The benefit of ORC

We know collagen, thats why we added something important: ORC

1. Collagen has an important role in tissue repair[1]

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 repair[1].

Tissue repair

Cell growth

Control bacteria growth

Properties associated with collagen:

- 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

Properties associated with oxidized regenerated cellulose (ORC):

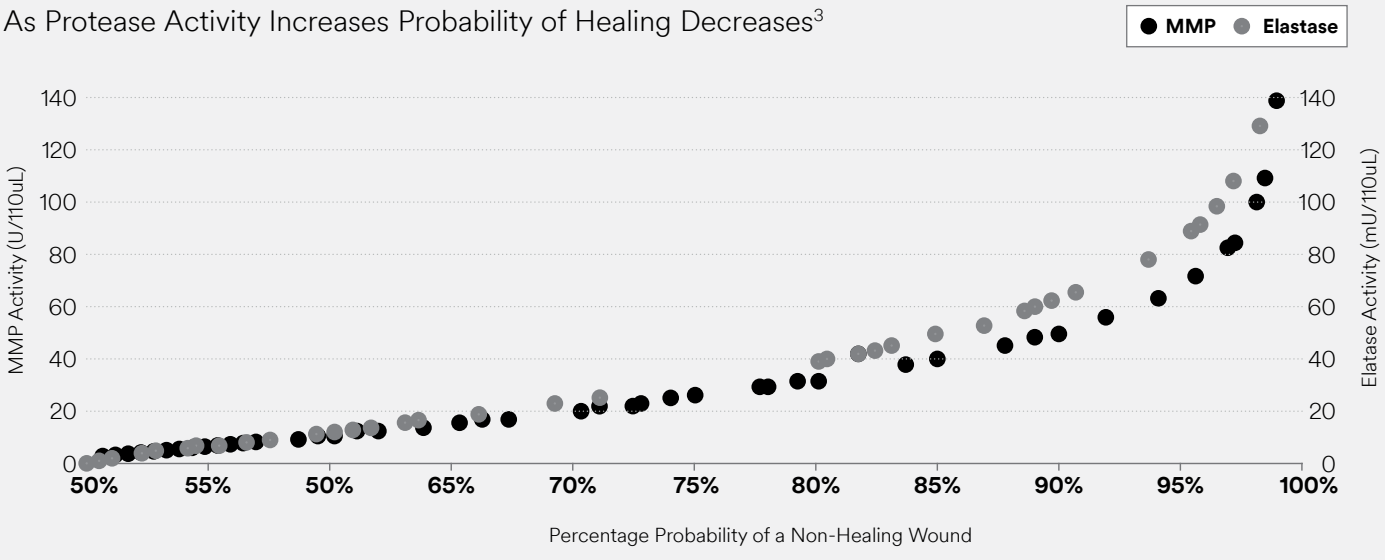
Cellulose is a major component of all plants. Once oxidized, ORC (Oxidized Regenerated Cellulose) is completely bioresorbable, and readily degrades through fluid absorption and subsequent gelling[2].

***In vitro* properties of ORC have been associated with:**

- Cell migration and growth[1]
- Bactericidal properties[1]
- Reduction of protease activity levels, specifically elastase and MMPs[1]
- Scavenging free radicals and bound excess metal ions[1]

Protease Activity

As Protease Activity Increases Probability of Healing Decreases[3]

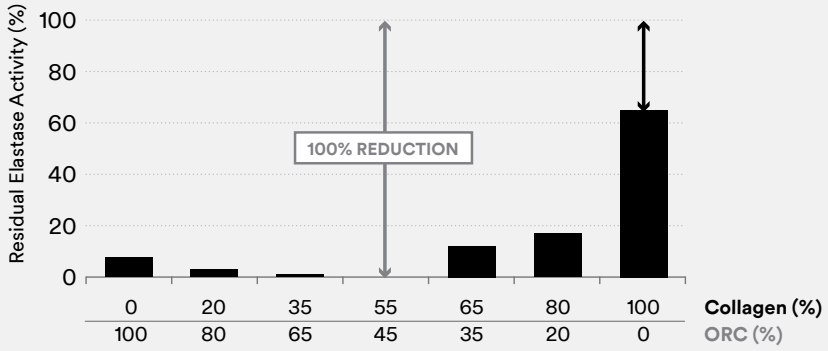


The evidence

The effect on elastase activity in presence of ORC and collagen materials after 24 hours:

