



Assessing the efficacy of treatment for Digital Dermatitis in organic dairy systems.

Sushil Paudyal and Pablo Pinedo

Department of Animal Science, Colorado State University

INTRODUCTION

- Digital Dermatitis is a major cause of lameness in dairy cows
- Primary consequence of DD infection is pain, which results in reduced animal welfare and significant economic loss.
- There is a need in organic systems for validated treatment options that can be used to treat disease conditions.
- Predisposing factors
 - Biosecurity, Hygiene, Cow comfort
- Pathogen associated
 - Spirochaetes : Treponemes
 - Fusobacterium, Campylobacter, Bacteroides

OBJECTIVES

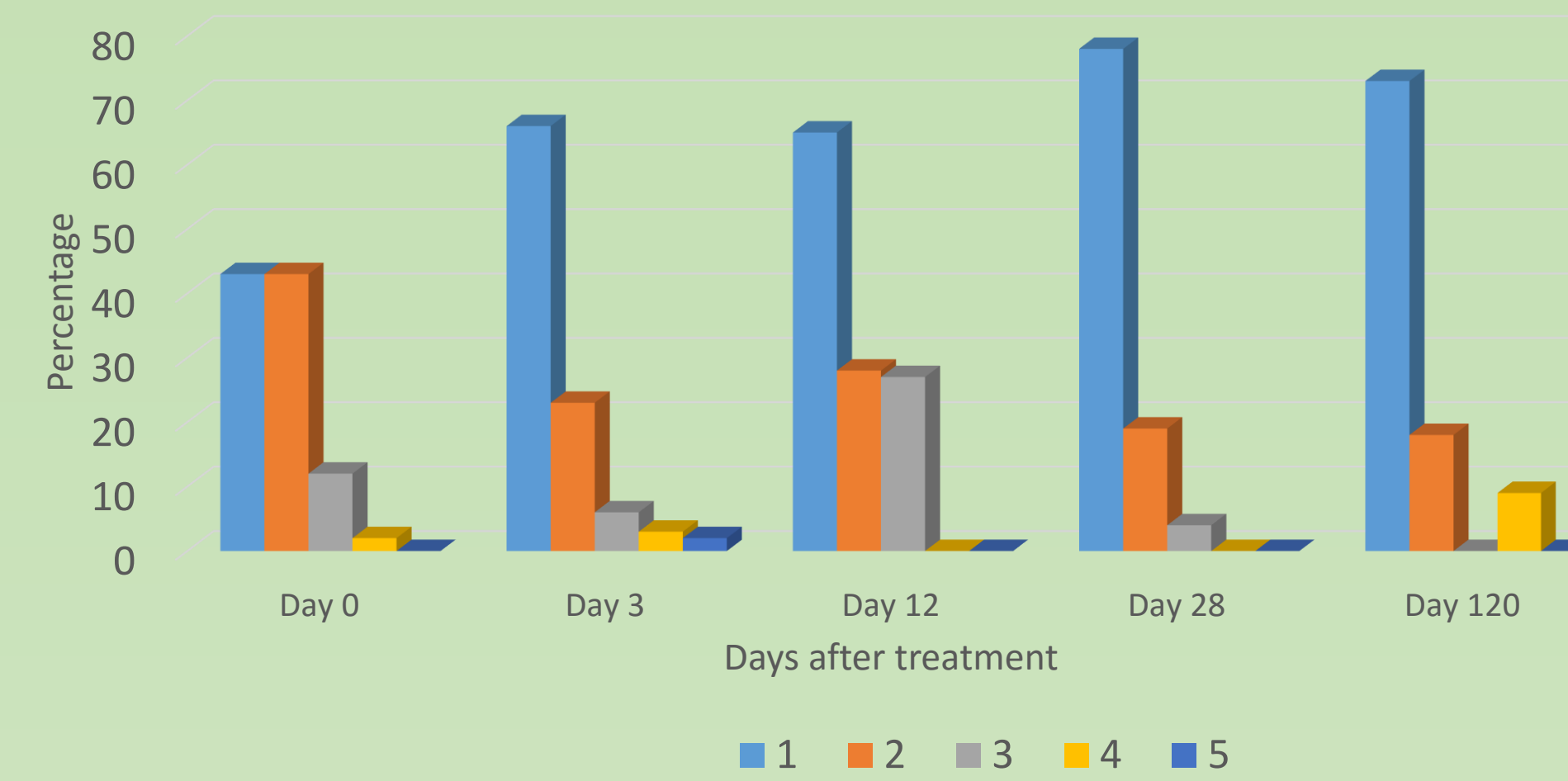
To evaluate the efficacy of treatment of DD using different combinations of copper sulphate, Iodine, and honey.

