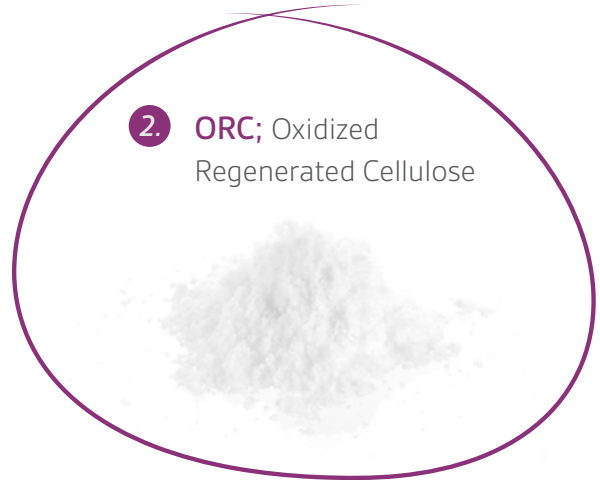


We know collagen,
that's why we added
something important:
ORC

1. **Collagen** has an important role in tissue repair¹



2. **ORC**; Oxidized
Regenerated Cellulose



3. **Silver**; a known antimicrobial agent



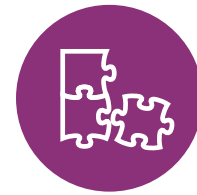
What is Collagen?

Collagen is one of the most abundant proteins in the human body and is a major constituent of skin, bone, tendons, muscles and cartilage. Collagen has a high tensile strength and has an important role in tissue repair¹.

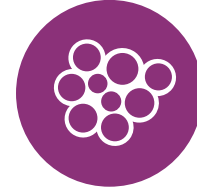
How Collagen works:

- It has hemostatic properties
- A low inflammatory and antigenic response: "recognized" by cells
 - Enhances the deposition of new collagen fibers
 - Substrate for cellular adhesion and migration
- It is bioresorbable
- Collagen proteins and peptides stimulate cells
 - Chemotactic for neutrophils, macrophages, and fibroblasts

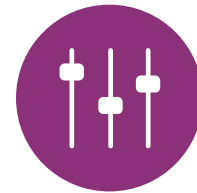
Collagen can act as a sacrificial substrate for excessive MMPs



Tissue repair



Cell growth



Control bacteria growth

What is ORC?

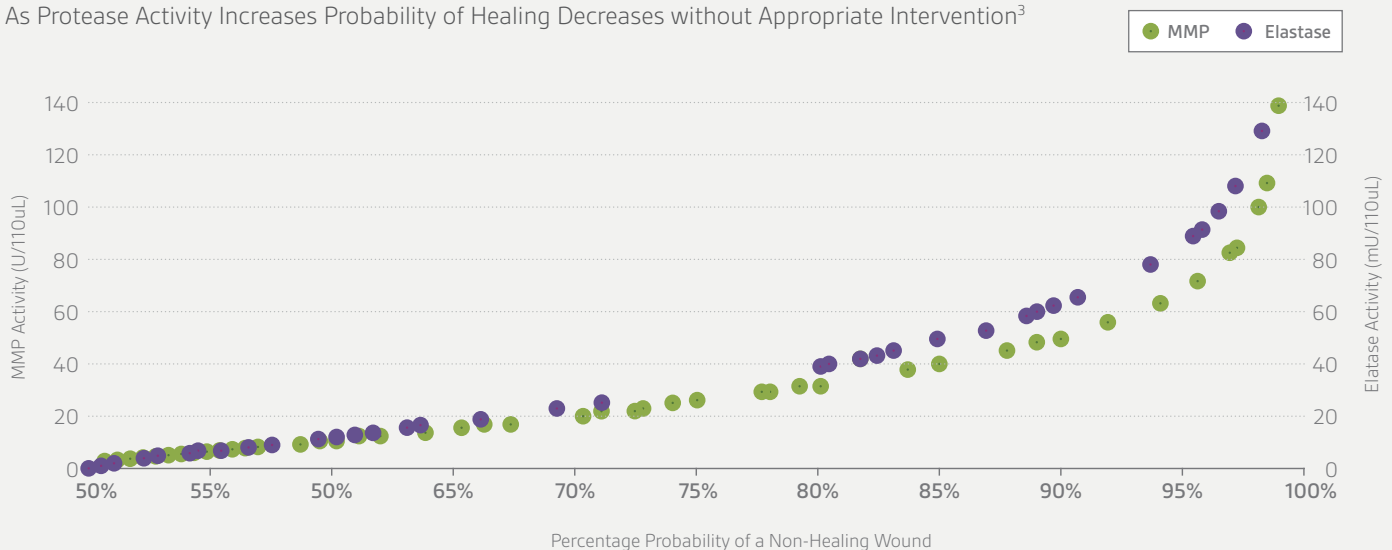
Cellulose is a major component of all plants. Once oxidized, ORC (Oxidized Regenerated Cellulose) is completely bioresorbable, and readily degrades through fluid absorption and subsequent gelling².

