

FLUORESCENCE PHOTOBIMODULATION THERAPY

Annette Lundberg, DVM
Dermatology Resident
Auburn University

1

OUTLINE

Photobiomodulation

Fluorescence photobiomodulation

Clinical examples

2

PHOTOBIOMODULATION

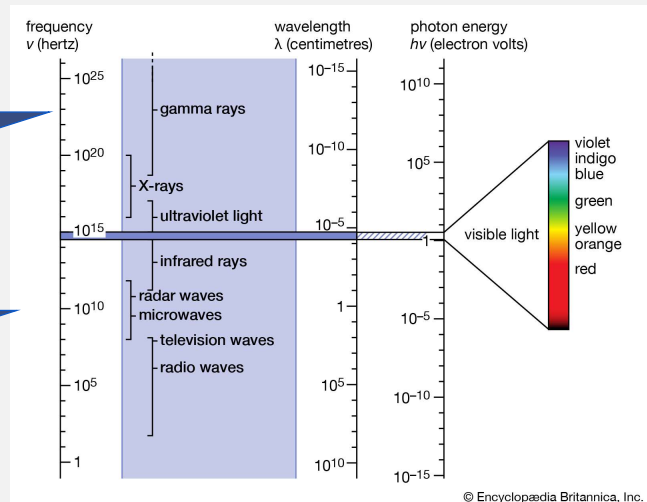
3

PHOTOBIOMODULATION

Visible (380 to 750 nm) to near infra-red light

