



Topical Digital Dermatitis Treatments Summary

Introduction

Digital dermatitis is one of the most commonly identified foot lesions and is treated with a wide range of products. When treating digital dermatitis, it is important to consider the impact of treatment on lesion improvement, pain reduction and the potential for the treatment to cause residues. This document lists the data available for commonly marketed products in North America. The objective of this paper is to be a reference for veterinarians when their clients ask them about the efficacy and safety of digital dermatitis treatment products. For each product, a peer-reviewed literature search was done to determine if the product had been evaluated. Data from products are only listed in the evidence table if the paper included a comparison group of either no treatment or tetracycline as a positive control. No judgment was made on the quality of the study related to sample size, study procedures or outcomes.

Evidence quantity was rated as:

- **Repeated**
More than one control study with a control group of either no treatment/saline or tetracycline
- **Minimal**
At least one control study with a control group of either no treatment/saline or tetracycline
- **Poor**
At least one study without a control group of either no treatment or tetracycline
- **None**
No studies

Summary

Only a few non-antibiotic products have published evidence related to their efficacy. For antibiotic products such as tetracycline, only a few treatment protocols have been repeated. All studies have various limitations related to sample size and how/when outcomes are measured. In addition, the treatment protocol for the majority of antibiotic and nonantibiotic products requires multiple treatments. Considering this is not how digital dermatitis is typically managed on commercial dairy farms, we are left with gaps in our knowledge of the real-world efficacy of the products.



Products available in North America with published peer-reviewed data

Product name	Ingredients	Dosage	Efficacy	Evidence quantity	Foot bathed during study	Evaluated for milk residues
Tet wrap/paste	Tetracycline HCl	2-5 g under a bandage or applied as paste	8-12 days after application 57.1% in the wrap and 47.4% in the paste group were healed (no active moist surface); this compared to 0% healed with no treatment. After 3 months 17.1% of the lesion recurred in the bandage group and 26.6 % in the paste group (Cutler et al., 2013).	Repeated	Yes	Yes None were found in the study. In Cramer et al. (2019) at a 2-5 g dose cow or bulk tank withdrawal times range from 0 to 27 hours at 100 or 300 ppb.
Commercial tet spray (Cyclospray in Canada)	Chlortetracycline		At day 3, 14 or 34. Tetracycline spray cure rates were 31.6%, 41.8%, and 50.5% (Schultz and Capion, 2013). At day 28, 58% of M2 lesions improved to either M1, 3 or 4 for tetracycline spray treatment at day 0, 1, 2 (Holzhauer et al., 2011).	Poor	Unknown (Schultz and Capion, 2013) No (Holzhauer et. al., 2011)	No
Compounded Tetracycline Spray	Tetracycline HCL	5 ml (2-3g tet) for up to 8 treatments (Jacobs)	Tet powder mixed with a saline spray: probability of clinical cure of active lesions (M1, M2, M4.1) at week 1 or week 8 post-treatment was 68.8% and 32.6% Compared to the saline cure rates of 33.5% and 10.0%, the cure rates were numerically higher but only statistically better in week 1 (Jacobs et al., 2018).	Repeated	Yes	No
Lincomycin Soluble Powder	Lincomycin	10g under a bandage	After 29 days 65% of cows treated with lincomycin were classified as non-active compared to 22% of untreated cows (Moore et al., 2001).	Repeated	No	No THERE IS NO LICENSED LINCOMYCIN PRODUCT FOR CATTLE HENCE, THE TOLERANCE IS ZERO. THEREFORE, USE IS NOT RECOMMENDED.
HealMax® Wart Spray – AgroChem	Glutaraldehyde-based	5 ml for up to 8 treatments	Probability of clinical cure of active lesions (M1, M2, M4.1) at week 1 or week 8 post-treatment was 52.2% and 30.8%. Compared to the saline cure rates of 33.5% and 10.0% the cure rates were numerically higher but only statistically better in week 1 (Jacobs et al., 2018).	Minimal	Yes	No



Products available in North America with published peer-reviewed data (continued)