MATERIALS & METHODS

- Cows were identified in the pen with visible pain response in their rear leg.
- Cows with only M1 & M2 lesions were enrolled at the trimming chute.
- Follow up conducted for 70 cows on d3, d12, & d28.
- A subsample of 45 cows were followed till d120.
- Design
 - Randomized controlled trial
 - Three treatment options
 - Controls (CON)
 - CuSO₄ + Iodine (CS-I)
 - Honey + Iodine (HO-I)
- Lesion was bandaged and the bandage was removed at day 3 following treatment.
- Repeated Measures analyses
 - Between subject (treatment effects)
 - Within subject (day effect)
- PROC MIXED and PROC GENMOD (SAS)

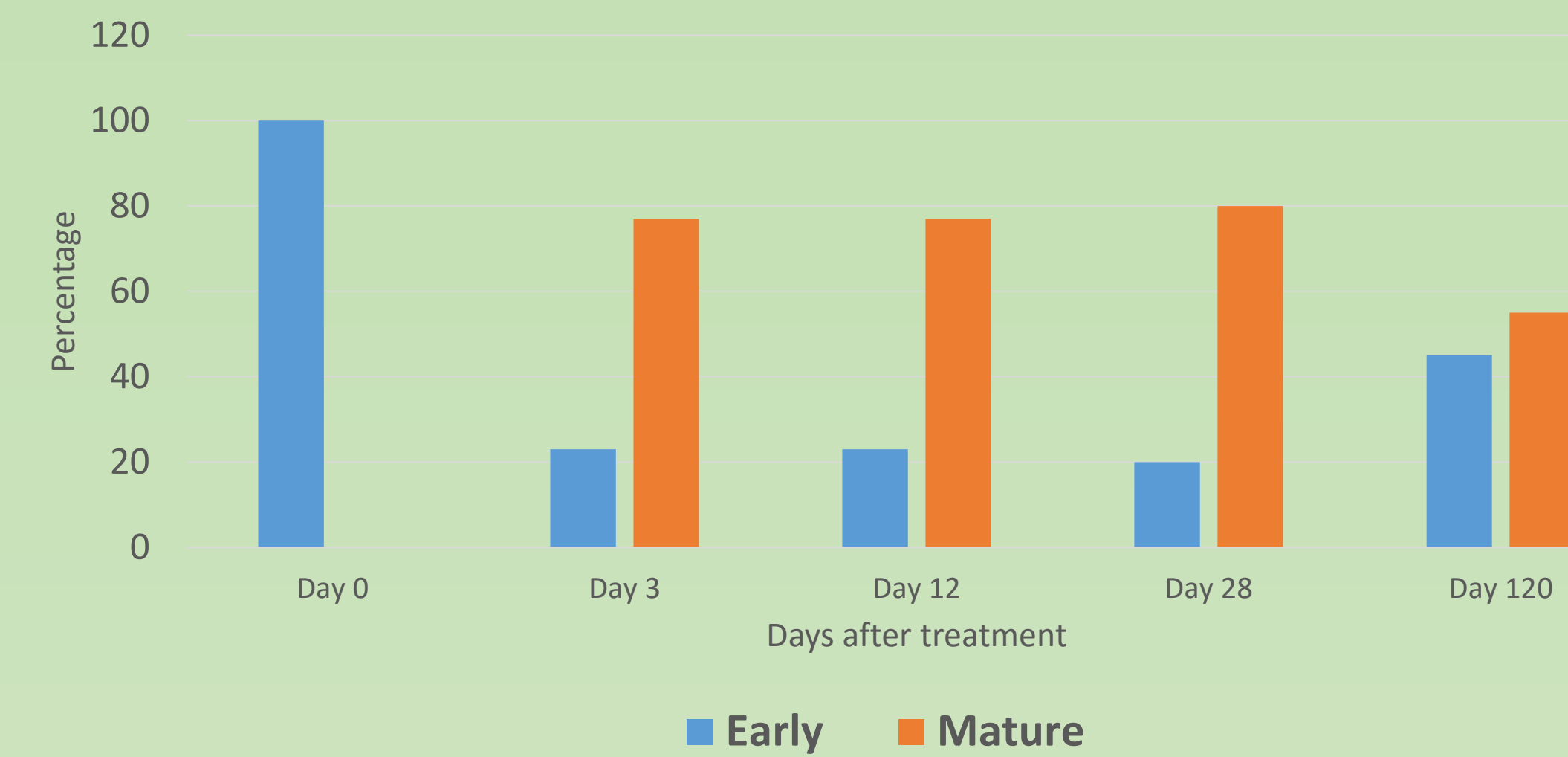
RESULTS

Lameness scores in different follow up days



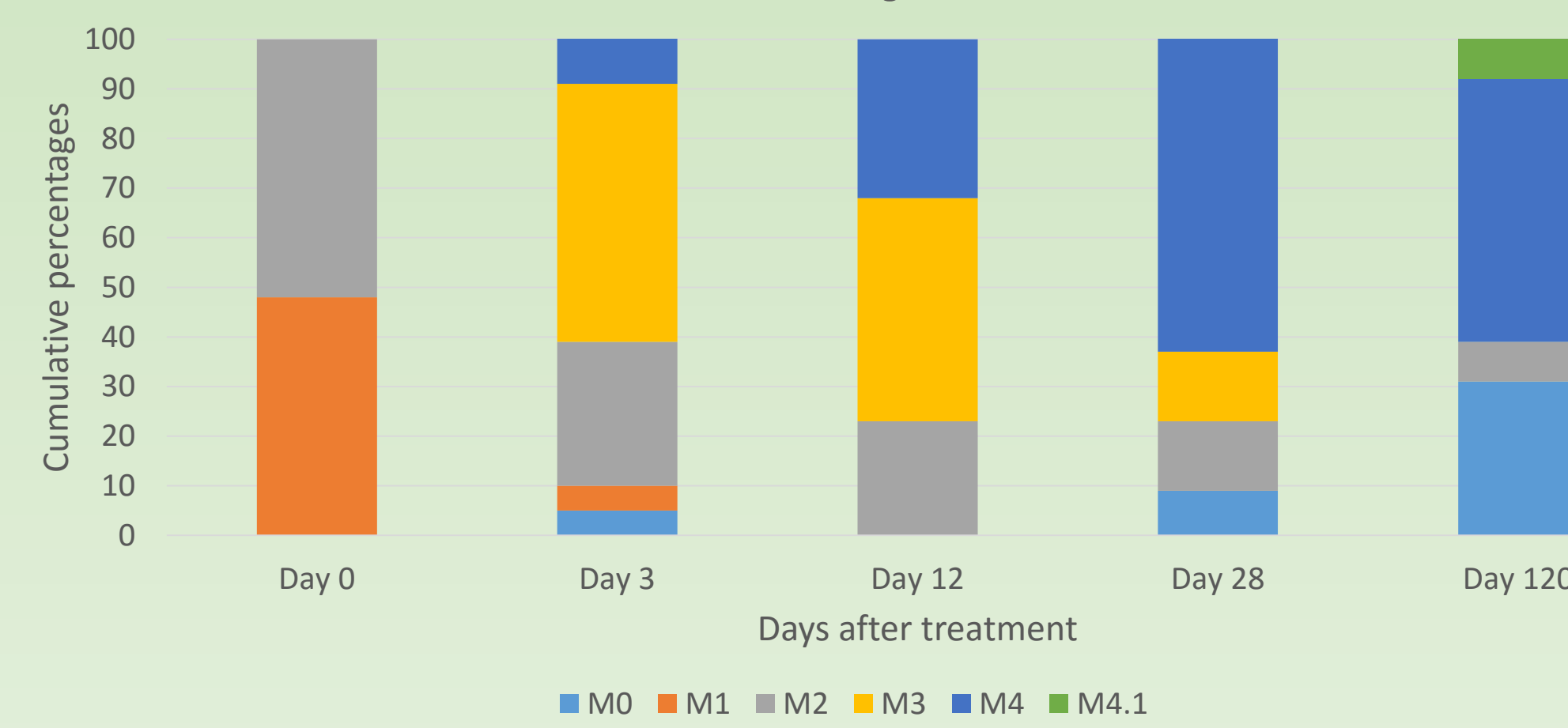
- Lameness scores decrease with increasing follow up days.

