Presentation for clinicians

The Science behind Pocket-X® Gel

Geistlich

PRUDENTIX
Innovative dental products

leading regeneration

DISCLAIMER

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Presentation for clinicians

The Science behind Pocket-X® Gel

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Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?

- ✓ Pocket-X® Gel effectively improved the clinical parameters:
  - Pocket Depth (PD)
  - Clinical Attachment Level (CAL)
  - Bleeding on Probing (BOP)

  in stage 3 periodontitis patients over a 6-month period

LEARN HERE

What is split-mouth design?

- ✓ Is a popular design in oral health research. In the most common split-mouth study, each of two treatments are randomly assigned to either the right or left halves of the dentition

LEARN HERE

Has Pocket-X® Gel shown safety and effectiveness in patients?

- ✓ Pocket-X® Gel has been shown to be safe and effective in patients in dentistry
- ✓ No adverse or allergic reactions to the treatment gel were observed

LEARN HERE

What are the advantages of Hyaluronic Acid?

- ✓ Biocompatible and biodegradable
- ✓ Accelerating wound healing
- ✓ Stimulating tissue regeneration
- ✓ Having immunomodulatory functions
- ✓ Exceptional capacity for fluid-binding

LEARN HERE

How does Hyaluronic Acid support Periodontal Therapy?

- ✓ Accelerating wound healing
- ✓ Providing a barrier for pathogen penetration and being bacteriostatic
- ✓ Attracting growth factors and facilitating cell migration
- ✓ Stimulating tissue regeneration
- ✓ Coordinating inflammation
- ✓ Promoting angiogenesis

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Presentation for clinicians

The Science behind Pocket-X® Gel

click on icons to learn more

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What are the advantages of using Poloxamer 407 in oral gels?	Why does Pocket-X® Gel turn into gel when applied into periodontal pockets?	What are the advantages of combining Hyaluronic Acid and Poloxamer 407 in oral gels?
✓ Thermosensitivity & gel-forming properties ✓ Compatibility ✓ Good tolerability ✓ Ease of administration LEARN HERE	✓ When the temperature increases, the hydrogen bonds between the aqueous solvent and the hydrophilic PEO chains breaks. Desolvation induces the hydrophobic interaction among the PPO blocks, the formation of spherical micelles and, successively, the gelation process LEARN HERE	✓ Synergistic properties ✓ Improved elasticity ✓ Optimal viscosity ✓ Easier for administration ✓ Prolonged wound-healing effect ✓ Good tolerability LEARN HERE
What are the advantages of Octenidine?	**Is there any clinical evidence for the effectiveness of Octenidine in dentistry?**	**Why is Octenidine mouthwash recommended to maintain healthy oral conditions?**
✓ Broad spectrum of antimicrobial activity, acts as preservative ✓ Long term effect ✓ Very good tolerability ✓ Rapid onset of action ✓ Development of resistance unlikely ✓ Approved with no restrictions in cosmetic products LEARN HERE	✓ Clinical study data from 201 patients clearly demonstrated the superiority of OCT mouthwash over placebo in the inhibition of plaque re-growth over a 5-day period LEARN HERE	✓ Inhibited plaque formation up to 93% ✓ Eliminated atypical oral microbe species, even at 1 month after therapy LEARN HERE

Clinical study results

Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?

Pocket-X® Gel effectively improved the clinical parameters:

Pocket Depth (PD)
Clinical Attachment Level (CAL)
Bleeding on Probing (BOP)

in stage 3 periodontitis patients over a 6-month period.

LEARN MORE

BACK

Ariel Hirsch et al., Clin Oral Investig. 2022 Apr;26(4):3721-3733. doi: 10.1007/s00784-021-04344-2. Epub 2022 Jan 8. Read Online

Evaluate the efficacy and safety of Pocket-X® Gel for improving the gingival healing of deep periodontal pockets when used in conjunction with SRP.

