An Advanced Decellularized Dermis Intended for Supplemental Support and Covering for Soft Tissue Repair

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An allograft collagen scaffold that can support a patient’s own cellular ingrowth, engineered to minimize an immune response and to yield a bio-compatible matrix and support incoming cellular growth. The Decellularized Dermis retains its growth factors, native collagen scaffold and elastin thanks to a proprietary processing technology (LifeNet Health’s Matracell®). Decellularized dermis serves as a scaffold which is suitable for the reinforcement of damaged or inadequate integumental tissue at the surgical site. Provides a structural support for cells, some components of the ECM bind to recipient growth factors, creating a reservoir that can be rapidly mobilized to the debrided wound to stimulate cell proliferation and migration. Can be used as augment in rotator cuff procedures, Achilles tendon repair, fractured bicaps tendon as an interposition graft, cover wounds. It is sterile with SAL 10³.

Tissue healing is a dynamic process involving interactions between cells, extracellular matrix (ECM) and growth factors that reconstitutes tissue following injury. Matrices or tissue scaffolds provide a collagen structure for tissue remodeling, while the removal of viable cells aims to minimize or prevent an inflammatory or immunogenic response. Given current knowledge, the ideal acellular matrix is one that closely approximates the structure and function of the native ECM it is replacing.

Matracell® Decellularization Processing Technology

Step One – Decellularization. To remove donor cells from the allograft an anionic, non-denaturing detergent, N-Lauroyl sarcosinate (NLS), is utilized. To remove the donor DNA, Benzonase®, a recombinant endonuclease, is applied to efficiently degrade the DNA without introducing the risk associated with other endonucleases and Prion Diseases.

Step Two – Rinsing. In a process utilizing USP grade normal saline, decellularization reagent residuals and donor cell remnants are removed from the allograft.

Step Three – Preservation. The processed allograft is preserved with LifeNet Health’s proprietary technology a solution comprised of USP Glycerol and USP Saline. This allows the decellularized dermis to be stored at room temperature.

Step Four – Sterilization. This final step involves the use of low-dose gamma irradiation performed at ultra-low temperatures. The final allograft has a Sterility Assurance Level (SAL) of 10³.

ADM clinical applications

Sealed Structure/Thermal Properties | LifeNet Health Decellularized Dermis
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Closed resembling native ECM (e.g., retains natural architecture and key components for woven healing) | ✓
Tissue storage/temperature needles and long shelf life | ✓
Termally sterile | ✓
Provides barrier to infection (i.e., bacteria/erum) | ✓
Resistant to proteolytic enzyme degradation | ✓
Promotes optimal cell activity for rapid neovascularization and tissue regeneration | ✓