Lesion score in different follow up days

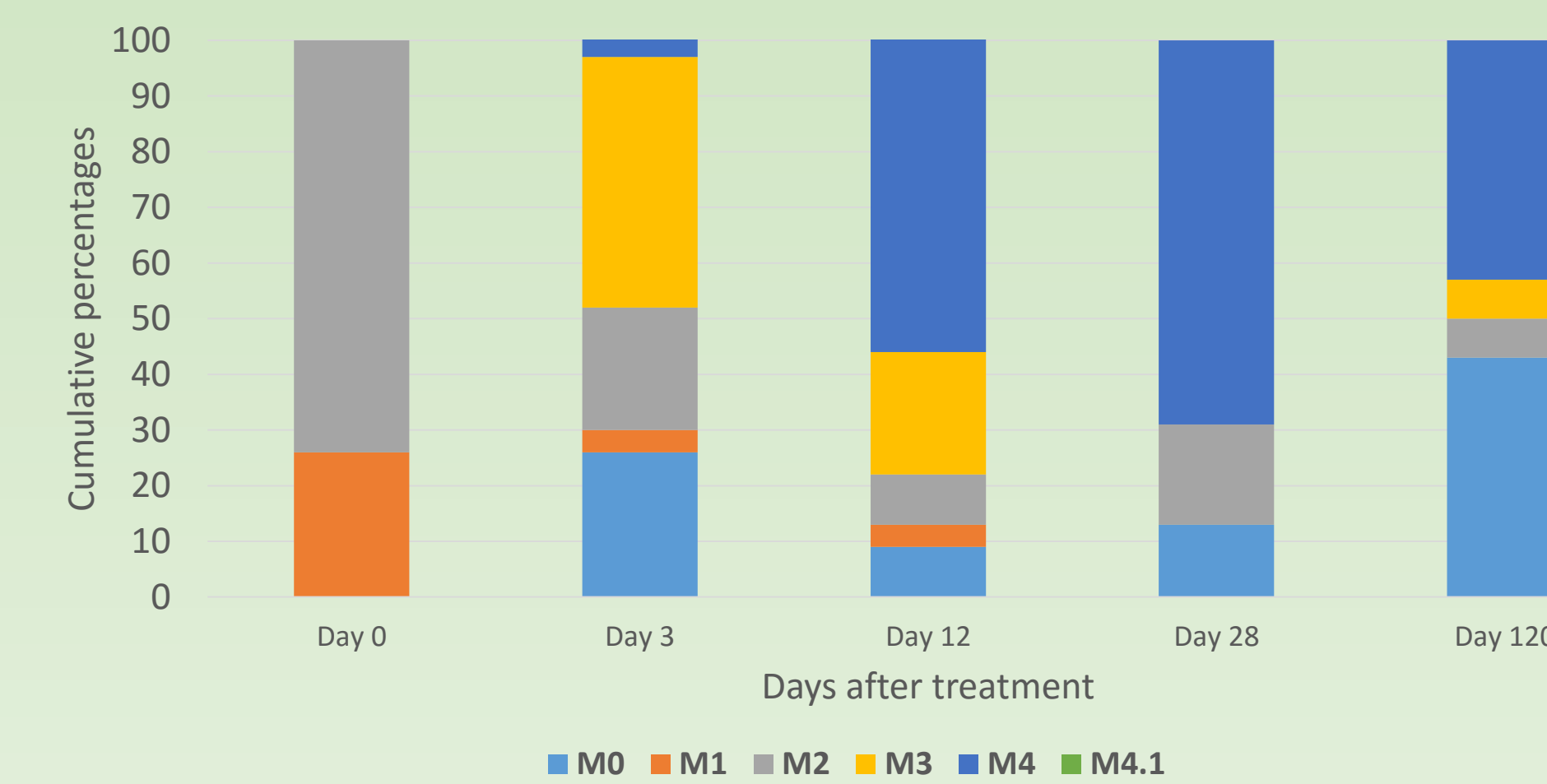


- Lesion scores change to mature from early lesion with increasing follow up days.