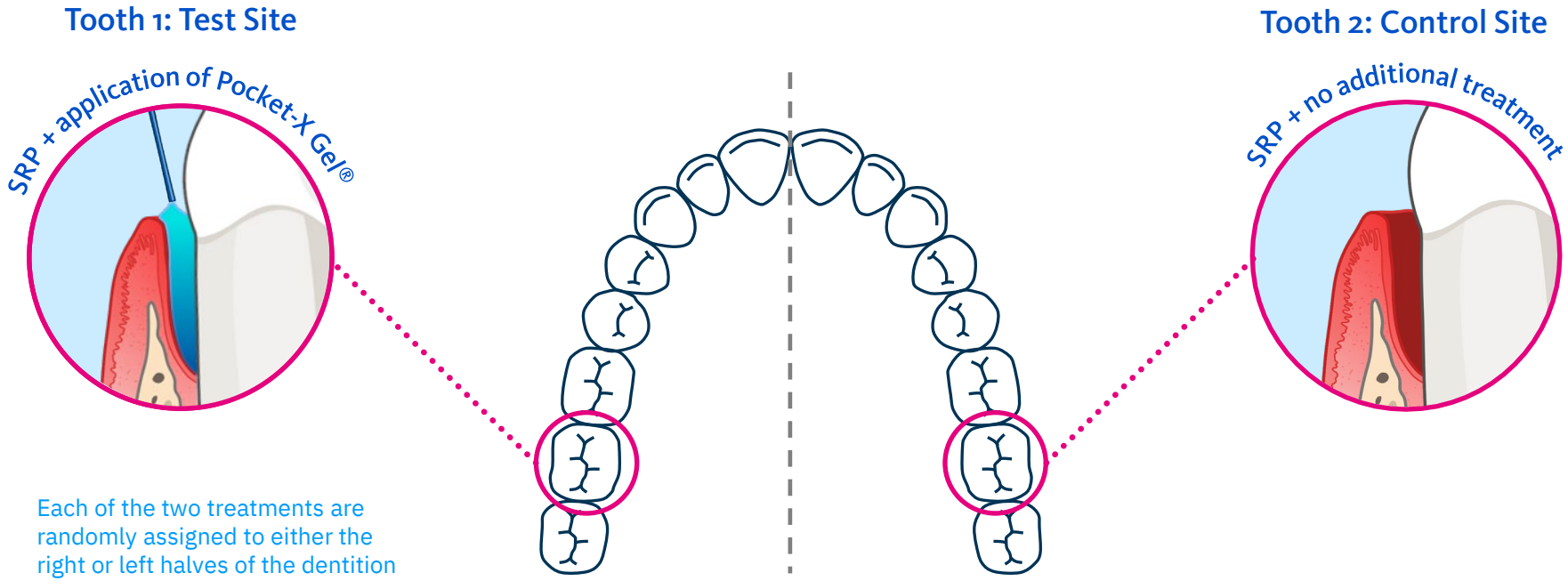
Randomized, prospective clinical trial

34 patients

3 and 6 months

Split-mouth design

What is split-mouth design?



Each of the two treatments are randomly assigned to either the right or left halves of the dentition

LEARN MORE

- Full-mouth **scaling and root planing (SRP)** performed in all residual pockets **≥ 5 mm,** with no suppuration. Treatment by means of ultrasonic and hand instruments.
- Pocket-X® Gel applied subgingivally in the test sites immediately after SRP (baseline) and 1 month later.

BACK

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Randomized, prospective clinical trial

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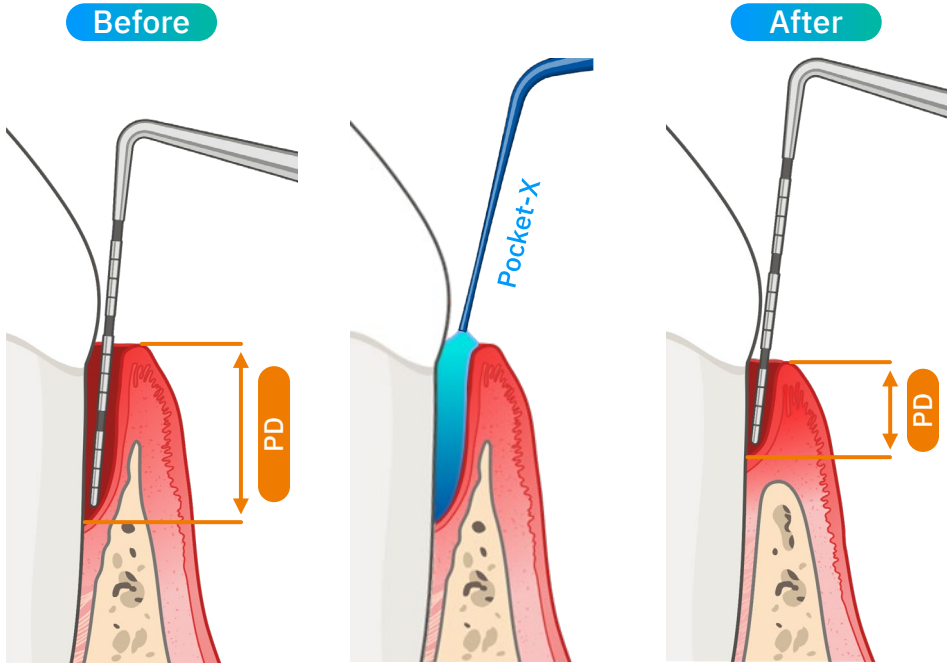
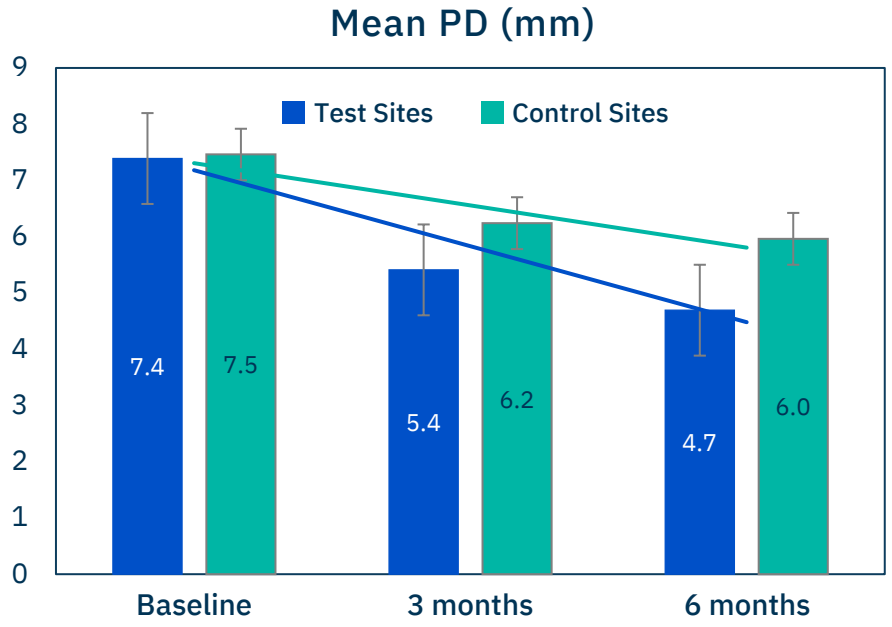
3 and 6 months

Greater reduction of pocket depth (PD) implies a clinical benefit of the Pocket-X® Gel treatment

Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?





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- Pocket-X® Gel treatment resulted in > 1 mm additional reduction of mean pocket depth, nearly 1.8 times more than scaling and root planing alone at 6 months after treatment.

