

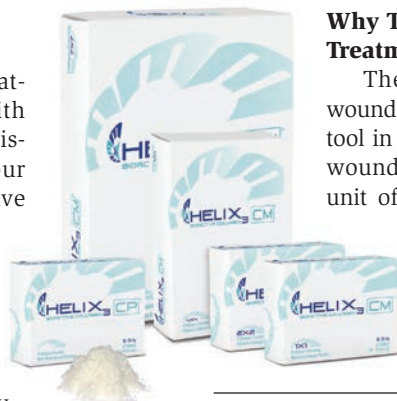
Benefits of Using a Tropocollagen vs. Hydrolyzed/Denatured Collagen in Wound Healing

By Regina Anderson

Have you tried collagen in your treatment protocols but were dissatisfied with the results? Are you seeking a more consistently effective wound treatment for your patients? It is possible that you may have been using the wrong type of collagen dressing to treat your patient's wounds.

Many collagens on the market today are hydrolyzed/denatured or biologically inactive. The price of hydrolyzed collagen may be attractive; however, denatured collagen products are produced by chemically breaking down the triple helix protein bonds of Type I collagen. This fragments the basic structural unit into component amino acids that are no longer bioavailable. The body must then exert a high energy cost to form new collagen to support wound healing needs, inhibiting the healing process.

Healthcare professionals seeking faster wound healing results and satisfied patients should turn to tropocollagens, such as HELIX3® Bioactive Collagen by AMERX Health Care.



Why Tropocollagen is the Most Efficient Treatment for Wound Care

The benefits of using a tropocollagen in wound healing provides podiatrists an important tool in the treatment of difficult and hard to heal wounds. Tropocollagen is the basic structural unit of collagen in its purest form. It is distinguished by its triple helical strands of amino acids that coil together to form a rigid braided rope-like protein structure, stabilized by hydrogen bonds that self-assemble into larger arrays in the

A tropocollagen—as is found in HELIX3 Bioactive Collagen—provides an optimal and superior wound healing environment, able to create strong new soft tissue structures.

Characteristic	Non-Hydrolyzed/Native Collagen	Hydrolyzed/Denatured Collagen
Tertiary Structure of Collagen	Retains triple helical quaternary structure and hence biological activity.	Molecules are fragmented, forms random coils. Biologically inactive.
Protein	Retains full length of the peptide chains and are in native form.	Proteins are denatured; broken down into short inactive peptides.
Stability	Braided texture structure provides superior biological activity and stability	Shorter peptides are random coils that lack braided texturing structure, not stable and not biologically active
Scaffolding for Wound Healing	Enables scaffolding and cell migration for developing granulation tissue	Unable to support critical molecular interactions and scaffolding required in wound healing
Tensile Strength	Braided rope-structure forms very strong bond, enhancing mechanical strength	Poor tensile strength
Thermal Durability	Enhanced thermal durability	Low molecular weight of small chain segments – thermally unstable
Interactions with other Biomolecules	Ability to engage in precise interactions with other biomolecules because of the native fibrillar structure	Cannot bind with other mediators because the modules are denatured
Binding	Binds to other mediators because of biological activity and hence promotes proper healing	Not biologically active
Energy Cost	Self-assembles into larger arrays in ECM – entropically efficient	Inefficient and unproductive interactions
Viscosity	High due to stronger electrostatic repulsion among molecular chains	Low viscosity secondary to low molecular weight of small chain segments
Bioavailability	Native fibrillar structure provides excellent biocompatibility and resorption	Little biological activity or bioavailability
Therapeutic Properties	Provides an optimal wound healing environment. Robust complete healing even in chronic wounds	Very limited therapeutic value

extracellular matrix (ECM). These arrays are then able to bind with other body tissues.

In contrast, hydrolyzed/denatured collagen changes the structure of the collagen molecules into shorter, random coil forms that lack structure and are easily fragmented due to disassociation of the hydrogen bonds. These fragments can no longer bind efficiently with other parts of the body. Denatured collagen is broken down into simple amino acids that must be reassembled into collagen by the body to use and comes at a high energy cost.

How Tropocollagen Forms a Vital Part of the ECM and Plays a Major Role in All Phases of the Wound Healing Process

Seventy to eighty percent of the ECM consists of Type 1 Collagen. HELIX3 Bioactive Collagen, containing 100% Type 1 Bovine Collagen, retains the tropocollagen structure leading to more efficient healing of wounds. The braided, textured structure of the tropocollagen forms a very strong bond with enhanced mechanical strength, and provides superior stability to enable scaffolding and cell migration for developing granulation tissue. Comparatively,

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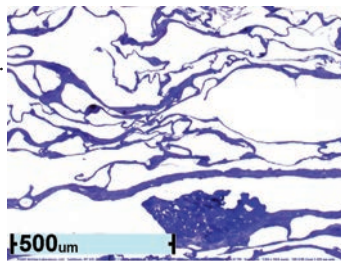
HELIX3® Bioactive Collagen

the shorter coils of hydrolyzed/denatured collagen lack the braided texturing structure needed for stability, are easy to fracture and unable to support scaffolding.

Enable Superior Stability of the Molecule, Better Scaffolding for Wound Healing and Cell Migration for Developing Granulation Tissue with Tropocollagen

Tropocollagen retains significantly more native triple helical protein structure to enhance thermal durability, mechanical strength, molecular stability, and the ability to engage in precise interactions with other biomolecules in delivering therapeutic properties, making the healing process more efficient. Tropocollagen demonstrates excellent biocompatibility and biodegradability, whereas the process of denaturing collagen breaks it into amino acid fragments that are highly soluble in water and must be combined with other biopolymers to become bioavailable for use in wound healing.

The high viscosity demonstrated by a tropocollagen



HELIX3® Bioactive Collagen photographed under a digital microscope at 500um.

is due to stronger electrostatic repulsion among molecular chains. Conversely, denatured collagens lack thermal durability, carry a low viscosity reflecting the low molecular weight of its small chain segments, and are unable to support the scaffolding required in wound healing.

HELIX3® Bioactive Collagen—The Best Choice for Healing Wounds

It is important to understand that while many collagens are marketed as wound healing agents, a tropocollagen—as is found in HELIX3 Bioactive Collagen—provides an optimal and superior wound healing environment, able to create strong new soft tissue structures. HELIX3 contains up to 10X more non-denatured, tropocollagen protein than competing products and contains no additives, synthetics, or fillers. HELIX3 is available in both a sterile, highly absorptive porous Collagen Matrix that maintains an optimal wound environment for dry wounds, and a Collagen Powder that absorbs up to 40-60x its weight in fluid to promote moist healing in draining wounds. HELIX3 is PDAC approved and reimbursable.

For more information, visit amerxhc.com or [click here](#).