Product name	Ingredients	Dosage	Efficacy	Evidence quantity	Foot bathed during study	Evaluated for milk residues
Hoof Sol Liquid Spray	Copper/Zinc/ Aloe vera	5 ml for up to 8 treatments	Probability of clinical cure of active lesions (M1, M2, M4.1) at week 1 or week 8 post-treatment was 79.0% and 45.3%. Compared to the saline cure rates of 33.5% and 10.0% the cure rates were numerically higher but only statistically better in week 1 (Jacobs et al., 2018).	Minimal	Yes	No
Salicylic Acid Powder (SA)	Salicylic acid USP	10g under a bandage for 3 days	Compared to a tetracycline spray SA cure (healing or improvement) rate of any lesion was 23.3%, 38.8%, and 50.5% at day 3, 14 or 34. Tetracycline spray cure rates were 31.6%, 41.8%, and 50.5% (Schultz and Capion, 2013).	Repeated	Not reported	Detectable levels of salicylic acid up to 36 hours (Wirt et al., 2021).
Hoofpro – SSI Corporation	Ionized copper (0.67%) and sulfur (2.2%) low pH solution	8 days total (5 consecutive with a 2-day break and then 3 treatments every other day)	On day 14 and day 28 10/10 cows still had visible painful lesions. This is more than using tetracycline (2/11 cows with painful lesions and 4/11 cows with visible lesions on day 28) and similar to just using tap water (Hernandez et al., 1999).	Minimal	Not reported	No
Victory Topical™ – Babson Bros Co.	Soluble copper, peroxide compound, and a cationic agent	8 days total (5 consecutive with a 2-day break then 3 treatments every other day)	On day 14 2/14 cows had a painful lesion while 14/14 had a visible lesion. On day 28 3/15 cows had painful lesions and 15/15 cows had visible lesions. This was better than using tetracycline spray (25g/ml) (9/15 cows with painful lesions and 12/15 cows with visible lesions on day 28) (Shearer and Hernandez, 2000).	Minimal	Not reported	No
Copper Sulfate	5%	8 days total (5 consecutive with a 2-day break and then 3 treatments every other day)	On day 14 9/10 cows had painful and visible lesions. On day 28 8/10 cows had painful and visible lesions. This is more than using tetracycline (2/11 cows with painful lesions and 4/11 cows with visible lesions on day 28) and similar to using tap water (Hernandez et al., 1999).	Minimal	Not reported	No



Products available in North America with published peer-reviewed data (continued)

Product name	Ingredients	Dosage	Efficacy	Evidence quantity	Foot bathed during study	Evaluated for milk residues
Intra Hoof-fit Gel – Intracare	Copper and zinc containing chelate	5g at day 0 with a wrap, day 3, and 7 with a brush	On day 28 92% of M2 lesions improved to either M1, 3 or 4 compared to 58% for Tetracycline spray treatment at day 0, 1, 3 (Holzhauer et al., 2011).	Minimal	No	No
GreenSpray (Intra Epidine spray) – Intracare	Copper and zinc containing chelate	On day 0, 1 3 second spray and wrapped for 3 days followed by spray on days 3 and 7	On day 10 of the study (3 days after the last treatment the 87% of lesions improved (M2 to not M2). Compared to 48% of the lesions improving on day 10 (7 days after last treatment) for the chlortetracycline spray (treated on days 0,1,2) (Dotinga et al.).	Minimal	No	No
Copper and Iodine	30ml 7% iodine plus 940g copper	10 ml under 3-day wrap	In the copper and iodine group on day 3, 32% of M1/M2 lesions improved to M0/M4. On day 12, 65% had improved. On day 28, 76% had improved. This compares to 14% and 32 %, and 73% improvement on days 3, 12, and 28 in the no-treatment group (Paudyal et al., 2020).	Minimal	Yes	No
Honey and iodine	30ml 7% iodine 570 g of honey	10 ml under 3-day wrap	In the honey and iodine group on day 3, 27% of M1/M2 lesions improved to M0/M4. On day 12, 50% had improved. On day 28, 64% had improved. This compares to 14% and 32 %, and 73% improvement on days 3, 12, and 28 in the no-treatment group (Paudyal et al., 2020).	Minimal	Yes	No



