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Reduction of Cross-Sucking among Calves

Reduction by Means of a Modified Drinking Stall and an Enriched Post-Feeding Area

The automatic teat feeder for calves allows the milk quantity to be distributed over several meals per day. However, a meal is dispensed very quickly. As a result, the suckling instinct of the animals generally cannot be satisfied, and cross-sucking sets in. Therefore, the calves were laterally led out of the drinking stall into a separate, enriched post-feeding area by means of constructional-technical alterations to the lockable drinking stall in order to divert the suckling instinct to bucket feeders and hay nets.

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Keywords

Cross-sucking, group-housed dairy calves, automatic teat feeder

The unsatisfied suckling instinct of the calves is mentioned as the main reason for cross-sucking among calves after a milk meal. The frequency of cross-sucking diminishes with temporal distance from milk intake and after the end of milk feeding [1; 2]. If milk is dispensed in buckets, for example, cross-sucking can be reduced by using a tight nipple which prolongs the feeding process [3], fixing the calves after feeding for up to 10 min [4; 5], or offering a highly complex environment [6]. In connection with the automatic teat feeder, for example, lockable drinking stalls, which have been realized in different forms and allow for „empty sucking“ after drinking [7; 8; 9], or the addition of 1 to 2 g of glucose per litre of milk replacer [10] reduce cross-sucking. As an alternative, the influence of a newly developed bionics nipple on cross-sucking after milk intake is being studied. Due to this nipple, the velocity of the milk flow is reduced, and drinking duration is prolonged [11].

Experimental Set-Up

This study was carried out in a cold stall of the FAL Braunschweig. The company Fˆrster (Engen) provided an automatic teat feeder featuring four drinking stalls and an automatic fever measuring system. In order to protect the fever measuring sensors, the nipples were covered by a slide which opened only when a calf was entitled to feeding.

The reference group was stalled up in a two-area pen with deep litter. The raised feeding area consisted of a mechanically lockable drinking stall according to [7], a feed concentrate dispenser, a hay rack, and a water drinker.

In optimized group housing, the resting area was spatially separated from the feeding area. The latter was only accessible via a structured free-range area. The drinking stall was able to be locked using automatic, pneumatically operated doors. With the aid of a specially programmed micro-processor, these doors were controlled and locked if the calf was entitled to feeding and the slide in front of the nipple opened. After the feeding, the slide closed again, and at the same time the lateral door of the drinking stall opened. After the calf had left the drinking stall, the lateral door closed, and the rear doors opened again. The functional reliability of the doors was tested using the aid of two light barriers. Through the lateral door of the drinking stall, the calf reached a separate little stall area which was only accessible after a successful drinking visit. This ìcalming zoneî was equipped with a bucket feeder featuring three closed blind nipples and a hay net, which was filled with a bundle of hay (*fig. 1*). The calves were able to decide themselves when they wanted to return to the group via a manual return flap.

Fig. 1: Calming zone with bucket-feeder and hay-net

For the study, exclusively female calves of the race German Holstein were available. The calves were borrowed from a farm and stalled up at the age of two to four weeks. Group size was twelve calves per group. Given six repetitions, the study was carried out with a total of 144 calves. At the same time, four groups were able to be stalled up parallel.

All groups were fed fresh milk according to the EU eco-regulations for twelve weeks.

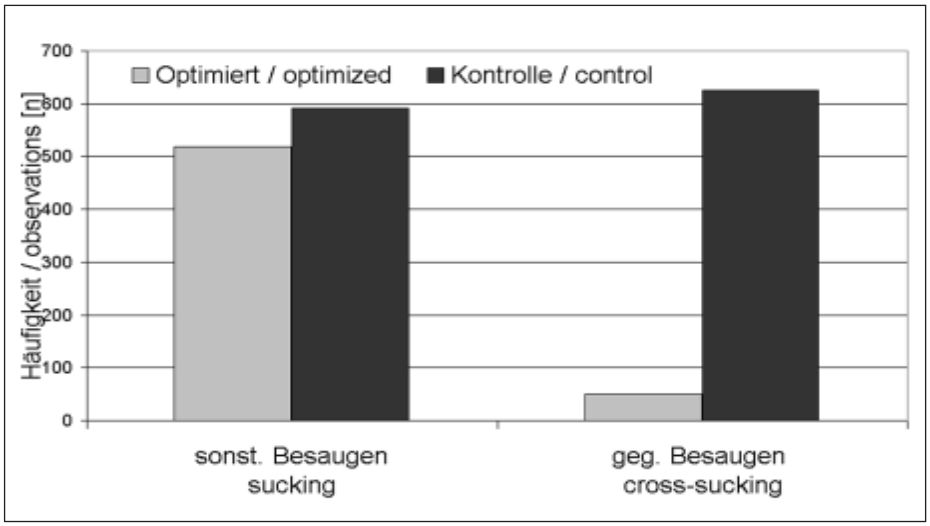

Fig. 2: Comparing other sucking-behaviour and cross-sucking between optimised (treatment) and control groups

At the beginning of the drinking period, 7 l of milk were dispensed per calf and day. This quantity was reduced almost continuously to 2.5 l.

Data Collection

Data were collected through direct observations. Each calf was observed every two weeks on two consecutive evenings for 20 minutes after the night meal.

Initial statistical evaluations are available for the parameters cross-sucking by calves, sucking/gnawing on stall equipment, and duration of hay- and feed concentrate intake. The data of the direct observations were processed and examined using the statistics package SAS (8.1).

Results

With regard to the parameter ìcross-suckingî, a significant difference between the reference groups and optimized group housing was able to be proven. Parameter-free methods (Kruskal-Wallis) were employed for the test because the condition of normal distribution, which was examined using the Shapiro-Wilks test, was not fulfilled.

The same statistical method was used to examine whether differences between the groups existed with regard to other sucking activities, i.e. sucking/gnawing on stall equipment and wood severing. In this case, no significant difference between the groups was able to be proven. The results for both sucking parameters are shown graphically in Figure 2. The comparison of the mean values of the duration of feed concentrate intake per calf and the duration of hay intake per calf did not show any significant differences either (*fig. 3*).

Conclusions

Based on the initial results described above, it was shown that constructional-technical alterations to the drinking stall and an enriched post-drinking area enabled a demonstrable reduction of cross-sucking among rearing calves after milk intake to be achieved.

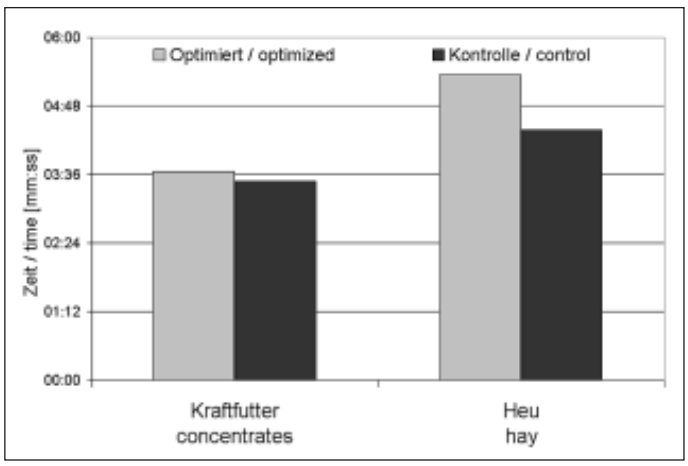

Fig. 3: Mean duration of concentrate and hay intake per calf regarding control and treatment groups

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