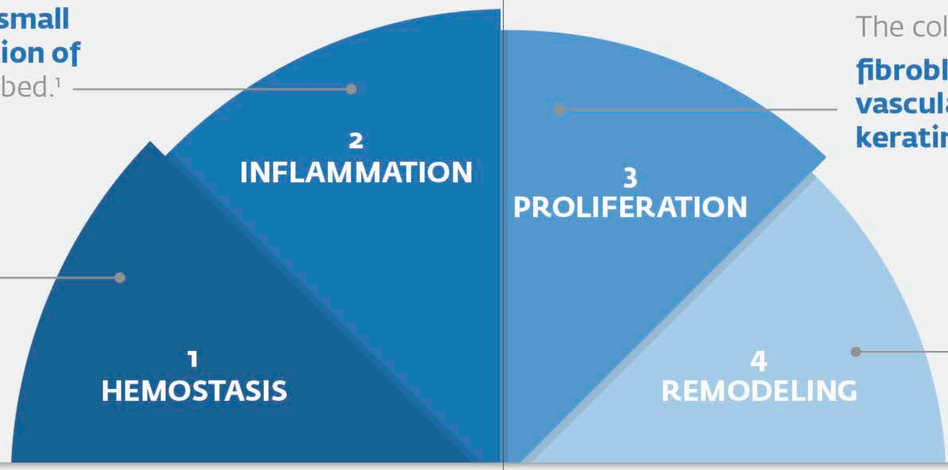
Chronic Wounds?

The Power of Pure Collagen for Fast Healing

AWC Medical

The role of collagen in wound healing



Proteases break the collagen into **small fragments** stimulating the **migration of inflammatory cells** to the wound bed.[1]

After an injury, the interaction between broken collagen and platelets leads to the **activation of the clotting cascade.**[1]

The collagen can also stimulate the migration of:

fibroblasts - deposition of endogenous collagen
vascular endothelial cells - formation of granulation tissue
keratinocytes - re-epithelialization[1]

Collagen fibers are rearranged and aligned, **creating a bridge** between the edges of the damaged tissue.[2]

Acute Wound

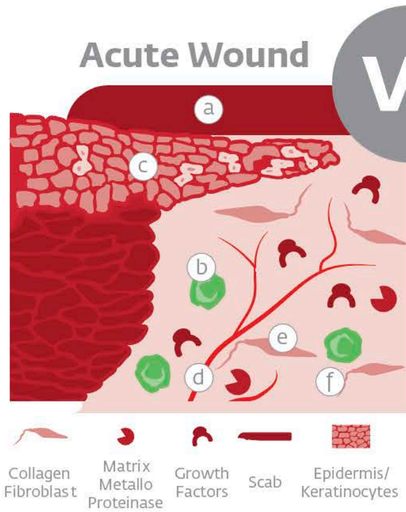
Collagen Breakdown

Proteases cleanse the wound from damaged extracellular matrix (ECM) and help the migration of epithelial cells, fibroblasts, and vascular endothelial cells.[3]

Collagen Synthesis

Fibroblasts synthesize collagen and new ECM, crucial for the remodeling processes.

Under normal conditions, fibroblasts and proteases maintain tissue homeostasis by regulating the turnover of ECM.



Normal healing process in acute wounds

Initial Phase

a. Scab Formation
b. Immune Cell Infiltration

Healing Phase

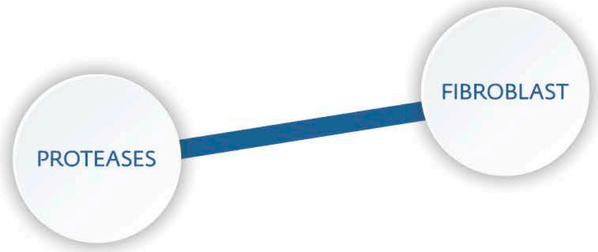
c. Re-epithelialization
d. Angiogenesis
e. Fibroblast Migration
f. Collagen Deposition

Impaired healing process in chronic wounds

Chronic Wound Abnormalities

a. Colonization, Infection
b. Hyperproliferative Epidermis
c. Persistent Inflammation, Exudate
d. Fibroblast Senescence
e. Impaired Angiogenesis
f. Fibrin Cuffs (Barrier to Oxygen)
g. Elevated MMPs