Products available in North America with no published peer-reviewed data

Product	Ingredients
Hoof Solutions Copper Wart Spray – Heartland Health Mfg.	Copper sulfate, hydrochloric acid 5%, natural ingredients
Cupricyn Wart & Roof Care Spray – Radix Labs	CuSO ₄ in buffered base
Dr. Sarah's Foot Fix Spray	Essential oils and herbal extracts
Dr. Paul's Foot Salve	Diatomaceous earth, mineral oil, tea tree oil, eucalyptus oil, grape seed extract, evergreen and camphor
Gold Series Wart Spray – Heartland Health Mfg.	Proprietary essential oil blend, liquid hydrocarbon, penetrants and surfactants, mineral acid
Hoof & Wart Gel – Radix Labs	Chelate of CuSO ₄ and ZnSO ₄ in buffered emollient gel
Dr. Naylor's Hoof 'n Heel	Concentrated ZnSO ₄ solution, sodium lauryl sulfate
QuickHit Gel – SSI Corporation	Copper, zinc, inert carriers, salicylic acid
QuickHit Liquid – SSI Corporation	Zn (0.71%), Cu (0.33%), Sulfur (0.5%)
Topshot spray and paste – Speciality Sales/Hoofstrong	Zinc chloride
Wundersauce	Made with a blend of organic materials, natural healing plant extracts and 100% natural oils
BHA Bovine Hoof Adhesives Hoof Solution Boviderma	Chelated and micronized zinc and copper Aloe vera
THexx Dragonhyde putty	Brilliant green, phenoxyethanol, polyethylene terephthalate
J & L Hoof Gel/Spray	Copper?
Big Shot	Zinc Oxide and attapulgite (Kaopectate) [®]

References

- Cramer G, Solano L, Johnson R. 2019. Evaluation of tetracycline in milk following extra-label administration of topical tetracycline for digital dermatitis in dairy cattle. *J Dairy Sci* 102:883–895. doi:10.3168/jds.2018-14961.
- Cutler JHH, Cramer G, Walter JJ, Millman ST, Kelton DF. 2013. Randomized clinical trial of tetracycline hydrochloride bandage and paste treatments for resolution of lesions and pain associated with digital dermatitis in dairy cattle. *J Dairy Sci* 96:7550–7557. doi:10.3168/jds.2012-6384.
- Dotinga, A., R. Jorritsma, and M. Nielen. A Randomised Non-inferiority Trial on the Effect of an Antibiotic or Non-antibiotic Topical Treatment Protocol for Digital Dermatitis in Dairy Cattle. *Vet Evid* 2:13.
- Hernandez J, Shearer JK, Elliott JB. 1999. Comparison of topical application of oxytetracycline and four nonantibiotic solutions for treatment of papillomatous digital dermatitis in dairy cows. *J Am Vet Med Assoc* 214:688–690.
- Holzhauser M, Bartels CJ, van Barneveld M, Vuldere C, Lam T. 2011. Curative effect of topical treatment of digital dermatitis with a gel containing activated copper and zinc chelate. *Vet Rec* 169:555–555. doi:10.1136/vr.d5513.
- Jacobs C, Orsel K, Mason S, Barkema HW. 2018. Comparison of effects of routine topical treatments in the milking parlor on digital dermatitis lesions. *J Dairy Sci* 101:5255–5266. doi:10.3168/jds.2017-13984.
- Moore DA, Berry SL, Truscott ML, Koziy V. 2001. Efficacy of a nonantimicrobial cream administered topically for treatment of digital dermatitis in dairy cattle. *J Am Vet Med Assoc* 219:1435–1438.
- Paudyal S, Manriquez D, Velasquez A, Shearer JK, Plummer PJ, Melendez P, Callan RJ, Sorge, Bothe H, Velez J, Pinedo PJ. 2020. Efficacy of non-antibiotic treatment options for digital dermatitis on an organic dairy farm. *Vet J* 255:105417. doi:10.1016/j.tvjl.2019.105417.
- Schultz N, Capion N. 2013. Efficacy of salicylic acid in the treatment of digital dermatitis in dairy cattle. *Vet J* 198:518–523. doi:10.1016/j.tvjl.2013.09.002.
- Shearer JK, Hernandez J. 2000. Efficacy of Two Modified Nonantibiotic Formulations (Victory) for Treatment of Papillomatous Digital Dermatitis in Dairy Cows. *J Dairy Sci* 83:741–745. doi:10.3168/jds.S0022-0302(00)74936-8.
- Wirt KM, Young JM, Cramer G, Wagner SA. 2021. Topical salicylic acid treatment of digital dermatitis in dairy cows, *Bov Pract* 2021.