Footbath solution helps to reduce digital dermatitis

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Lameness is highly prevalent in dairy cattle and has significant economic and welfare implications. Approximately 20-25% of all cases of lameness worldwide are attributable to digital dermatitis (DD), and in the UK, some 70% of dairy farms are affected with the disease.

Digital dermatitis is a multifactorial disease defined as a circumscribed, erosive to papillomatous, intensely painful lesion that is often surrounded by a ridge of hyperkeratotic skin bearing hypertrophied hairs and is associated with lameness.

Laven and Logue (2006) critically reviewed footbath formulations that are commonly used in the UK for treatment of digital dermatitis, and found that, despite the array of substances used in footbaths, very few had been tested in controlled studies, and that their mode of use was subjective and efficacy unknown.

Experimental study

A recent study was undertaken to evaluate the effectiveness of using Healthy Hooves as a footbath solution, compared with normal farm practice of using a copper sulphate solution, on the incidence and severity of lameness in dairy cattle, and in particular on digital dermatitis.

The study was conducted by Lindsay Heasman and Matt Dobbs of Westpoint Veterinary Group, with Barry Clements of Healthy Hooves Europe, Pre-treatment Solutions.

A total of 84 animals were used in the study. From the start, each animal in the herd was footbathed on a twice-daily basis for 10 consecutive milkings each week (Monday afternoon to Saturday morning inclusive).

A longitudinally split footbath was used, with the control treatment (5% copper sulphate solution, CS) used in the left hand side of the footbath (ie each animal's front left and hind left feet were exposed to CS) and Healthy Hooves (2% Healthy Hooves solution plus 2% copper sulphate (HH)) used in the right hand side (ie each animal's front right and hind right feet were exposed to HH).

The allocation of treatment solution to each side of the footbath was randomly decided by the toss of a coin. The CS solution was changed daily, while the HH solution was changed three times per week. The preparation and changing of all footbath solutions was performed by study staff. The study ran for 12 weeks, from 1st September to 25th November 2010 (day 84).

Before it began, each animal was mobility scored and had all four feet lifted, trimmed where appropriate, and scored for the presence and severity of digital dermatitis, to enable baseline data to be collected.

Mobility scoring was then performed every four weeks until the end of the study. An additional mobility score was collected 10 weeks after the completion of the study.

An assessment of the presence and severity of digital dermatitis was also made on the final day.

During the mobility scoring assessment, each cow was observed walking on a level concrete surface, and scored on a scale of 0-3, using the recognised DairyCo lameness scale.

For cows scored 2 or 3, the lame leg was also recorded. During the digital dermatitis assessment, and where digital dermatitis was present, this was scored as mild (Score 1), moderate (Score 2) or severe (Score 3).

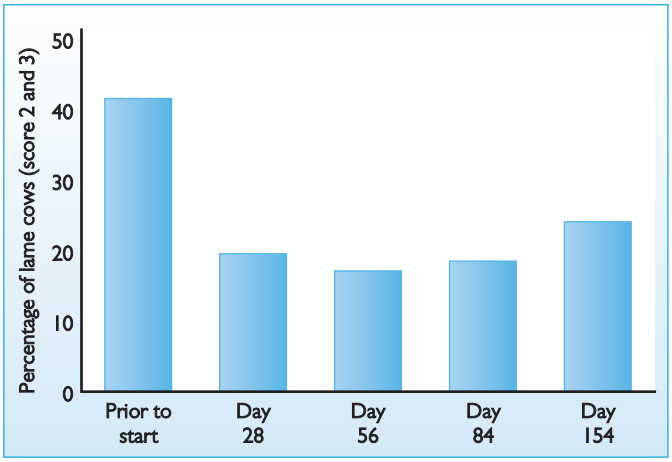

Fig. 1. Percentage of lame cows (Scores 2 and 3) during the study.

Results

The results of the mobility scoring clearly showed a reduction in the number of lame cows (Scores 2 and 3) by day 28 of the study, and that this reduction was maintained for the duration of the study.

Interestingly, 10 weeks after it was completed, the percentage of lame cows in the herd had increased from 18.1% to 24.7%. Before the start of the study, 28 (33.3%) of enrolled animals had DD affecting at least one foot. DD lesions were recorded on a total of 35 feet, with 13 of these being on the right and 22 on the left.

By the final day, only three animals (3.6%) had persistent DD lesions.

The effects of each test article on reducing the severity of digital dermatitis were analysed, but were found not to be significantly different from one another (Mann-Whitney test. P>0.05), as each treatment virtually eliminated digital dermatitis.

Summary

This study clearly demonstrated that footbathing with Healthy Hooves controlled DD in the study animals as effectively as using 5% copper sulphate, while using significantly less copper sulphate.

The amount of copper sulphate used in the CS group was 300kg (5kg per 100 litres, changed five times per week for 12 weeks), compared with 72kg in the HH group (2kg per 100 litres, changed three times per week for 12 weeks), representing a 76% reduction in the amount of copper sulphate used.

There is growing concern that the use of copper sulphate footbath solutions contributes to the accumulation of copper on soil, as footbath water is typically discarded into the manure lagoon and therefore spread onto land.

This study provides further evidence that routine footbathing, coupled with a regular foot care programme, can control digital dermatitis and reduce the incidence of lameness in dairy cattle. ■

Table 1. Incidence (% severity) of digital dermatitis lesions.

	Prior to start		Day 84	
	Left feet	Right feet	Left feet	Right feet
Mild (Score 1)	8	3	2	2
Moderate (Score 2)	8	4	0	0
Severe (Score 3)	6	6	0	0
No. cases scored 1-3	22	13	2	2