- Collagen-only - 30% reduction in elastase activity[4]
- Collagen plus ORC - 100% reduction in elastase[4]

Reduction in elastase activity



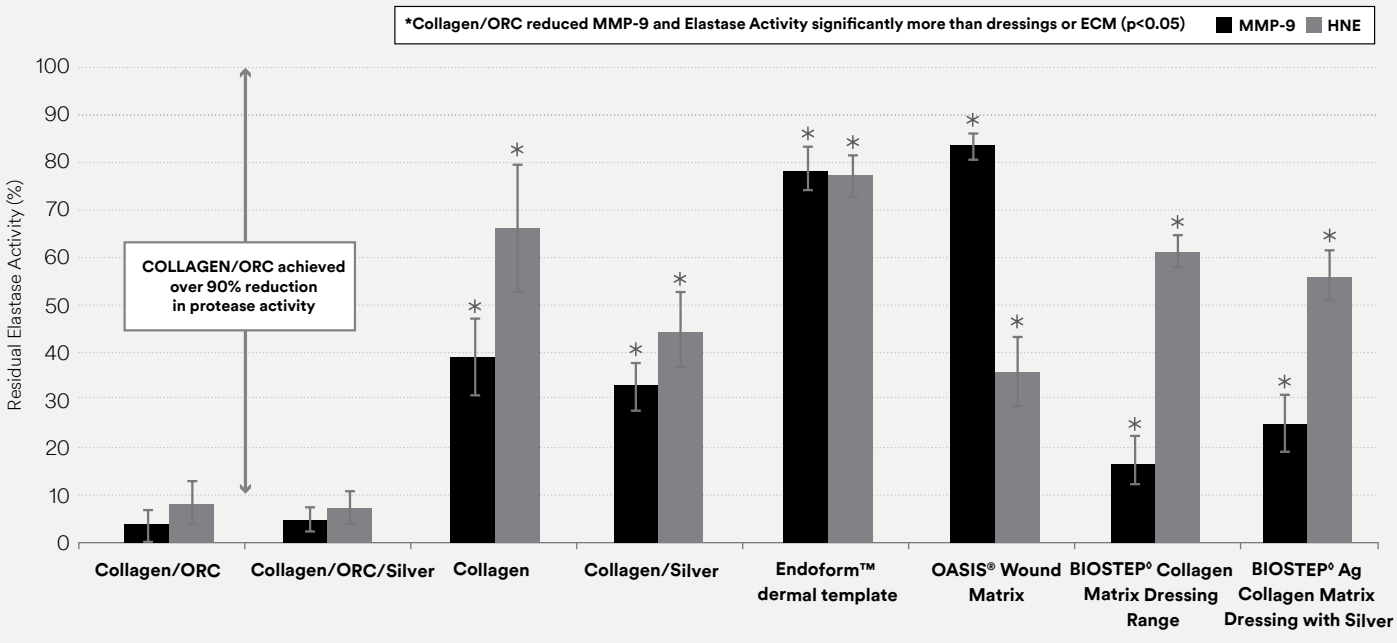
AN IN VITRO **STUDY**

Examining Collagen/ORC assessing the following parameters[5]:

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

Figure 1

The effects of collagen based materials on both MMP-9 and Human Neutrophil Elastase activity