Interacts with endogenous chromophores

Target effect



4

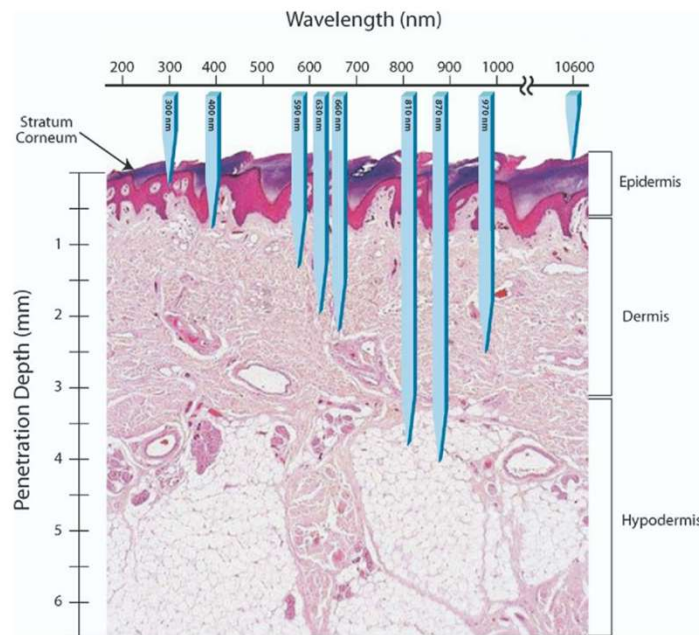


Figure 6 Optical penetration depth. Barolet, 2009

5

PHOTOBIOIMODULATION

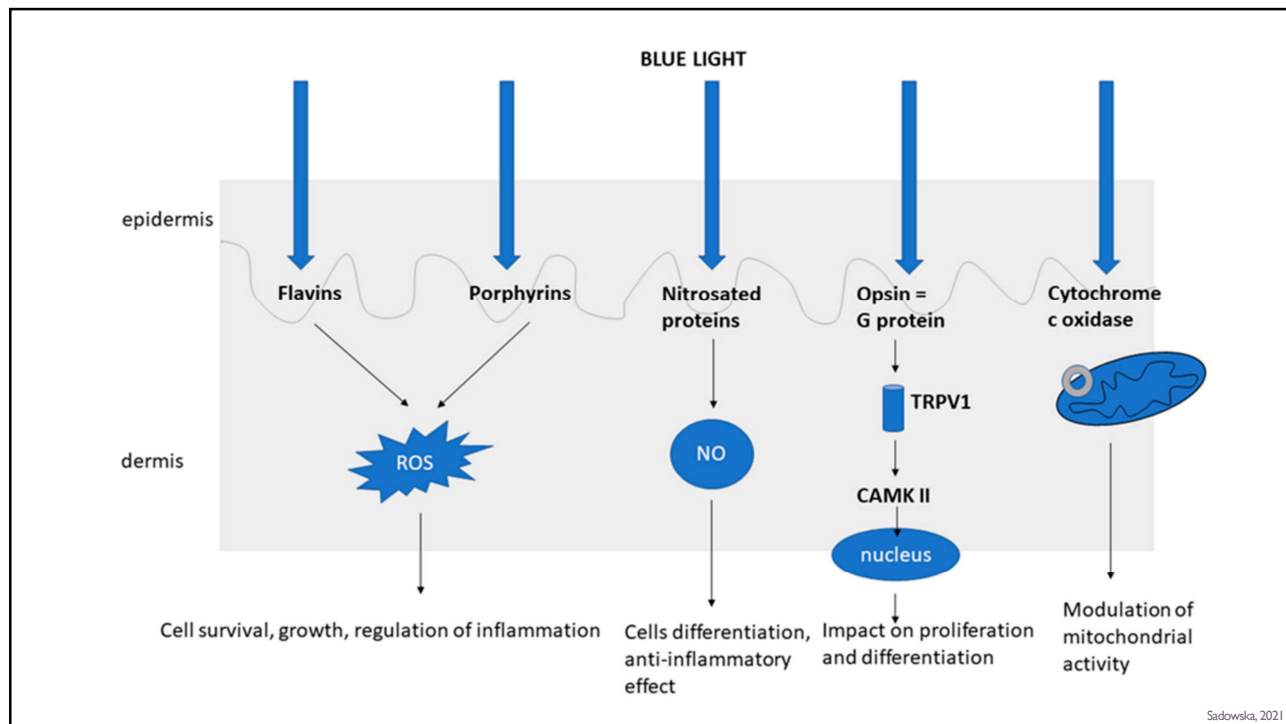
Blue light (450–485 nm)

- Antimicrobial (Wang et al., 2017)

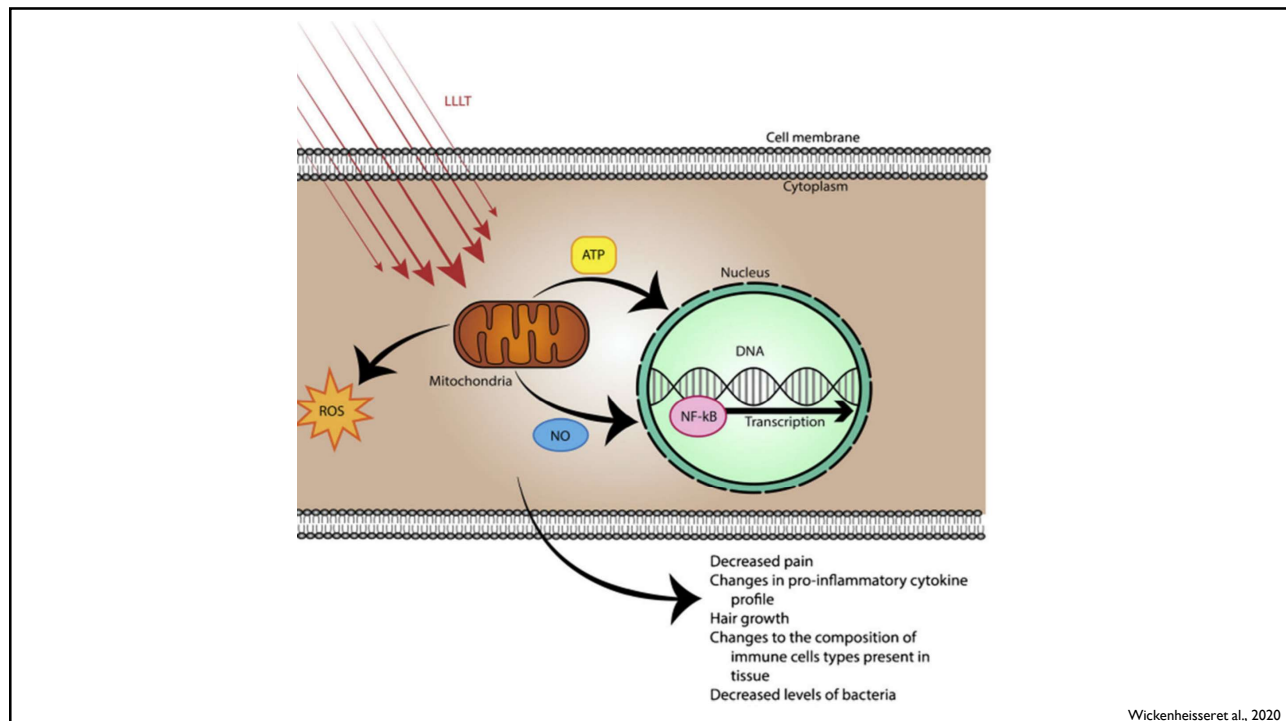
Red light (625–750 nm)

