Controlling the spread of bovine digital dermatitis

Gareth J. Staton[1], Amy Gillespie[1], Nicholas J. Evans[1], Roger Blowey[2] and Stuart D. Carter[1]

[1]Institute of Infection & Global Health, University of Liverpool, Leahurst Campus, Chester High Road, Neston, UK and [2]Wood Veterinary Group, Gloucester, UK.

To the Editor,

Bovine digital dermatitis (BDD) is a major infectious cause of lameness in both beef and dairy cattle worldwide, with significant welfare and economic implications. Pathogenic spirochaetes belonging to the genus *Treponema* are highly associated with the BDD lesion and are considered essential to its aetiology. BDD transmission routes have yet to be fully defined, although transmission *via* unsterilized foot trimming equipment, and in particular, trimming blades, is supported by epidemiological data: Wells *et al.* (1999) demonstrated that a failure to clean trimming blades between cows was associated with a high (>5%) herd incidence of BDD (Odds Ratio 1.9). Recent research undertaken by our group has demonstrated that blades used to trim BDD-symptomatic feet readily become contaminated with the BDD-associated treponeme DNA and cultivatable cells (Sullivan *et al.*, 2014). Moreover, we have shown that under aerobic conditions, treponeme viability on foot trimming blades is maintained for up to two hours (Gillespie *et al.*, 2019), which may facilitate both intra- and inter-herd transmission. To mitigate the risk of BDD transmission *via* this route, disinfection of the foot trimming blades should be considered.

Previously, an *in vitro* evaluation of several footbath disinfectants against a BDD treponeme isolate (*Treponema phagedenis*-like) revealed that the minimum inhibitory concentrations and minimum bactericidal concentrations remained below working disinfectant concentrations (Hartshorn *et al.*, 2013). In addition, this activity persisted despite up to 20% manure contamination, implying that effective concentrations could be achieved practically on farm. Recently, we investigated the disinfection efficacy of popular disinfectants against BDD-associated treponemes on foot trimming blades *in vitro* and demonstrated that a 20 s contact with 1% FAM®30, 2% Virkon® or 2% sodium hypochlorite rendered treponemes non-viable (Gillespie *et al.*, 2019), effectively eliminating the potential for transmission.

With these data, we have developed a standardized blade disinfection protocol which we recommend as part of a holistic approach to BDD infection control. The disinfection protocol, to be applied during foot trimming, is available online at: https://ahdb.org.uk/reducing-spread-of-DD

References

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