In vitro studies¹ have shown that ORC:

- Has hemostatic properties
- Stimulated cell migration and growth
- Has bactericidal properties
- Reduced protease activity levels, specifically elastase and MMPs
- Scavenged free radicals and bound excess metal ions

Protease Activity

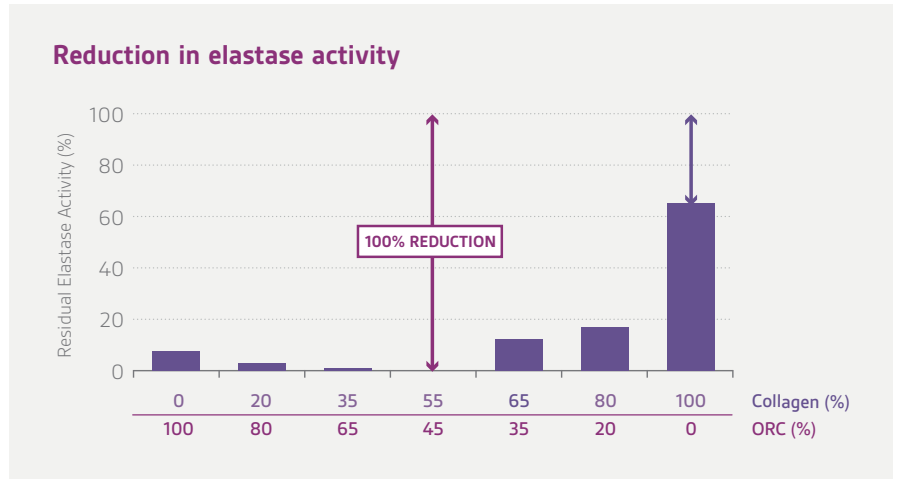
As Protease Activity Increases Probability of Healing Decreases without Appropriate Intervention³



The evidence

Reduction in elastase activity with the addition of ORC to collagen (*in vitro*).

Collagen-only provides 30% reduction in elastase activity after 24 hours, **with the addition of ORC to collagen this provides a 100% reduction in Elastase after 24 hours**. Demonstrating that ORC is a necessary addition to collagen to deal with elastase activity⁴.