BACK

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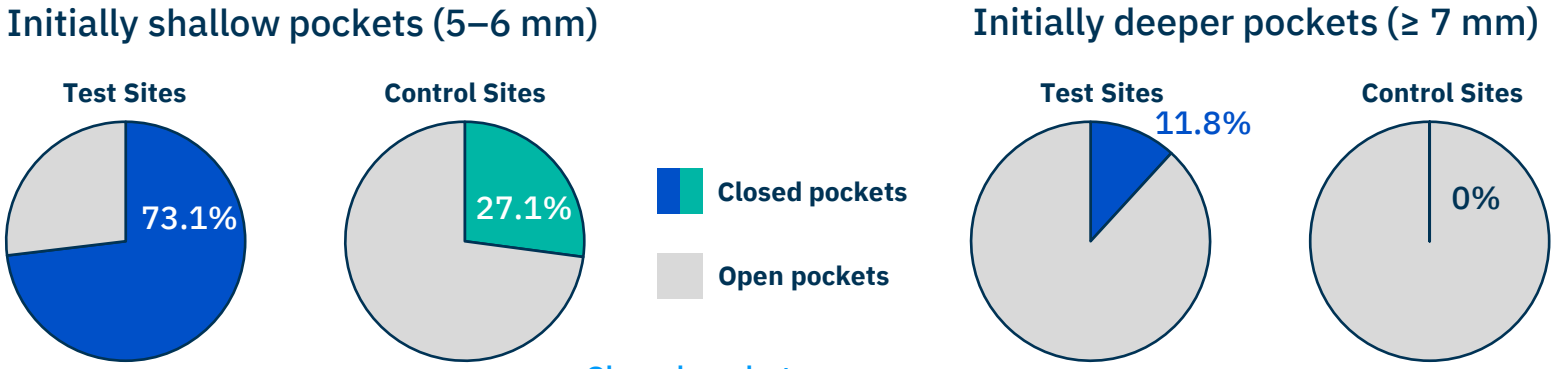
Percentage of closed pockets at 6 months was significantly higher at test sites

Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?

Percentage of **closed pockets** at 6 months grouped by initial pocket depth



Closed pockets:
PPD ≤ 4 mm with no bleeding

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- Pocket-X® Gel promoted statistically significant superior results: **46%** more pockets of initial depths of 5–6 mm healed with Pocket-X® Gel than pockets treated with scaling and root planing only.

BACK

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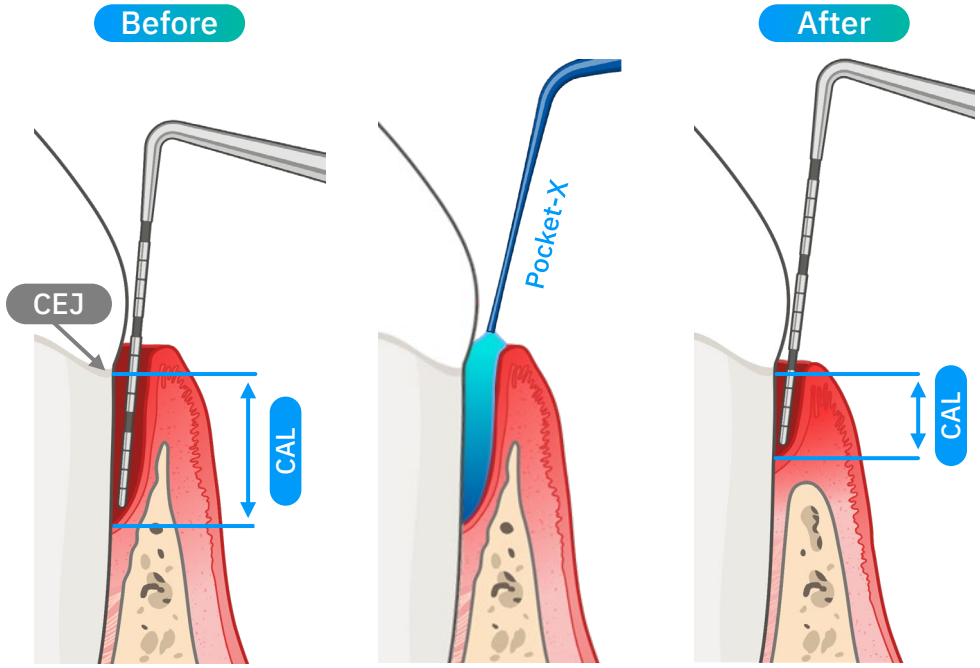
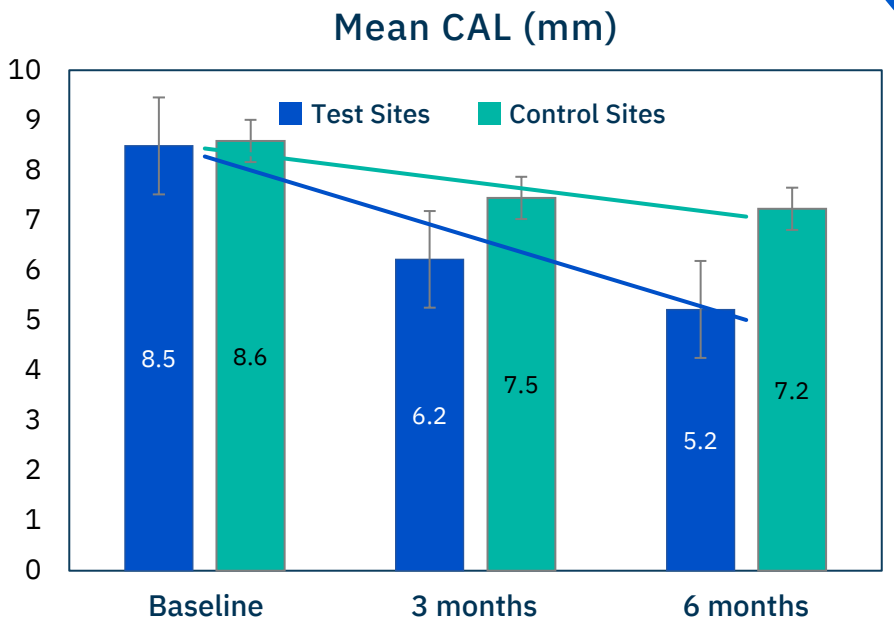
Greater reduction of CAL implies a clinical benefit of the Pocket-X® Gel treatment

Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?





