



# USE OF AN ANTIMICROBIAL MICROFILM WOUND DRESSING IN SPONTANEOUS WOUNDS IN ANIMALS

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## Introduction

Here we report clinical case examples of the application of MicroLyte™ Ag, a novel ultrathin and transparent antimicrobial microfilm wound contact dressing.

MicroLyte™ Ag is a sterile, single use polyvinyl alcohol hydrogel sheet with a polymeric surface coating containing ionic and metallic silver. It is only 20 microns thick and it contains only 0.1 mg/in<sup>2</sup> of silver (~100x less than the leading silver-based antimicrobial dressings).

This dressing is engineered to conformably adhere to the microcontours of the wound-bed and provide intimate contact of active agents to the wound bed, thus MicroLyte™ Ag is effective at reducing bacterial loads on its surface by 5 Log<sub>10</sub> units within 24 h and provides barrier to infection of the dressing up to 72 h without causing cytotoxicity.

Previous experimental studies have shown that the dressing is benign to wound tissues and reduces bacterial burden in wounds and on wound dressings. The low concentrations of silver also avert the problems of tissue staining and thermal activation during MRI that can occur with other silver laden dressings.

Subsequent to experimental pre-clinical studies examining this dressing both in vitro, ex vivo and in vivo in rodents and pigs, we have initiated beta testing of the dressing in spontaneous wounds in animals presented to the Teaching Hospital at the School of Veterinary Medicine at the University of Wisconsin-Madison.

## Study Design

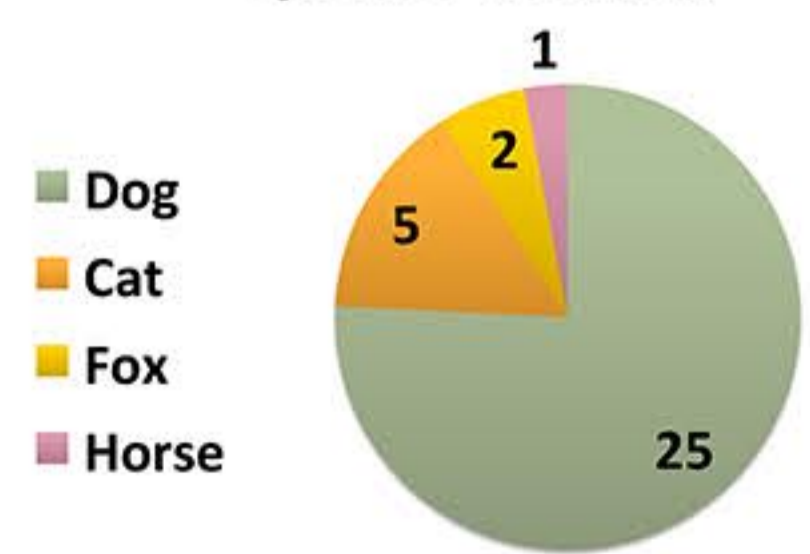
Privately owned animals were presented to UW Veterinary Care Hospital for assessment and treatment.

Animals either arrived with non-healing wounds as a primary problem or developed chronic wounds subsequent to treatment for other conditions such as neoplasia or traumatic orthopedic injuries.

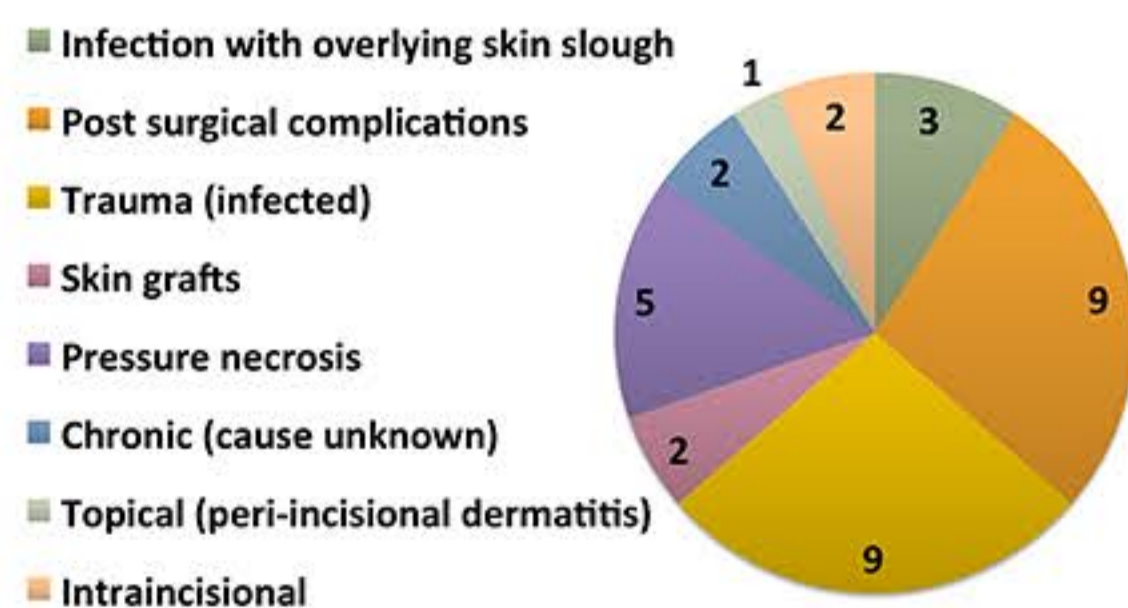
Informed consent for treatment using MicroLyte™ Ag wound dressing was obtained and treatments initiated while continuing standard of care therapies of the wounds.