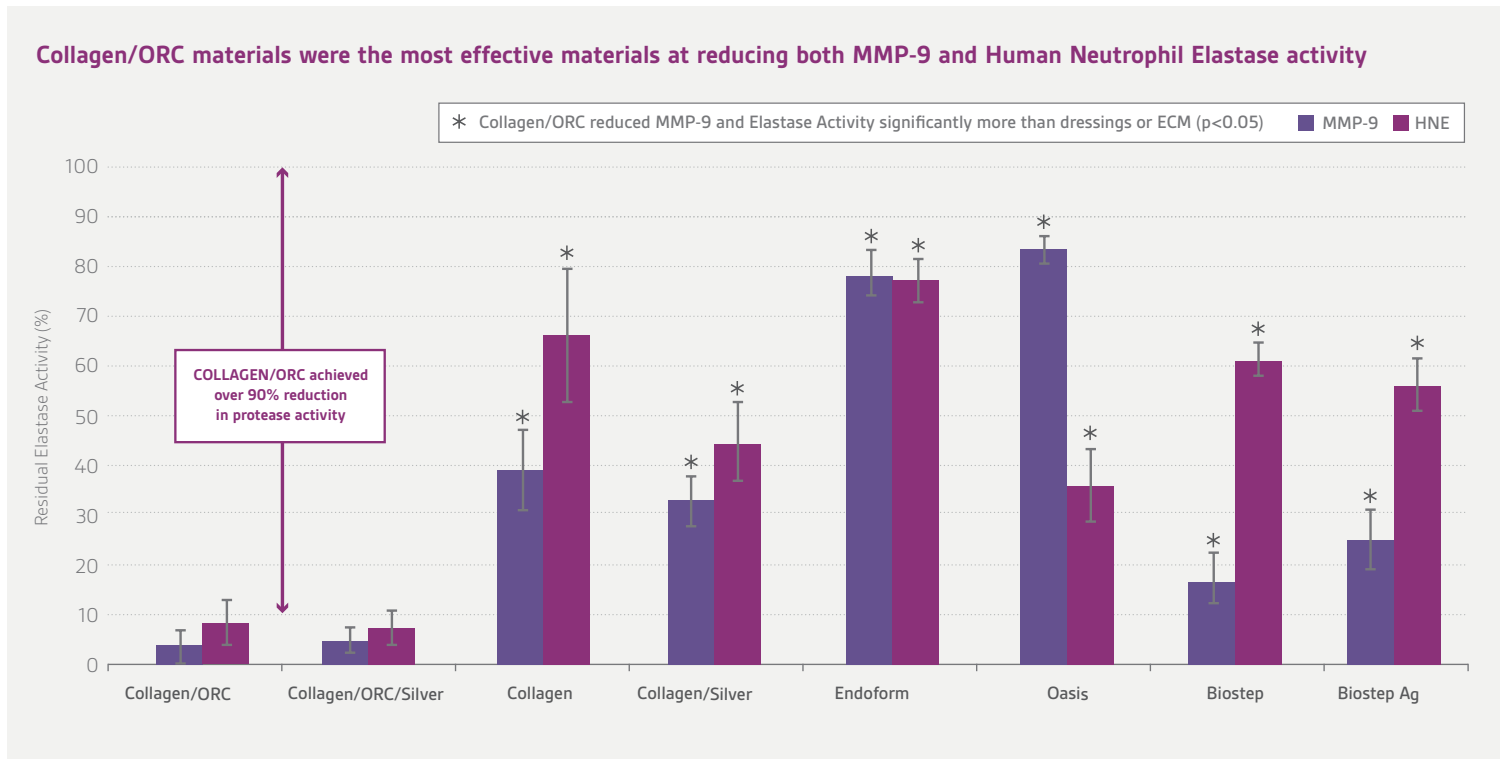


AN IN VITRO STUDY

EXAMINING THE BENEFITS OF COLLAGEN/ORC ASSESSING THE FOLLOWING PARAMETERS⁵:

- Ability to reduce elastase activity (Fig. 1)
- Effect on pH and impact on bacterial growth (Fig. 2)

Figure 1



Collagen/ORC reduced both Elastase and MMP-9 activity significantly more than all other materials tested ($p < 0.05$).