- Wound healing (Dompe et al., 2020)
- Anti-inflammatory (Dompe et al., 2020)

6



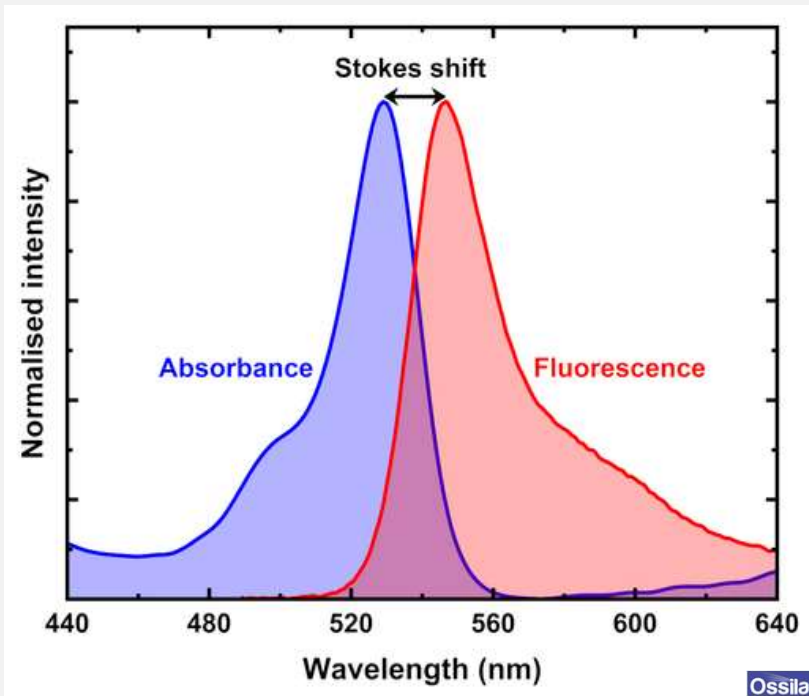
7



8

FLUORESCENCE PHOTOBIOMODULATION

9



10

FLUORESCENCE PHOTOBIMODULATION (FPB)

Form of photobiomodulation

Phovia™ System (Vetoquinol)

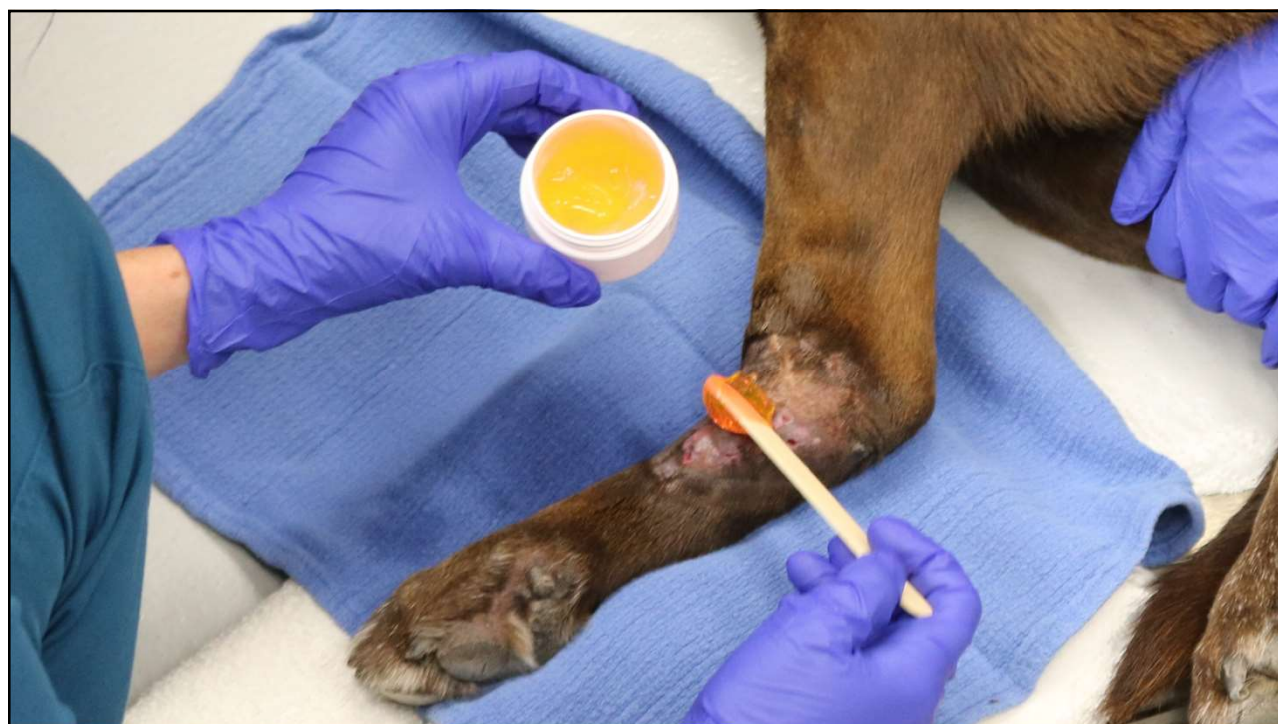
- Blue light-emitting diode
- Chromophore containing hydrogel
- 500 - 700 nm
- Manufacturer recommendations:
 - 2 treatments per week