Clinical attachment level (CAL)
distance in mm from the cementoenamel junction (CEJ) to the bottom of the probable periodontal pocket

- Scaling and root planing (SRP) + Pocket-X® Gel yielded statistically significant higher CAL reductions compared to SRP alone.
- Pocket-X® Gel resulted in 1.5 times more gain of clinical attachment than SRP alone at 6 months after treatment.

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BACK

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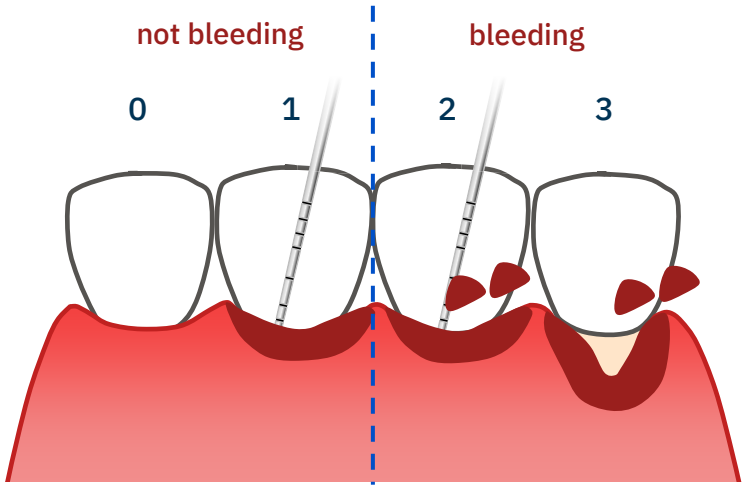
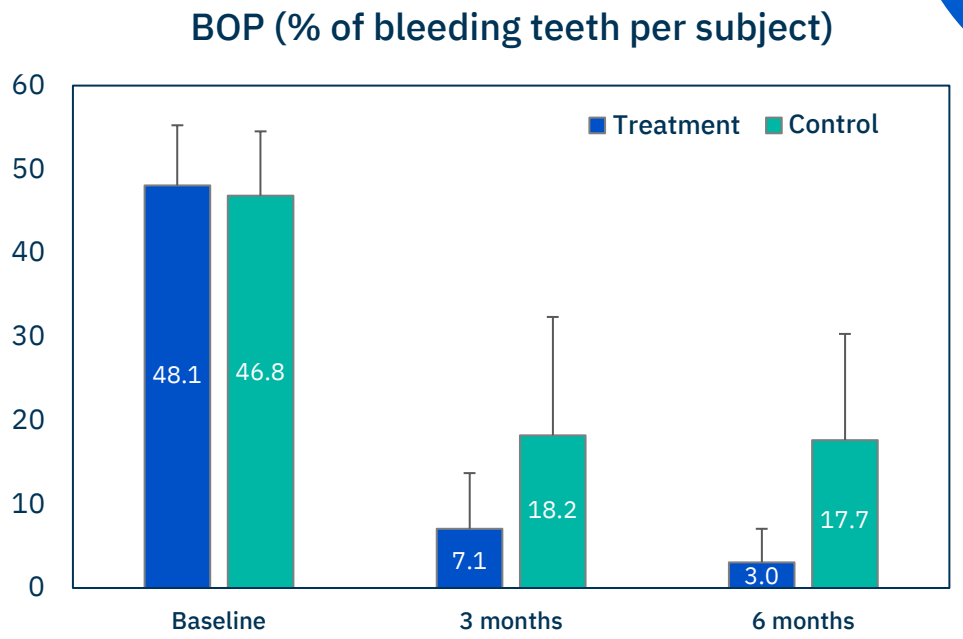
Greater reduction of bleeding on probing (BOP) implies a clinical benefit of the Pocket-X® Gel treatment

Why is scaling and root planing (SRP) with Pocket-X® Gel better than SRP alone?

BOP



0 > Normal gingiva/absence of inflammation.
1 > Mild inflammation: Slight change in color, slight edema. No bleeding on probing.
2 > Moderate inflammation: Redness edema and glazing. Bleeding on probing.
3 > Severe inflammation: Marked redness and edema. Ulceration and a tendency for spontaneous bleeding.



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- Both groups showed significantly reduced BOP at 3 months compared with the baseline values. Less BOP was observed in the treatment group than in the control group at 3 and 6 months.

BACK

Ariel Hirsch et al., Clin Oral Investig. 2022 Apr;26(4):3721-3733. doi: 10.1007/s00784-021-04344-2. Epub 2022 Jan 8. Read Online

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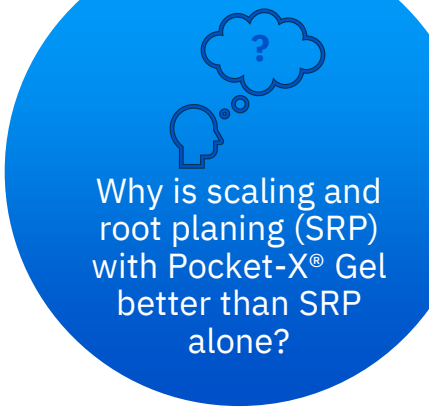
Pocket-X® Gel Clinical Study Summary



- Pocket-X® Gel effectively prevented repopulation of periodontal pockets, and enhanced improvements of clinical parameters in chronic adult periodontitis patients over a six months period.
- PPD, CAL and BOP measurements showed distinctly better results when using Pocket-X® Gel with SRP than SRP alone.
- Pocket-X® Gel has been shown to be safe and effective in patients in dentistry.

→ **Subgingival application of Pocket-X® Gel provided clinically significant better results compared to SRP alone.**

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BACK

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Pocket-X® Gel has been shown to be safe and effective in patients in dentistry.

No adverse or allergic reactions to the treatment gel were observed.

