ZOOL 567 Topic Summary – Cross-Sucking in Cattle

Cross-sucking is the behavior in which calves suck the body parts of other cattle (Jensen, 2003). Calves do not receive milk from this type of sucking, which makes it abnormal, as the intention of sucking is to receive milk from the mother cow (Jensen, 2003). Common targets of cross-sucking are the ears, mouth, tail, navel, inguinal area, and udder area (Margerison et al., 2003). Cross-sucking is only observed in calves not raised with their mother (Jensen, 2003), and this is the standard practice on commercial dairy farms (Margerison et al., 2003). When housed with other cattle, the pen-mates of the calf that performs cross-sucking become the outlets of the behavior (Lidfors & Isberg, 2003). Cross-sucking is of interest, as well as of concern, because of its association with diseases such as mastitis (Beaver et al., 2019).

One of the major influences on cross-sucking are hormones. De Passille (2001) conducted a literature review to investigate factors influencing cross-sucking and found that the hormones insulin and cholecystokinin, which have roles in metabolism, are positively correlated with sucking. Other researchers (Veissier et al., 2002) investigated how the vagal system (a part of the parasympathetic nervous system) could be affected by sucking. In their experiment, they determined through an electrocardiogram the state of calmness calves experienced after the different feeding methods (bucket or artificial teat). They found that when calves were teat-fed (allowed to suckle as they fed), they were in a calmer state and cross-sucked less post-meal.

Decades ago, de Passille and Rushen (1997) investigated the how different feeding systems affect the motivation of calves to cross-suck. They offered calves artificial teats at different time intervals post-meal (10 minutes, 30 minutes, and 60 minutes post-feeding), and found offering teats quicker rather than later after a meal decreased cross-sucking prevalence. Thus, they suggested it is the taste of milk that stimulates the occurrence of cross-sucking, and sucking motivation drops off a little while after milk ingestion. Scientists later investigated how artificial teat and hay provision affects cross-sucking prevalence by dividing calves into three treatment groups: bucket-fed with no hay, bucket-fed with hay access, and artificial teat-fed with hay access (Horvath & Miller-Cushon, 2017). They found when calves were provided hay, feeding time increased, and cross-sucking prevalence lowered. Thus, the researchers suggested that when the allocated feeding time is sufficient, there is less cross-sucking. Margerison and colleagues (2003) investigated feeding systems in a different way – they wanted to see if calves cross-suckled less when they were allowed to suckle their mother or other female cows. There were three treatment groups: calves that suckled their own mother, calves that suckled other nurse cows, and calves that were bucket-fed. They found that the presence of either the calf's own mother or nurse cow could reduce cross-sucking. However, since housing calves with older cows is not a typical practice on commercial dairy farms, investigations into housing systems are also crucial.

In terms of housing, it is hard to come to a definitive conclusion about what is the best solution for the cattle. Many things, such as the calves' wellbeing, need to be considered. Reipurth et al (2020) investigated this through looking at how play behaviors (a positive reflection of welfare) and cross-sucking (a negative reflection of welfare) relate to group

housing. They defined play behaviors and cross-sucking behaviors on an ethogram and observed the calves. They found play behaviors to be negatively correlated with cross-sucking and concluded that group housing calves too early has no benefit on their wellbeing. Leruste and colleagues (2014) wanted to investigate how different physical factors could affect cross-sucking. They conducted a survey with 157 farms and found space to be a huge factor in cross-sucking. Hence, the researchers suggest more than 1.8 square meters of housing space to each calf helps reduce cross-sucking prevalence.

After reviewing these articles (de Passille & Rushen, 1997, Margerison et al., 2003, Horvath & Miller-Cushon, 2017), future research can look at how different weaning (transition from milk to solid food) methods affect the prevalence of cross-sucking. And since this behavior can continue into adulthood, Lidfors and Isberg (2003) also suggested future research to monitor how cross-sucking behaviors change once cattle enter adulthood in a cohort study.

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