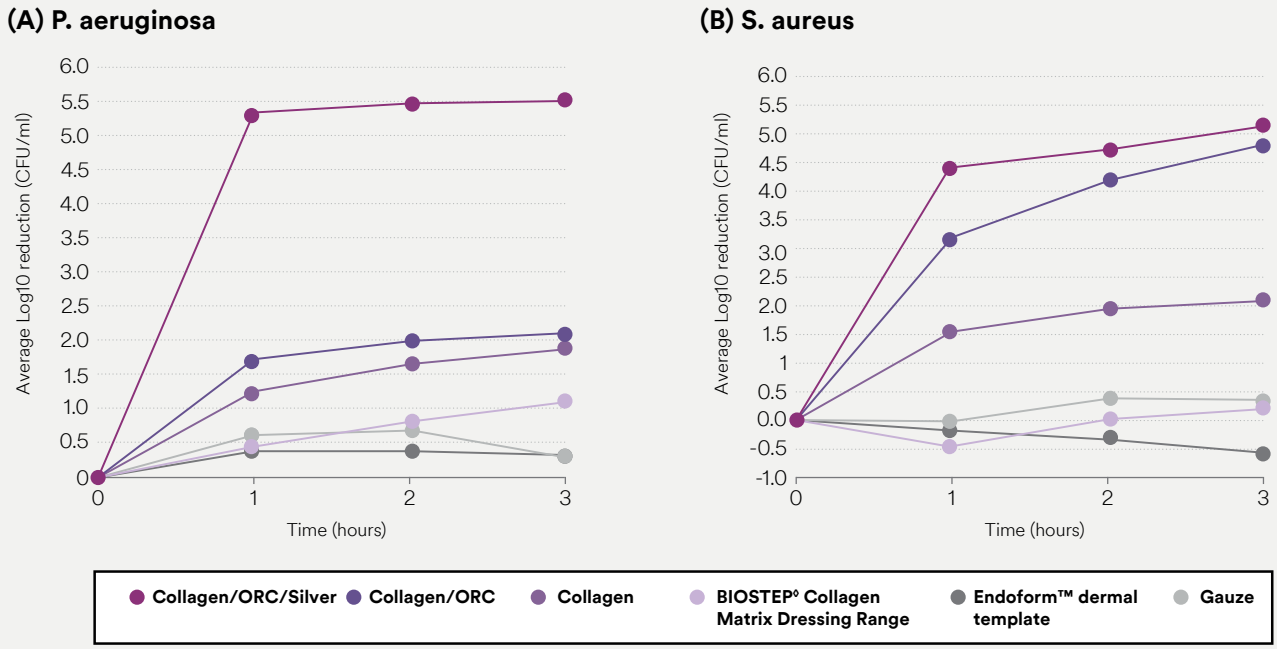


The effect on elastase and MMP-9 activity was significantly greater with collagen ORC materials than all other materials tested ($p<0.05$)

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 Log_{10} reduction essay

COLLAGEN/ORC MATERIALS OUTPERFORMED ALL OTHER DRESSINGS TESTED



- Previous published studies have shown that ORC provides bactericidal properties[6].
- Collagen/ORC combination demonstrated bactericidal activity against SA and bacteriostatic activity against PA in the log[10] 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 antimicrobial benefits of silver; effective against a broad range of bacteria.

Properties of ORC have been associated with:

- ORC combined with collagen provides enhanced in vitro performance for the reduction of protease activity compared with other naturally derived and collagen materials[5]
- Protection against bacterial growth[5]

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

References: 1. Cullen B and Ivins N. PROMOGRAN® and PROMOGRAN PRISMA® Made Easy. Wounds International. 2010;1(3):1-6. 2. Cullen B, et al. The benefits of oxidised regenerated cellulose for wound healing. Poster presented at: Wounds UK Annual Conference; November 7-9, 2011; Harrogate, UK. 3. Serena T, et al. Protease activity levels associated with healing status of chronic wounds. Poster presented at: Wounds UK Annual Conference; November 7-9, 2011; Harrogate, UK. 4. Cullen B, et al. The combined benefits of oxidised regenerated cellulose and collagen in the control of proteases in chronic wounds. Poster presented at: Clinical Symposium on Wound Care; October 22-24, 2009; San Antonio, TX. 5. Gibson M, et al. Can natural materials be optimised to improve wound environment? Presented at European Wound Management Association; May 12-14, 2015; London, UK. 6. Alfieri S, Di Miceli D, Menghi R, et al. 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.

NOTE: Specific indications, contraindications, warnings, precautions and safety information may exist for these products. Please consult a healthcare provider and product instructions for use prior to application. Rx only.

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