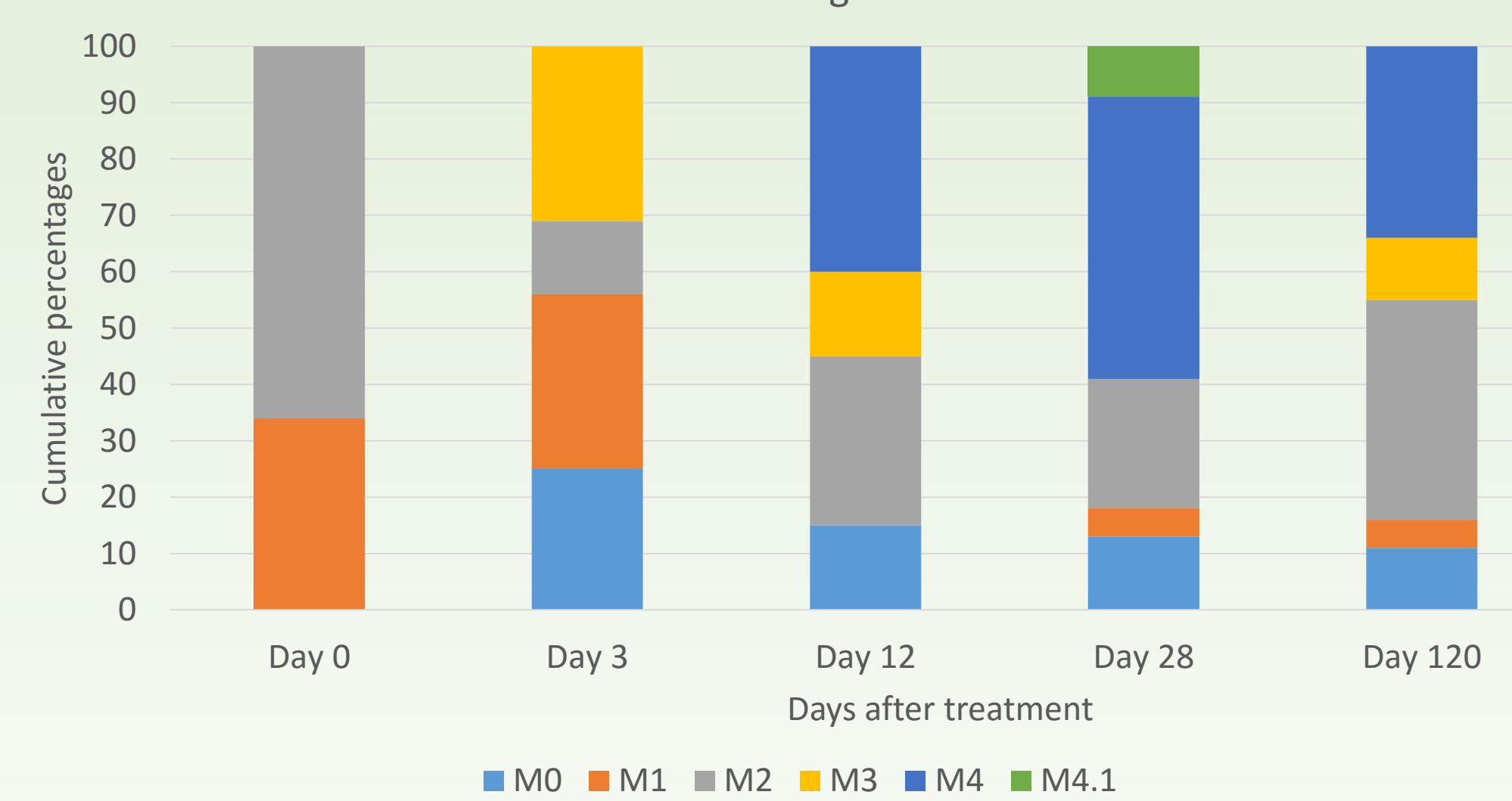
Distribution of Lesions among cows treated with CON