All spontaneous wounds were cultured with sensitivity analysis prior to application of the dressing.

### Species Treated



### Wound Etiologies



### Wound Duration

Wound durations ranged from 1 day to 5 months. Traumatic wounds were typically treated in the acute phase (1-5 days after injury). Remainder of wounds (excepting intraoperative and over skin graft uses) had durations of 3 weeks to 5 months (average 35 days) and a history of non-response to standard of care therapies prior to use of MicroLyte™ Ag.

### Acknowledgement

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## Results

### Bacterial Cultures from Wounds

- All wounds had positive bacterial cultures with one parasitic oomycote
- A wide variety of organisms were cultured from the wound surfaces
- Most wounds had multiple different organisms co-colonized on their surfaces
- Multidrug resistant organisms were found commonly

#### Notable organisms cultured

- Staphylococcus spp.
- Beta hemolytic Streptococcus spp.
- Pseudomonas spp.
- Coliforms
- Pasteurella spp.
- Proteus spp.
- Pythium insidiosum

#### Multidrug resistant organisms

- MRSA
- Pseudointermedius
- Schleiferi spp.
- Pseudomonas aeruginosa

### Application

- Wounds were inspected and lavaged with normal saline at every bandage change. Serial debridement was performed in some cases
- MicroLyte™ Ag was applied at every bandage change and covered with absorptive saline-soaked gauze or oil immersion gauze and a protective wrap
- Typically, bandages were changed daily over the first 3-5 days. As wounds became less effusive bandaging and dressing application intervals were extended up to once weekly

### Response

- Wounds typically demonstrated visible and measureable responses in 1 to 10 days after start of therapy
  - Two dog were euthanized due to poor prognosis or economic constraints prior to any notable response
  - Nine dogs and 1 cat were lost to follow up due to homing situations (shelter animals) or long distances required for client travel for rechecks. **These animals all showed improved wound condition, reduction in wound effusion and size prior to discharge**
  - Two animals showed no response to therapy (one cat and a dog with Pythium infection)
- The remainder of the animals had significant reductions in wound sizes and epithelialization with either complete closure or significant progress to closure at the time of this report
- No negative effects were observed in 2 animals with intralesional applications during surgery
- No negative effects of dressing application or discomfort were observed in any animal

## Conclusions

- MicroLyte™ Ag does not have any overt negative impacts on wounds of various etiologies in a range of species
- MicroLyte™ Ag was easy to apply and no animal evidenced any signs of discomfort upon application
- Application of MicroLyte™ Ag stimulated positive progression of healing in a series of animals with chronic wounds
- MicroLyte™ Ag appears to add a valuable adjunct to the clinical tools for managing wounds

## Clinical Case Examples

**Case 1:** A 2 year old female bulldog treated for an open comminuted fracture by pantarsal arthrodesis. Wound dehiscence and infection resulted in an open wound and exposed plate unresponsive to treatment for 5 weeks. Culture showed Proteus mirabilis, E. coli and MRSP on the wound surface. Microlyte applied daily for 5 days and then 3x/wk after. Progress noted in 24 hrs and bone plate coverage with granulation tissue in 11 days.



**Case 2:** A four year old male Labrador retriever treated for necrotizing cellulitis with slough. Culture revealed methicillin resistant Staph pseudointermedius. Microlyte was applied daily for a week and then 3x/wk for 2 weeks followed by 2x/wk thereafter. Restrictive epithelialized scar tissue was excised during healing and closed as needed. The wound improved in appearance in the first 3 days and was substantially closed over a period of 3 months.



**Case 3:** A female domestic short hair cat of unknown age presented with generalized deep second degree and some third degree burns of the hind foot pads, ventral tarsus and trunk. Devitalized tissues were debrided and the wounds were managed with application of Microlyte and bandaging 5x/wk for 2 weeks and then 3x/wk. Wounds formed granulation tissue within 5 days and healed via epithelialization and contracture.



**Case 4:** A 7 year old male domestic shorthair cat was treated for a chronic wound of 5 months duration subsequent to a traumatic hock injury and pantarsal arthrodesis. Microlyte was applied daily for 1 week and then 2-3x/wk afterward. Reduction in wound size was noted in 5 days with complete healing in 35 days.