11



12



13



14



15

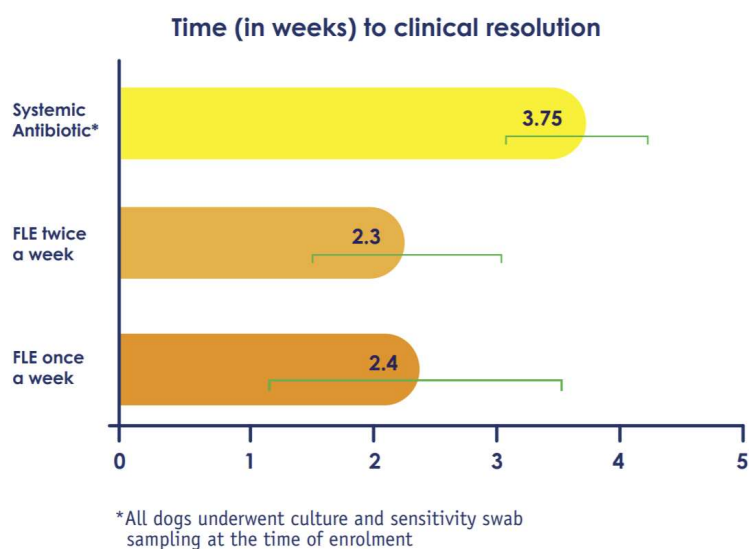
In vivo effects

- Superficial pyoderma (Marchegiani et al., 2018)
- Deep pyoderma (Marchegiani et al., 2017 and 2021)
- Interdigital pyoderma (Marchegiani et al., 2019)
- Multi-drug resistant pyoderma (Marchegiani et al., 2022)
- Perianal fistulae (Marchegiani et al., 2020a)
- Otitis externa (Tambella et al., 2020)
- Traumatic wounds (Marchegiani et al., 2020b)
- Chronic wounds (Hoisang et al., 2021)
- Surgical wounds (Salvaggio et al., 2020)

