0.001
The thickness of teat	14	3.179	0.1297	14	2.971	0.1116	5.597	p<0.001

On the other hand, it was determined that, in the measurements made by compass, there are important extension differences between the front and rear teats of these cows sucking only their front teats (Table 5 and 6) and the differences are stastistically significant (Table 7).

Considering the results of this study, we conclude that the self-sucking cows can cause failures not only on teat hygen and the structure of the udder but also on the economic parameters. If the real cause is not clarified in the cows sucking particularly both teats or if the self-sucking act is not prevented, great economic problems would to be unavoidable. However, in order to show the real relationship between self-sucking and some possible complications such as mastitis, we are of the opinion that much more detailed investigations should be carried out. In these studies, it can be of great use to concentrate on Red home breed South Anatolian cows (GAK), which frequently show such behavioral defects and are fed intensively in Diyarbakır region.

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