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Presentation for clinicians

Hyaluronic Acid overview

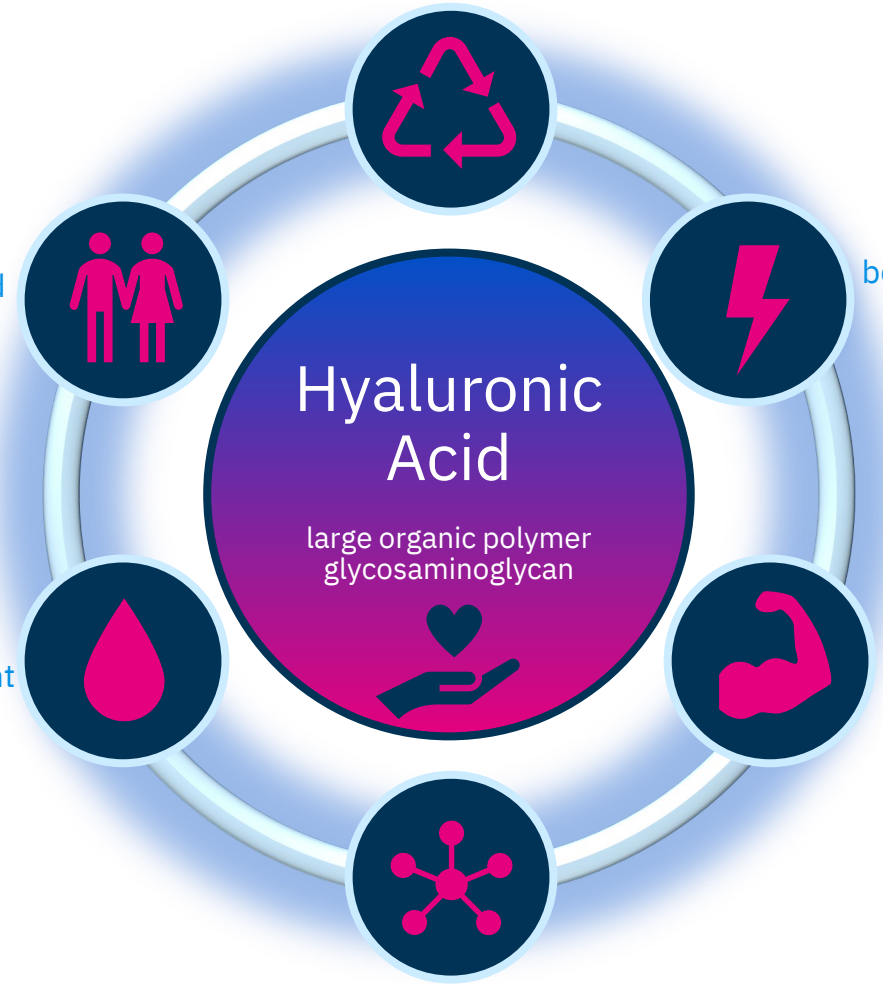
What are the advantages of Hyaluronic Acid?

BIOCOMPATIBLE AND BIODEGRADABLE

Well-tolerated by most individuals[1-4]

NATURALLY FOUND IN THE HUMAN BODY

Distributed widely throughout connective, epithelial, and neural tissues, found in gingiva and periodontal ligament[14-15]



ACCELERATING WOUND HEALING

Providing a barrier for pathogen penetration; being bacteriostatic; facilitating cell migration[5-8]

LEARN MORE

EXCEPTIONAL CAPACITY FOR FLUID-BINDING

Hygroscopic properties; can absorb huge amount of fluid; allowing it to retain moisture and enhances lubrication[4, 13]

STIMULATING TISSUE REGENERATION

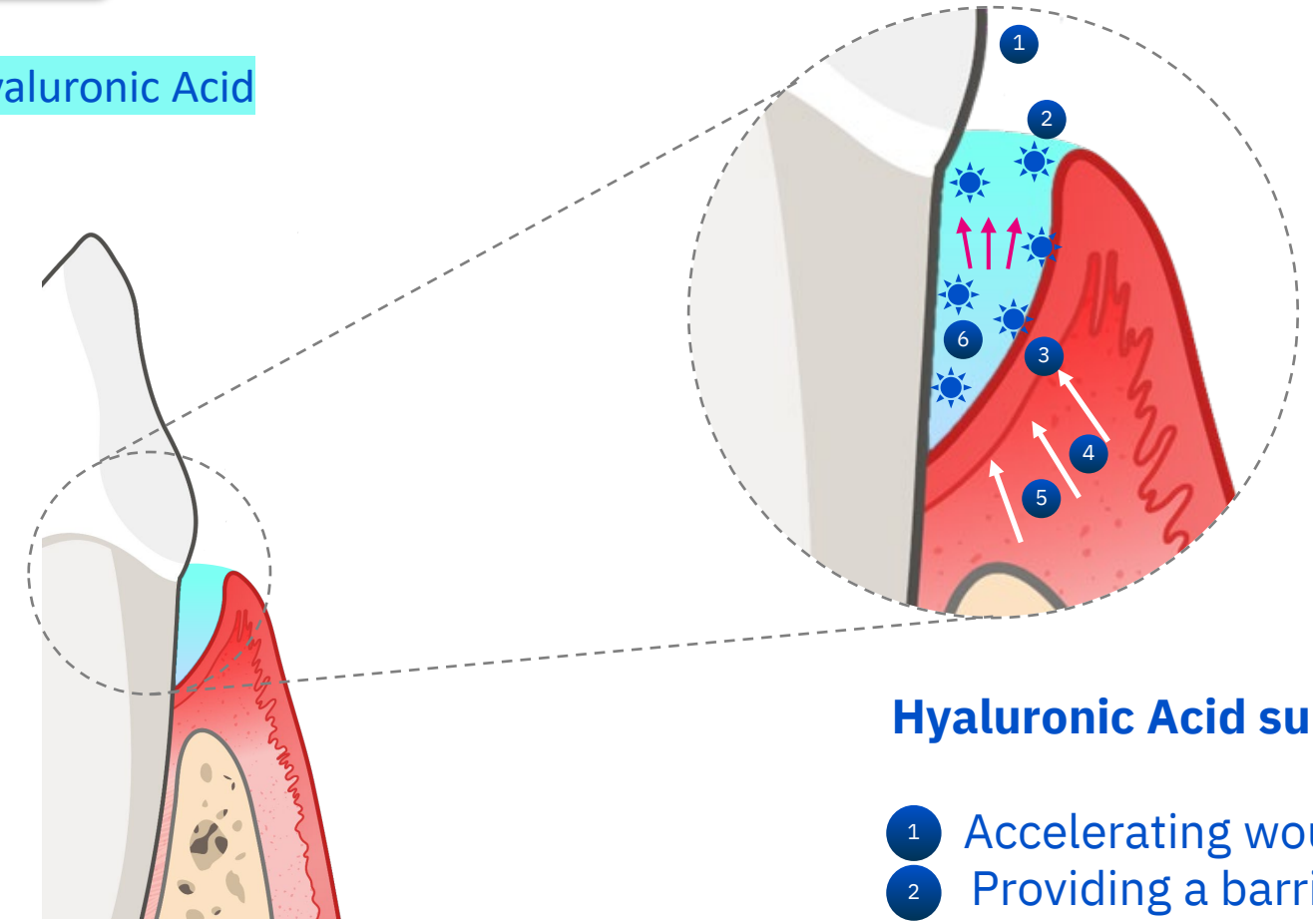
Accelerating new blood vessels formation & collagen production; promoting fibroblast proliferation; supporting the wound healing process[7-10]