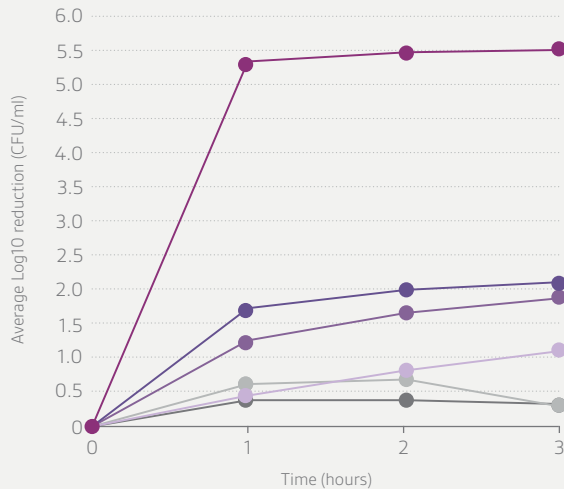
- The results show that *in vitro*, the combination of Collagen/ORC is more effective than collagen-only materials or ECM at reducing protease activity and bacterial bioburden.

Figure 2

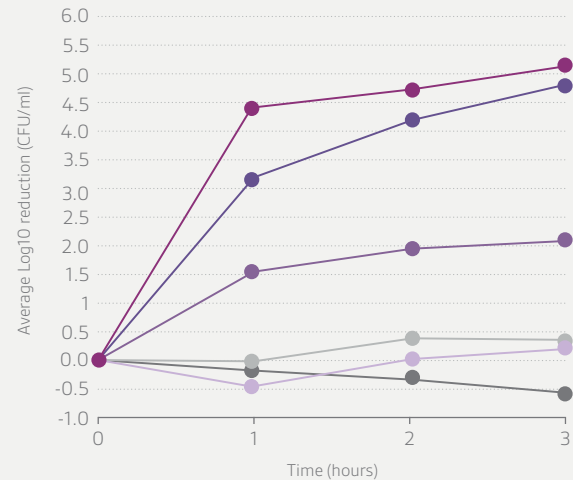
Effect of Collagen/ORC, natural-derived materials and collagen only dressings on (A) *P. aeruginosa* and (B) *S. aureus* total viable counts in the Log₁₀ reduction assay

COLLAGEN/ORC MATERIALS OUTPERFORMED ALL OTHER DRESSINGS TESTED

(A) *P. aeruginosa*



(B) *S. aureus*



- Previous published studies have shown that ORC provides bactericidal properties⁶.
- Collagen/ORC combination demonstrated bactericidal activity against SA and bacteriostatic activity against PA in the log₁₀ assay and is attributed to the low pH generated as ORC degrades and releases glucuronic acid.
- Collagen/ORC while effective against some bacteria which are sensitive to low pH, Collagen/ORC/Silver retain the benefits of Collagen/ORC with the additional bactericidal benefits of silver; effective against a broader range of bacteria.

Results demonstrated that ORC provided unique properties:

- Helped reduce protease activity⁵
- Protected against bacterial growth⁵
- ORC combined with collagen provides enhanced *in vitro* performance compared with other naturally derived and collagen materials⁵.

To learn more contact your Acelity representative at **800-275-4524** or visit **acelity.com**

References: 1. Cullen, B. and Ivins, N. PROMOGRAN® and PROMOGRAN PRISMA® Made Easy. Wounds International 2010, Vol 1(3). 2. Cullen, B. et al. The benefits of Oxidized regenerated cellulose for wound healing. Poster, Wounds UK 2011. 3. Serena T, et al. Protease activity levels associated with healing status of chronic wounds. Wounds UK, Harrogate, 2011. 4. Cullen B, et al. 2009 The combined benefits of Oxidized regenerated cellulose and collagen in the control of proteases in chronic wounds, presented at CSWC 2009. 5. Gibson M, et al, 2015, Can natural materials be optimised to improve wound environment? Presented at WHS, San Antonio, 2015. 6. Alfieri S, Di Miceli D, Menghi R, Quero G, Cina C, Percholi Ridolfini M, Doglietto G. Role of oxidized regenerated cellulose in preventing infections at the surgical site: prospective, randomized study in 98 patients affected by a dirty wound. Minerva Chir 2011, 66: 55-61.

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