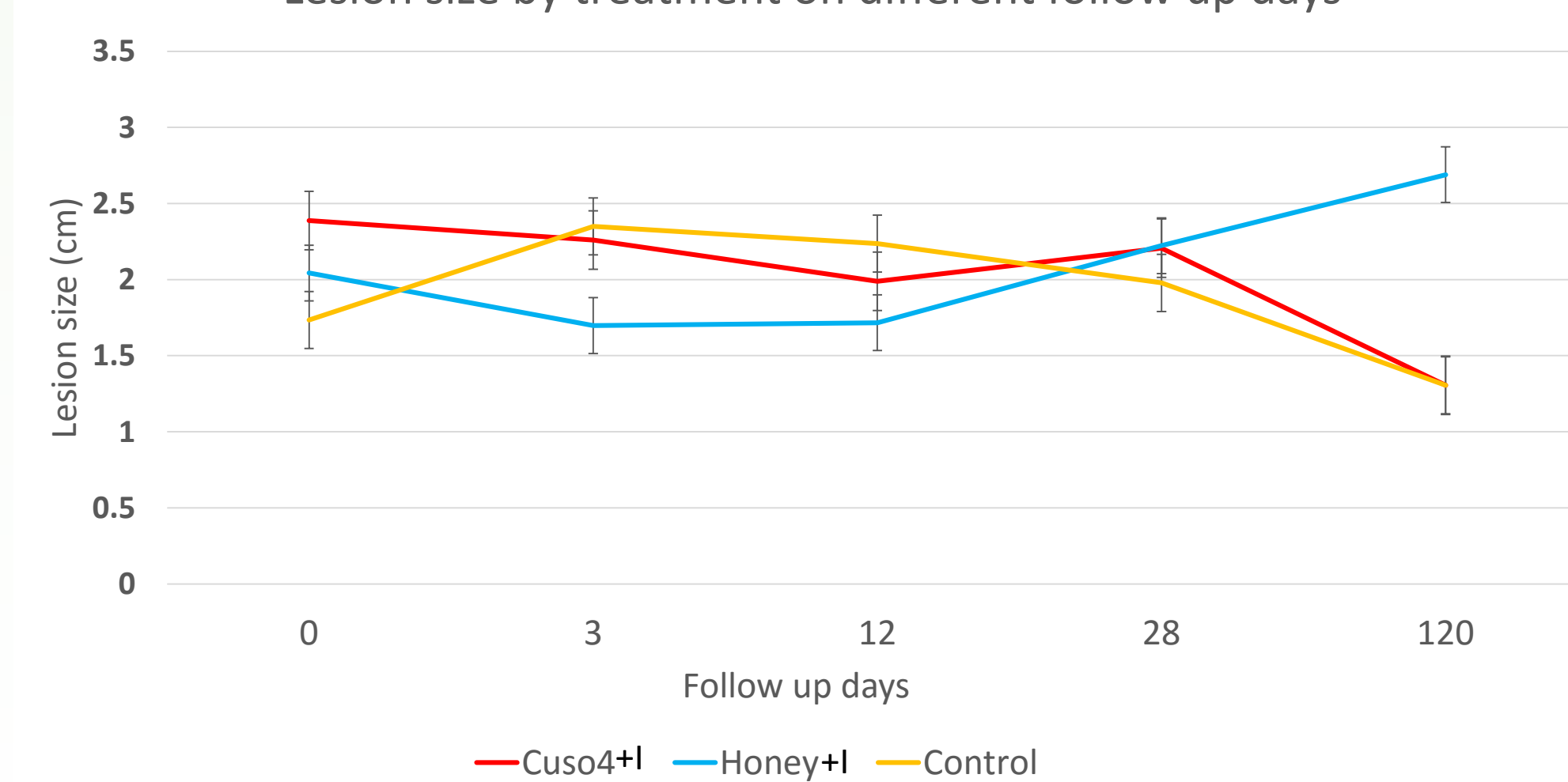
Distribution of Lesions among cows treated with CS-I