BACK

HAVING IMMUNOMODULATORY FUNCTIONS

Anti-inflammatory properties[11-12]

Hyaluronic Acid



How does Hyaluronic Acid support Periodontal Therapy?

LEARN MORE

Hyaluronic Acid supports Periodontal Therapy by:

1. Accelerating wound healing
2. Providing a barrier for pathogen penetration and being bacteriostatic
3. Attracting growth factors and facilitating cell migration
4. Stimulating tissue regeneration
5. Coordinating inflammation
6. Promoting angiogenesis

BACK

Bhati A, Biomed Rep. 2022 Sep 28;17(5):91. Read Online
Dahiya P, N Am J Med Sci. 2013 May;5(5):309-15. Read Online

Geistlich

References on Hyaluronic Acid overview

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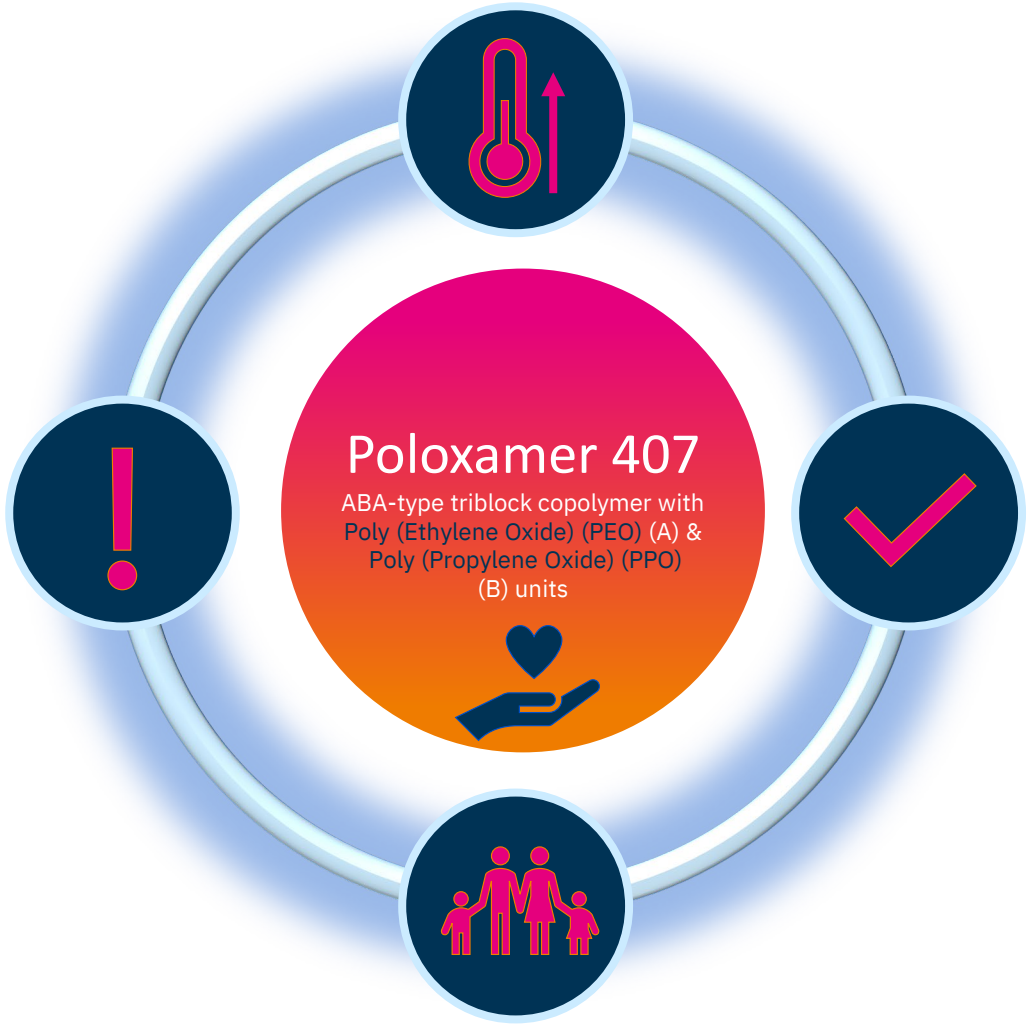
LEARN MORE

BACK

What are the advantages of using Poloxamer 407 in oral gels?