16

FPB AND SUPERFICIAL PYODERMA

Marchegiani et al., 2018



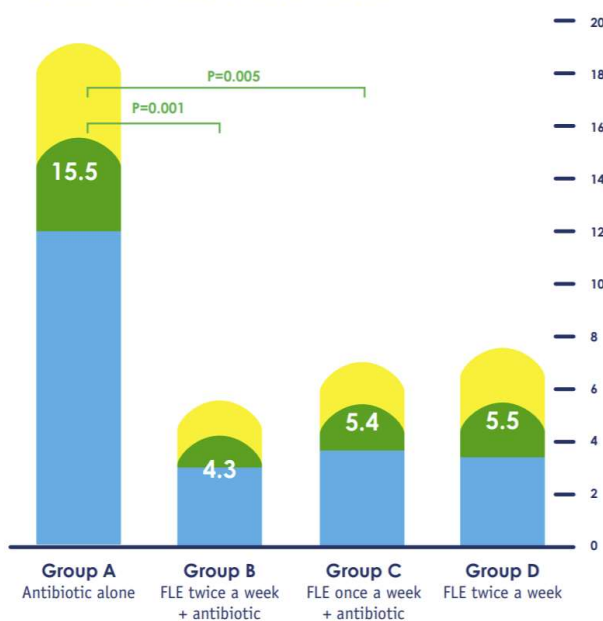
vetoquinol

17

FPB AND DEEP PYODERMA

Marchegiani et al., 2017

FIGURE 1. Time (weeks) to clinical resolution

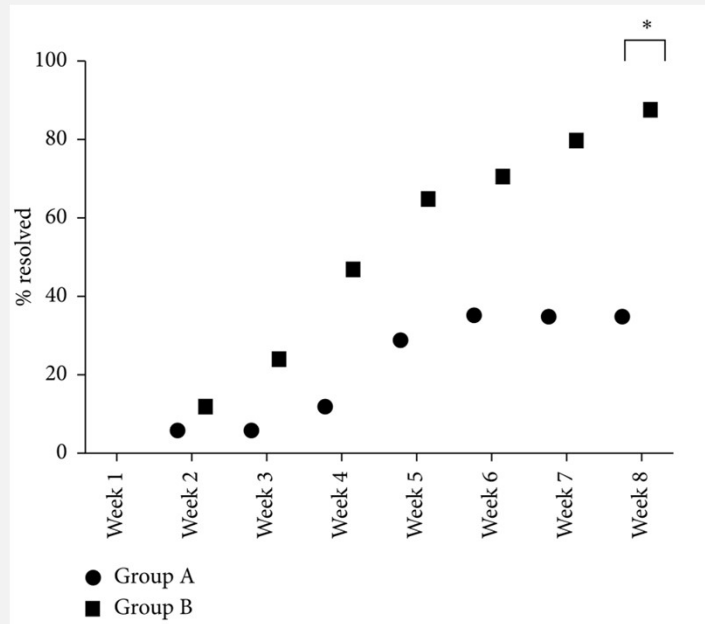


vetoquinol

18

FPB AND DEEP PYODERMA

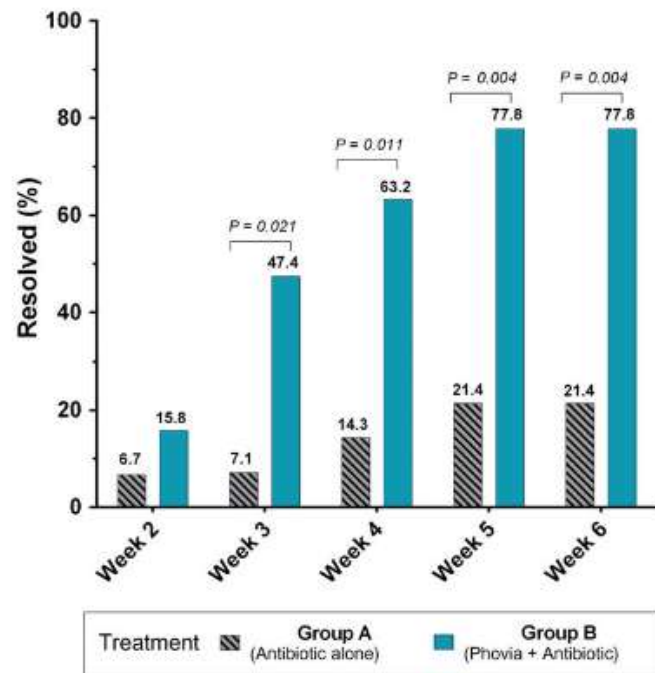
Marchegiani et al., 2021



19

FPB AND INTERDIGITAL PYODERMA