Chronic Wound



Increased Collagen Breakdown

When MMPs and elastase reach high levels, for a prolonged time, they begin to degrade "off target" proteins that are essential for healing.[4]

Decreased Collagen Synthesis

The recruitment of fibroblasts, the cells that synthesize collagen, is delayed and the expression of the collagen gene in fibroblasts is suppressed.[4]

(1) Brett D et al (2008): Wounds 20 (12): 347-356
(2) Dini V et al (2011): Journal of Wound Technology 13: 6-8
(3) Gibson D et al (2009): MMPs Made Easy. Wounds International: 1(1)
(4) Fleck CA et al (2010): J Am Coll Clin Wound Spec 2: 50-54

Are all collagen dressings the same?

REPAIR

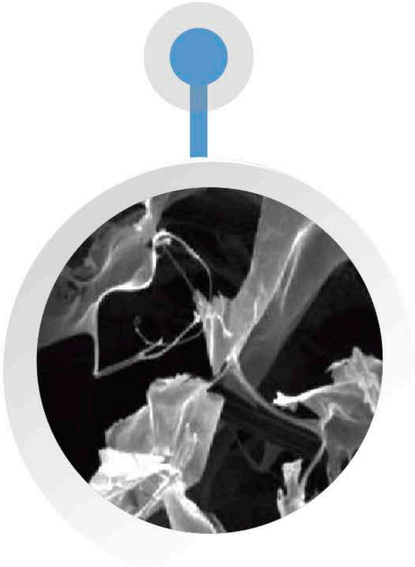
The wound heals by fibrosis and scar formation.[5] The deposition of connective tissue is a key phase to re-establish continuity of the skin.[6]

Biodegradable scaffolds can promote tissue regeneration and create a "bridge" to connect edges of the wound.[7]

REGENERATION

Wound healing is reached by repair or regeneration.[5]

New tissue completely restores damaged parts to their original morphology and functionality.[6]



Denatured Collagen/ORC

Triple helix formation lost

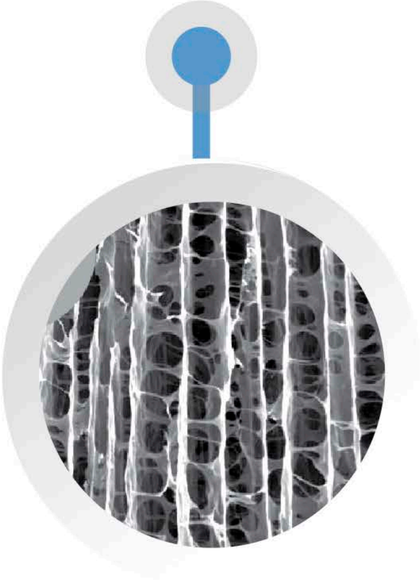
Some of the benefits of the collagen can be lost if the collagen is denatured in the manufacturing process.[9]

Denatured collagen does not interact with the host tissue and cells do not migrate significantly.[8]

Native Collagen

Triple helix formation intact

Native collagen provides a natural biodegradable scaffold that allows the migration and anchorage of fibroblast[10] and supports cellular adhesion and growth.[8]



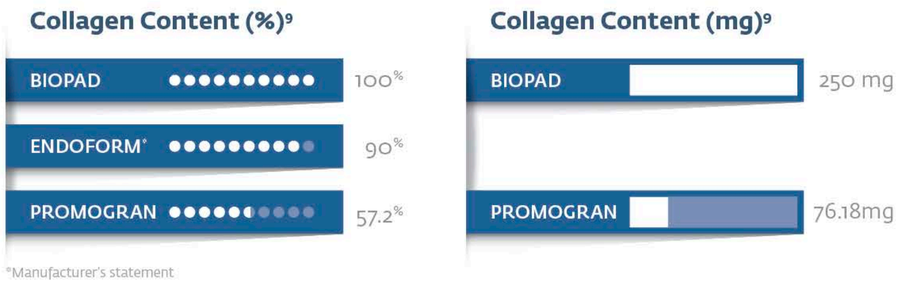
(5) Reinke JM et al (2012): Eur Surg Res 49:35–43
(6) Krafts PK et al (2010): Organogenesis 6:4, 225-233
(7) Attala A et al (2010): MRS Bull. August 1; 35

(8) Laghezza V et al. (2017): Poster session – SAWC Spring 2017
(9) Karr JC et al (2011): Adv Skin Wound Care 24: 208-216
(10) Fleck CA et al (2007): Adv Skin Wound Care 20(5):256-259

OUR SOLUTION

BIOPAD™ is a primary dressing that can accelerate the closure of hard-to-heal wounds.