THERMOSENSITIVITY & GEL-FORMING PROPERTIES

Its aqueous solution is liquid at room temperature but transforms to a gel at body temperature.[1-4]



EASE OF ADMINISTRATION

Oral gels formulated with Poloxamer 407 offer ease of administration, as they can be easily dispensed and spread in the oral cavity.[1]

COMPATIBILITY

Due to good solubilizing capacity and its compatibility with numerous biomolecules and chemicals, it is widely used in the field of biomedicine in a wide-range of applications[1-9]

GOOD TOLERABILITY

Recognized as safe owing to low toxicity[9-12]

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References on advantages of Poloxamer 407

1. Chen Y, et al., Materials (Basel). 2021 Aug 12;14(16):4522. Read Online

2. Ruel-Gariépy E, et al., Eur J Pharm Biopharm. 2004 Sep;58(2):409-26. Read Online

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12. Ariel Hirsch et al., Clin Oral Investig. 2022 Apr;26(4):3721-3733. Read Online

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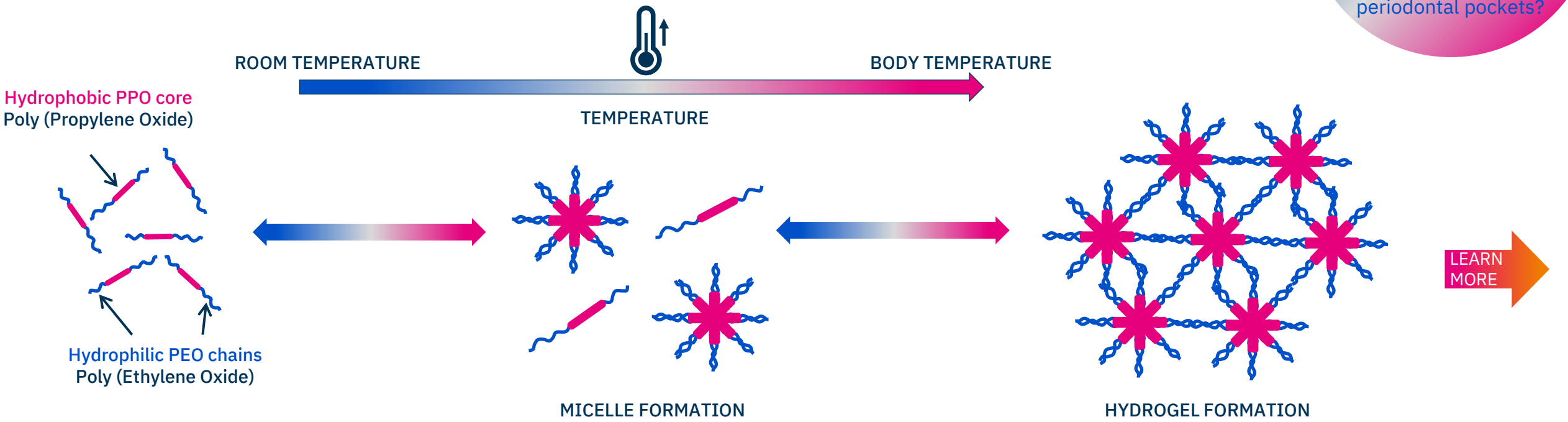
BACK

P407 aqueous solution exhibits thermo-reversible gelation

Why does Pocket-X® Gel turn into gel when applied into periodontal pockets?



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When the temperature increases, the hydrogen bonds between the aqueous solvent and the hydrophilic PEO chains break. Desolvation induces the hydrophobic interaction among the PPO blocks, the formation of spherical micelles and, successively, the gelation process.

BACK

Alexandridis P, et al., Macromolecules 1994 27 (9), 2414-2425 Read Online
Chen Y, et al., Materials (Basel). 2021 Aug 12;14(16):4522. Read Online

What are the advantages of combining HA and Poloxamer 407 in oral gels?

SYNERGISTIC PROPERTIES

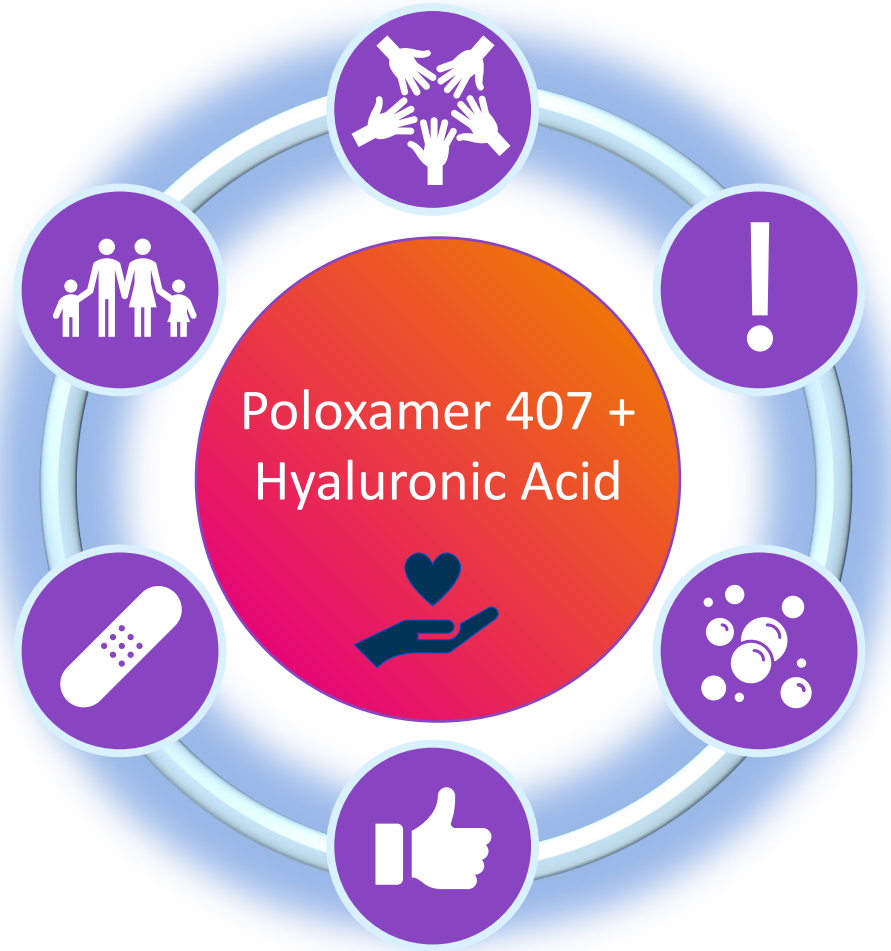
Improved gel performance.[1-4]