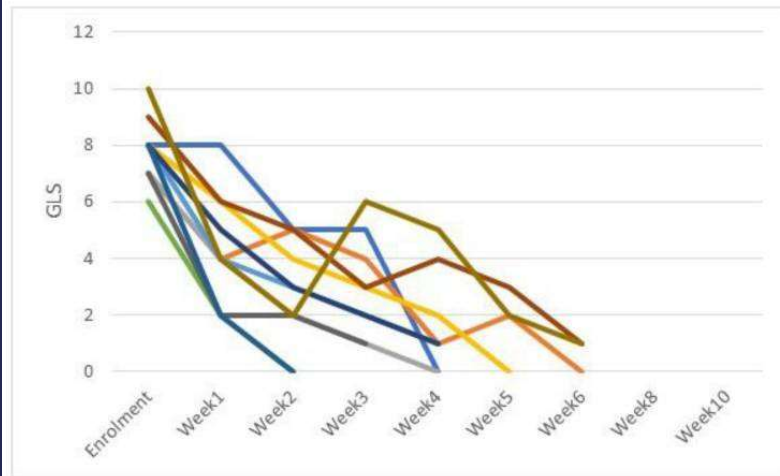
Marchegiani et al., 2019



20

MULTI-DRUG RESISTANT DEEP PYODERMA

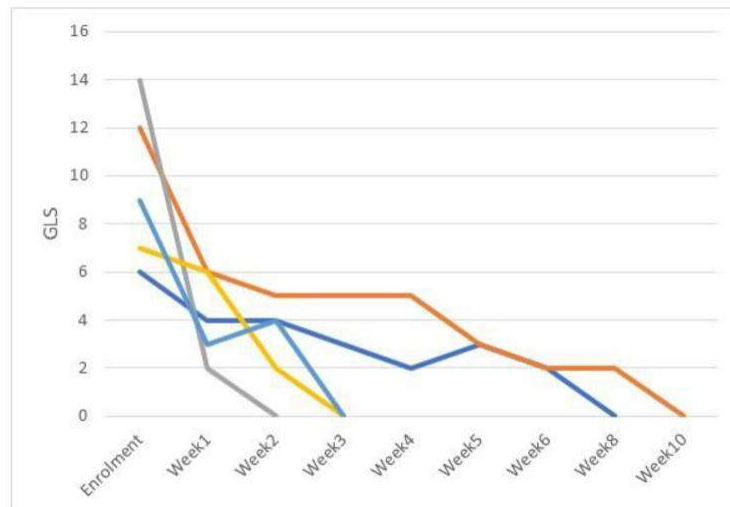
Marchegiani et al., 2022



21

MULTI-DRUG RESISTANT INTERDIGITAL PYODERMA

Marchegiani et al., 2022

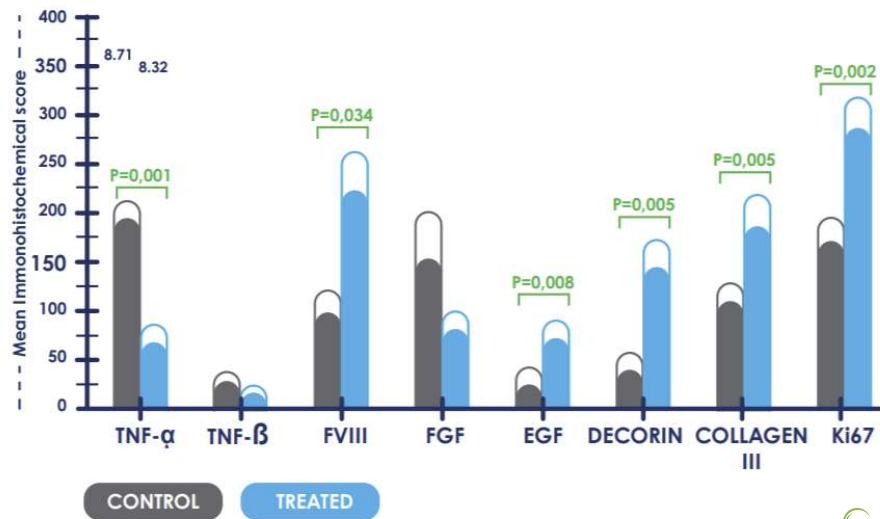


22

SURGICAL WOUNDS

Salvaggio et al., 2020

FIGURE 2. Immunohistochemistry scores of treated and control wounds.