- ✓ **Highest collagen content on the market: up to 5 times the standard amount of collagen.[9]**
- ✓ **100% pure collagen: no fillers.**
- ✓ **Only type I collagen: approximately 70% of collagen in the skin is represented by type I.[11]**
- ✓ **Native structure: better interaction with the host tissue.[8]**



*Manufacturer's statement

HOW IT WORKS

BIOPAD™ protects the wound bed from the external environment, acting as a barrier against exogenous infective agents.

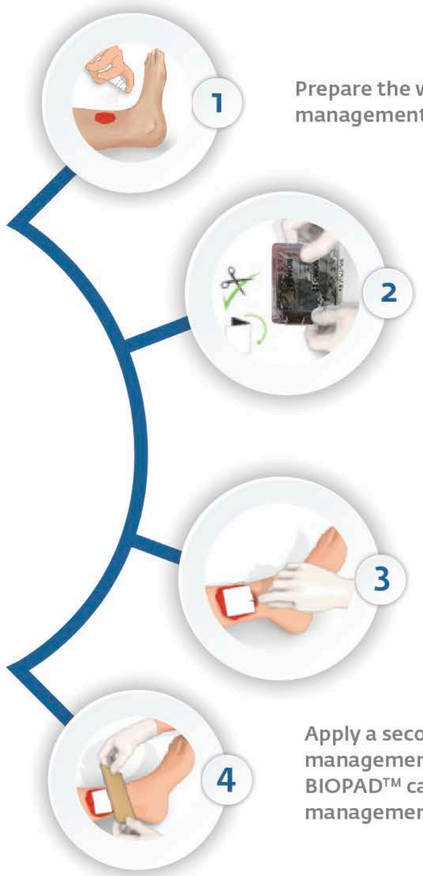
Thanks to the high amount of collagen, BIOPAD™ can sacrifice some of its content to feed MMPs and elastase.

BIOPAD™ stimulates the formation of new granulation tissue, the migration and proliferation of fibroblasts, and the deposition of new collagen fibers.

Thanks to the porosity, BIOPAD™ acts like a sponge able to absorb small amounts of exudate.

(11) Rangaraj A et al (2011): Wounds UK, 7/2: 54-63

PREPARATION



1. Prepare the wound bed according to appropriate wound management protocol and debride the wound if necessary.
2. Cut BIOPAD™, if necessary, to fit the size of the wound.

   Wound with limited exudate: hydrate BIOPAD™ with saline solution or a wound cleanser.

   Wound with heavy exudate: do not hydrate BIOPAD™. Rinse out the wound bed with saline solution or a wound cleanser prior to application.
3. Apply BIOPAD™ on the wound bed, covering the entire surface. Do not overlap the edges of the wound. BIOPAD™ transforms into a biodegradable gel and does not need to be removed.
4. Apply a secondary dressing according to appropriate wound management protocol. Depending on the amount of exudate, BIOPAD™ can be reapplied every 48 hours or per wound management protocol.

WHEN TO USE

- ✓ Diabetic ulcers
- ✓ Venous stasis ulcers
- ✓ Pressure ulcers
- ✓ Partial and full thickness wounds
- ✓ Donor sites and other bleeding surfaces
- ✓ Surgical and traumatic wounds

BIOPAD™ can be used with NPWT

BIOPAD™ is packaged in a transparent waterproof blister pack and is sterilized by gamma irradiation.

2" X 2" - 3 per box | Order Code 132622B
4" X 4" - 1 per box | Order Code 132644B

BIOPAD™ is covered by Medicare Part B - HCPCS code: A6021

Contraindications: Do not use on patients with a known hypersensitivity to collagen.

AWC Medical

AWC Medical Products
314 NW 11th ST Blue
Springs Mo 64015
Toll Free: 877.250.7391
Fax: 866.422.4361