

Using a para rubber-based apparatus for scratching as an enrichment for dairy cows: preliminary results

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Keywords: cows, enrichment, welfare

Introduction

Animal welfare is currently an important aspect in livestock industry. Good welfare of animals and management can reduce stress and enhance productivity and performance of animals (1), for example, increased quality and quantity of pork and beef productions (2,3), as well as the egg quality in chickens (4).

In some countries, a mechanical brush or a motored-rotor brush have been installed to improve the animal welfare in livestock, e.g. in cattle and small ruminants. This apparatus mimics the grooming behaviour and can reduce frustration and stress in the animals (5). Using such the apparatus has also been reported to increase milk production and can reduce mastitis (6). In addition, this apparatus can be used to monitor animals' health as unwell animals usually decrease their activities, therefore, less visit to the apparatus (7).

However, due to the high costs of installing and maintenance, it is not common for farmers in the developing countries, such as Thailand, to be able to afford the original version of the rotor brush machine. This project, therefore, aimed to examine, from the welfare and productivity perspectives, the efficiency of a locally developed, massage brush, para rubber-based apparatus. This product can potentially be an alternative to the more costly, imported version of the rotor brush and provide an affordable option for the farmers and contribute to the enhancement of the animal welfare in Thailand's livestock industry.

Materials and Methods

The experiment was carried out at a dairy cow farm of the Faculty of Veterinary Science, Kasetsart University, Kamphaeng Saen campus. Twelve Holstein Friesian cows, aged between 3-6 years old, were experimented. The para rubber-based apparatus (Fig. 1) was manufactured by S.C.16 Company Ltd. We tested the rubber apparatus with 3 different levels of hardness: 1) Hard, 2) Medium and 3) Soft, installed at 3 different locations inside the house barn. The locations of these rubber apparatus were counter-balanced, switching every 3 weeks. Cow behaviour was recorded on a daily basis, using 4 CCTVs. The frequency and duration of a visit to each apparatus, as well as the cow body language, such as the ears flipping caudally and dorsally or the tail moving unidirectionally, were used as indicators for their preference and the positive emotional valence (8). Pedometers were randomly attached to some of the tested cows to measure changes in their activity levels. Behaviour analysis was performed using Solomon Coder software.

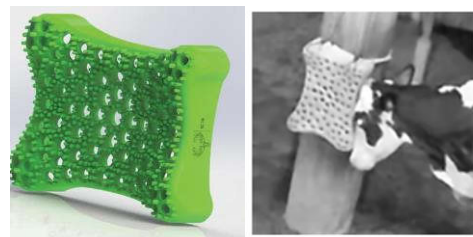


Figure 1 An illustration of the para rubber-based equipment.

Results and Discussion

The initial analysis revealed that all the cows visited the rubber apparatus during the day and the night. The frequency of rubbing against the apparatus was higher than that against the wall (72% vs 28%, respectively). (Fig. 2A). The head and the neck were the body parts that were frequently rubbed against the apparatus. It was noted from the video footages that, during the use of the apparatus, their ears pointed predominantly backward, and the tail seemed to move mainly in a unidirectional fashion. This suggests a potential enjoyment and a positive emotional valence of the cows towards the apparatus

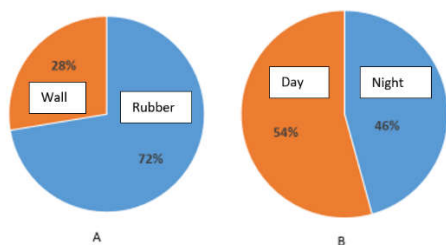


Figure 2 Cow's behaviour towards the rubber apparatus. A, the percentage of the cows rubbing against the apparatus, compared to the wall; B, the percentage of the rubber apparatus usage between the day and the night.

Considering the effect of hardness, the Hard version seemed to be used more frequently than the other versions (53%, compared to 26% and 21% of Medium and Soft, respectively) (Fig. 3A). This reflected their preference towards the Hard one. This result also suggested the cow cognitive ability to discriminate between different levels of hardness. The location of the apparatus seemed to also influence their usage as 47% of the cows visited the apparatus installed at the location II (the middle one amongst the three), while 24% and 29% used the apparatus installed at the location I and III, respectively (Fig. 2B).

Findings from the pedometers revealed an increased level of activity of the cows after the apparatus was introduced. The averaged steps increased from 113 steps/day prior to the installation, to 124 steps per day after the installation. We speculated that this increased activity associates to the use of the apparatus.

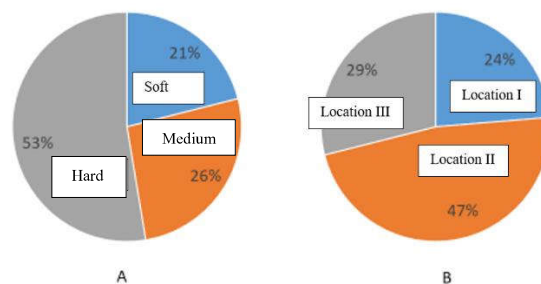


Figure 3 Preferences of the cows towards different levels of hardness of the massage brush rubber apparatus (A) and the locations of instalment (B).

From these preliminary results, it can be suggested that introducing of the tested apparatus could potentially reduce undesirable rubbing against the wall in the dairy cows, thus decrease injuries and related costs. Cognitively, the cows are likely to possess the ability to discriminate the level of hardness of the rubber and they favoured the Hard version of the apparatus. These initial results demonstrated a potential beneficial effect of this locally developed para rubber enrichment apparatus on the welfare of dairy cows.

Acknowledgements

We thank the Faculty of Veterinary Science, Mahidol University and S.C.16 Company Ltd. for the funding.

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