23

LIMITATIONS OF THE LITERATURE

Few studies elucidating mechanism of action

- No published veterinary *in vitro* studies

Few prospective, masked, controlled studies

Small population sizes

24

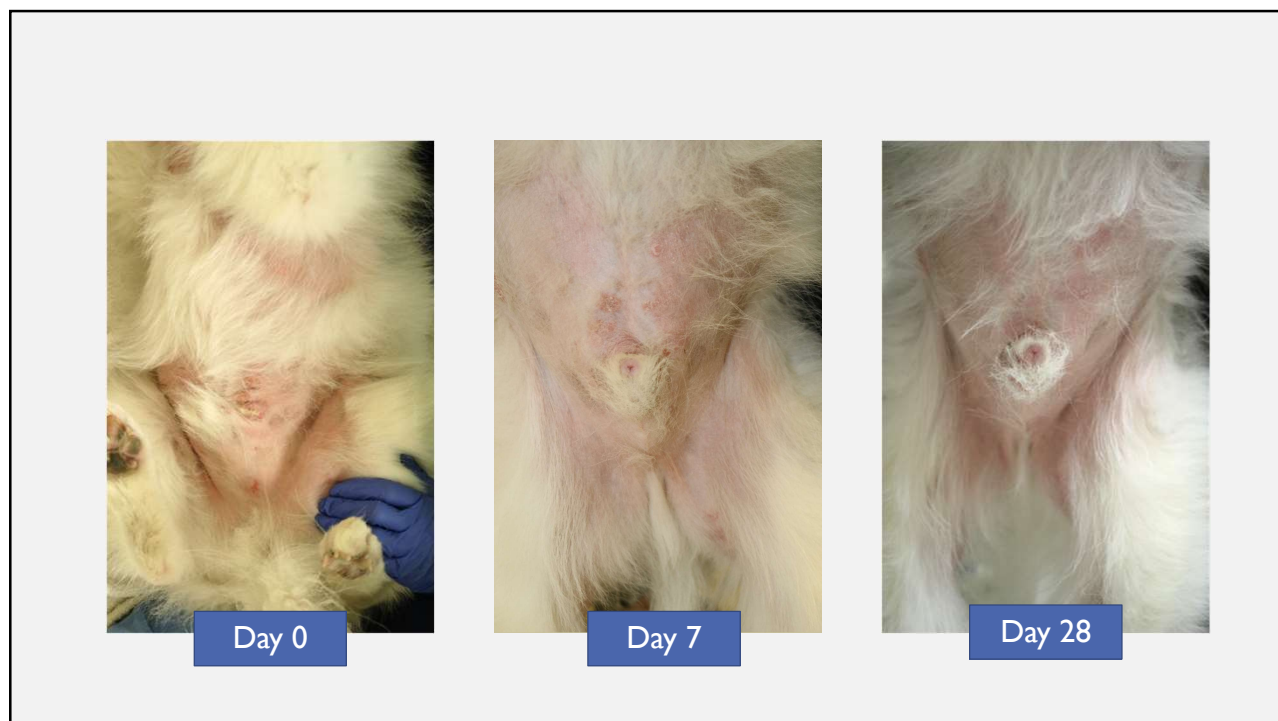