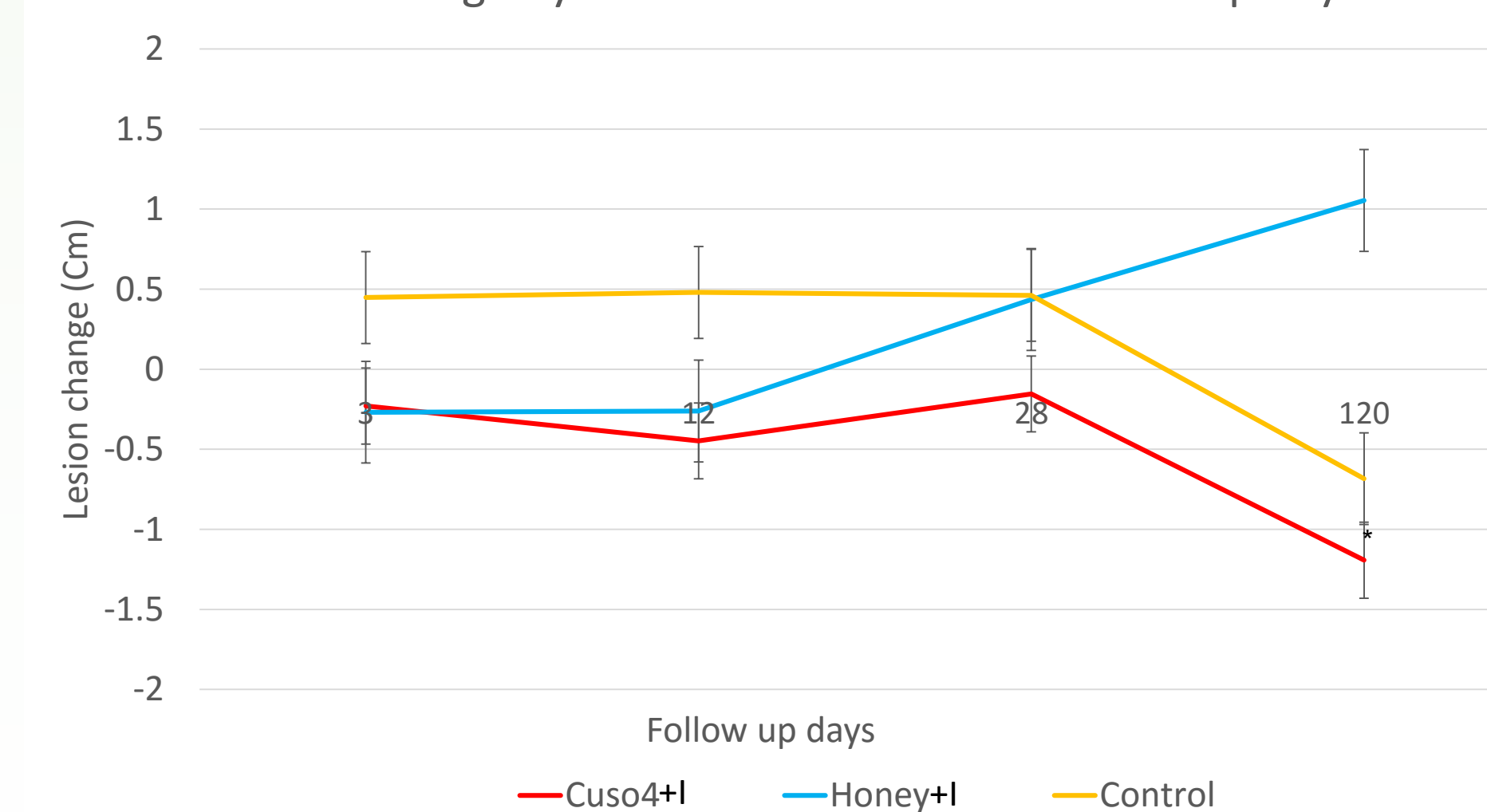
Distribution of Lesions among cows treated with HO-I



Lesion size by treatment on different follow up days



Lesion change by treatment on different follow up days



RESULTS contd.

- Effect of treatment on pain response

	Odds ratio	95% CI		Odds Ratio	95 %CI
HO-I vs CS-I	2.23	0.93-5.35	0 vs 3	4.69	2.7-6.6
CON vs CS-I	0.15	0.05-0.43	0 vs 12	4.92	3.1-6.7
CON vs HO-I	0.34	0.13-0.89	0 vs 28	5.55	3.6-7.5
			0 vs 120	5.55	3.7-7.4

- Effect of treatment on lameness score

	Odds Ratio	95%- CI
0 vs 3	2.87	1.29-6.35
0 vs 12	2.49	1.23-5.03
0 vs 28	5.36	2.4-11.98
0 vs 120	3.67	1.78-7.61

CONCLUSIONS

- Non antibiotic treatment options are effective in controlling pain and decreasing lesion size at day 120 after treatment.
- Clinical assessment of animals and evaluation of lesions suggest CuSo₄ and Iodine combination to be superior than honey Iodine combination and Control group.
- Higher odds of getting animal in pain if they were in control group than in treatment group. CS-I group showed least pain.
- Higher odds of cows demonstrating lameness on day 0 of treatment and the odds decreases on subsequent days!

CONTACT

Sushil Paudyal
 Department of Animal Science
 Colorado State University
 Email: Sushil.paudyal@colostate.edu