MicroLyte AG

IM-BED® BIOSCIENCES
Advanced materials for wound healing

A Paradigm Shift in Advanced Wound Care Driven by Trailblazing Engineering

Traditional Antimicrobial Dressings

Antimicrobial dressings are vital to clearing infections from stalled wounds thus allowing normal healing to proceed. Nearly 80% of such dressings employ silver as an antimicrobial agent, which is incorporated in a traditional fiber-based or hydrogel matrix. Increasingly, dressing manufacturers are using higher levels of silver to achieve greater effectiveness. This approach, however, results in inhibited re-epithelialization due to silver toxicity and severe tissue staining (**Figure 1**). Therefore, clinical guidelines restrict the use of such silver dressings *"for wounds where infection is already established or an excessive wound bioburden is delaying healing ('critical colonization'), and that they are used for short periods (less than 2 weeks) before re-evaluation."*

FIGURE 1: Wound staining- a temporary bluish-gray discoloration from metallic silver particles staining the superficial cornified layer of the epithelium.

Microlyte™ Ag Antimicrobial Wound Dressing

A **Microlyte™ Ag** wound dressing embodies trailblazing engineering resulting in an **effective, yet gentle** ultrathin transparent antimicrobial dressing. It 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 10x to 500x less silver compared to the leading silver-based antimicrobial dressings, as shown in **Table 1**. Yet, **MicroLyte™ Ag** dressing kills 99.99% of clinically relevant microbes, including MRSA and VRE on its surface within 24 hours and provides barrier to infection of the dressing up to 72 hours.

TABLE 1: Silver loading in **Microlyte™ Ag** and other antimicrobial wound dressings

Proprietary Name	Company	Silver Species	Ag Content (mg/100cm^2)
Silverlon®	Argentum Medical	Metallic silver	546
Therabond® 3D	Choice Therapeutics	Metallic silver	420
Silverlon® Easy Ag	Argentum Medical	Metallic silver	315
SilverSelect®	Milliken	Silver zirconium	200
Acticoat® 7	Smith & Nephew	Silver oxide, metallic silver	161
Calgitrol® Ag	B. Braun	Silver alginate	141
Mepilex® Ag	Molnlycke	Ag_2SO_4	120
Allevyn® Ag	Smith & Nephew	Silver Sulfadiazine	90
Contreet® Foam	Coloplast	Ag^+	85
Contreet® H	Coloplast	Ag^+	32
Aquacel® Ag	Convatec	$AgNO_3$	12
Microlyte™ Ag	**Imbed Bio**	**Ionic/metallic silver**	**1.5**

How the MicroLyte™ Ag Works Differently from Traditional Dressings

Traditional silver dressings (**Figure 2A**) are crude high capacity reservoirs of silver that compensate for the large of loss of silver ions in wound exudate by depositing large quantities of silver, that ends up passivated in epithelium causing tissue toxicity, staining, irritation and inhibition of re-epithelialization.

In contrast, **MicroLyte™ Ag** is a microfilm that is so thin that it inherently conforms to the underlying micro-contours of a moist wound-bed, providing intimate contact with the microbes on wound-bed. Antimicrobial silver in the dressing kills bacteria that come into contact with the dressing, and reduces microbial colonization (**Figure 2B**). This action reduces loss of silver in wound exudate and, thus, provides effective antimicrobial action at much lower silver concentrations. The microfilm dressing ultimately dissolves and can be rinsed off, eliminating the need for painful removal (i.e. doesn't have to be 'dug' out of the wounds unlike textile dressings).

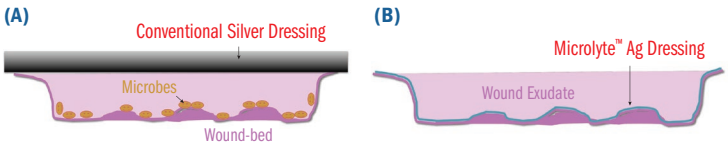

FIGURE 2: (A) Current commercial silver dressings have to release large concentrations of silver ions to replenish ions inactivated as they diffuse through wound exudate to kill bacteria colonized on wound -bed. Excess silver ends up passivated in epithelium. (B) Microlyte™ Ag wound contact dressing conforms to the contours of wound-bed, providing intimate contact of active silver ions with microbes on wound bed. This circumvents loss of silver in wound exudate, thus, reducing toxicity and staining.

Conclusion

Microlyte™ Ag wound dressing, with 100x less silver compared to traditional dressings is revolutionizing advanced wound care through "less is more" paradigm, which will make the treatment of 6.5 million patients in the United States suffering with chronic wounds more gentle and effective.