CLINICAL CASES

25

MOJO, 8 Y/O
MC
AMERICAN
ESKIMO
DOG



26



27



28



29



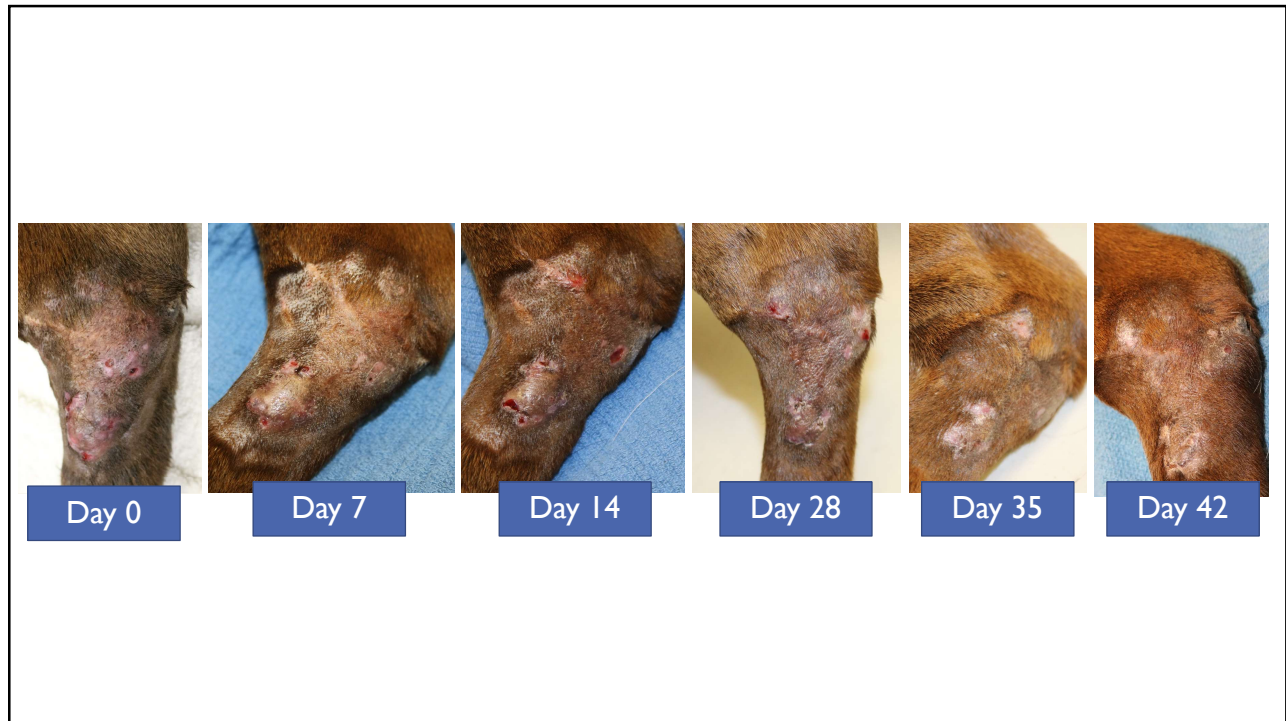
30



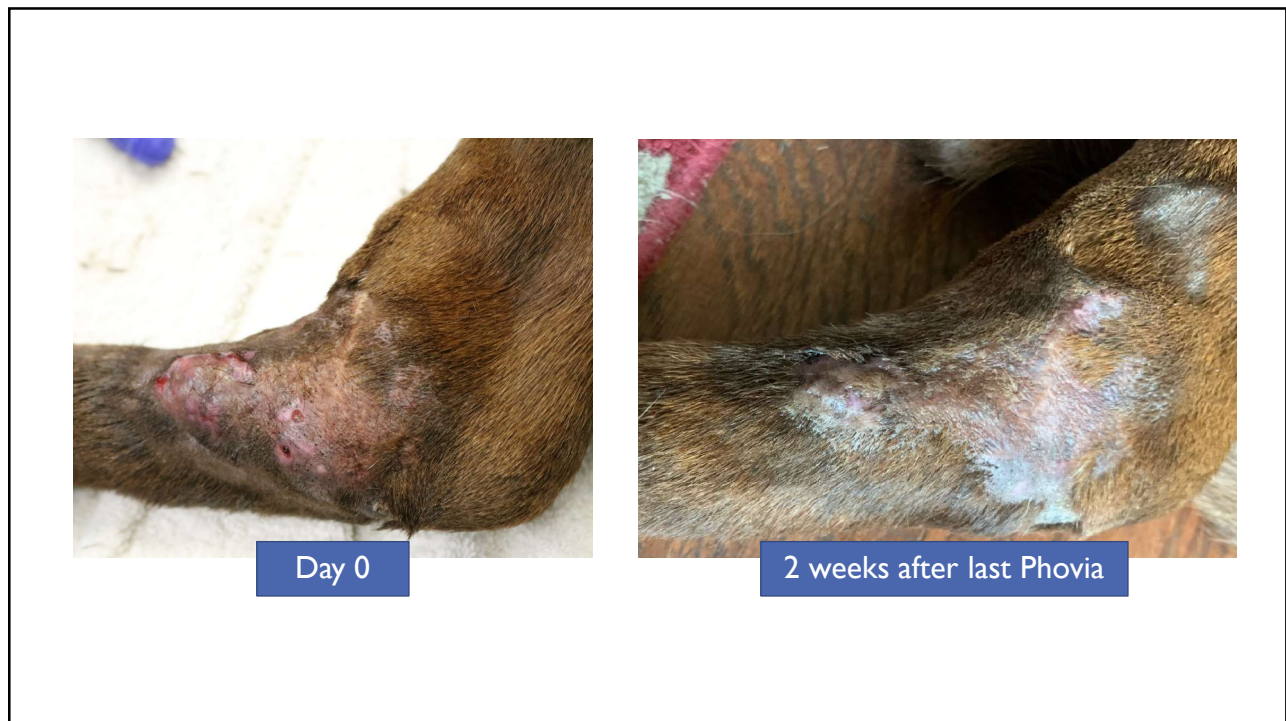
31



32



33



34

NINA
9 Y/O FS
YORKSHIRE
TERRIER



35



Day 0

36



37



38