GOOD TOLERABILITY

Recognized as safe owing to low toxicity.[7-8]

IMPROVED ELASTICITY

Hyaluronic Acid contributes to elasticity and moisturizing effects improving mucoadhesive properties.[3-4]



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PROLONGED WOUND-HEALING EFFECT

By forming a mechanical barrier, it protects the pockets from bacterial recolonization and improves healing of the gingiva.[6-7]

EXCELLENT VISCOSITY

Stabilization inside the defect and withstanding the washout effect of the gingival crevicular fluid.[5-6]

BACK

EASIER FOR ADMINISTRATION

Easy to apply inside the periodontal pockets. Targeting and filling even hard-to-reach ones.[5-6]

References on advantages of combining Hyaluronic Acid and Poloxamer 407

Geistlich

1. Hsieh HY, et al., PLoS One. 2020 Mar 11;15(3):e0227784. Read Online

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8. Ariel Hirsch et al., Clin Oral Investig. 2022 Apr;26(4):3721-3733. Read Online

LEARN MORE

BACK

What are the advantages of Octenidine?

BROAD SPECTRUM OF ANTIMICROBIAL ACTIVITY

Effectively targets a broad spectrum of microorganisms including a variety of bacteria, fungi and enveloped viruses.[1-5]

DEVELOPMENT OF RESISTANCE UNLIKELY

Nonspecific mechanism of action.[15-16]

LONG TERM EFFECT

48-hours remanence.[6]

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VERY GOOD TOLERABILITY AND EXTREMLY LOW ALLERGIC POTENTIAL

Well-tolerated by most individuals.[7-13]

Does not absorb into the body following oral and dermal use. [14]

STABILITY AND ANTIMICROBIAL ACTIVITY WITHIN A BRAOAD pH RANGE (pH 1.6-12.2)

Suitable for all wounds with different pH values during the healing phase.[7]

BACK

RAPID ONSET OF ACTION

From 1 minute onwards [1-5]

Octenidine is a preservative in Pocket-X® Gel that prevents the contamination of the gel.

References on advantages of Octenidine

Geistlich

1. Conceição T, et al., J Antimicrob Chemother. 2016 Oct;71(10):2991-4. Read Online

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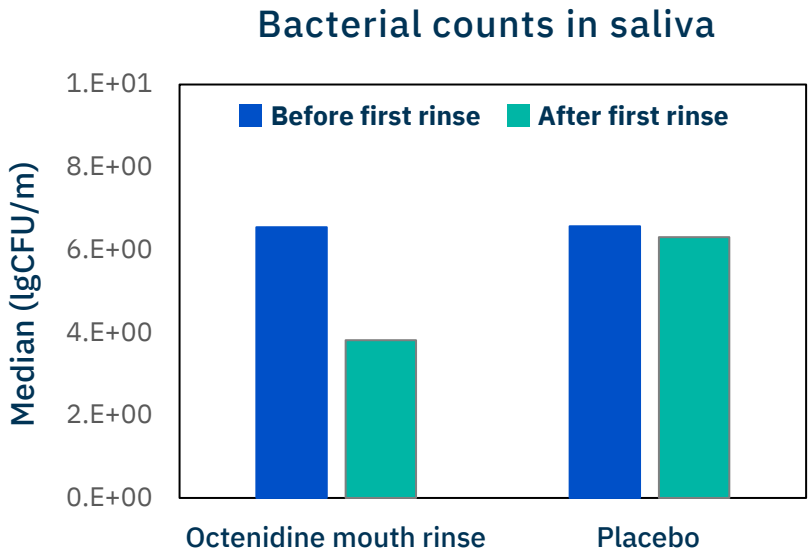
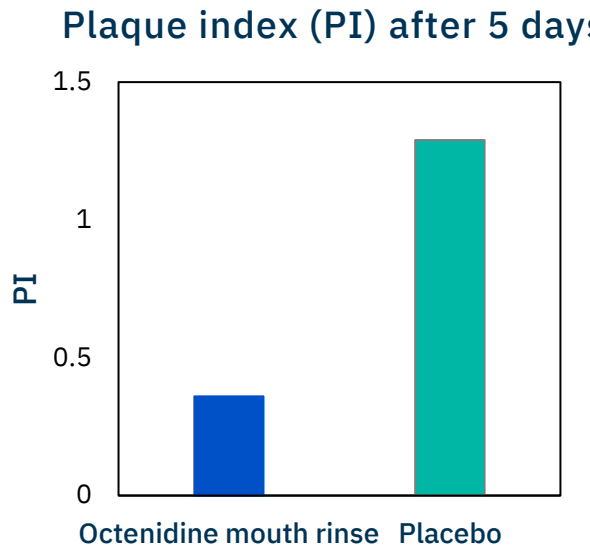
BACK

Octenidine mouthwash is recommended to maintain healthy oral conditions

Is there any clinical evidence for the effectiveness of Octenidine in dentistry?





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- A single rinse with the 0.1% OCT mouthwash reduced salivary bacterial counts significantly stronger than the placebo.
- The 0.1% OCT mouthwash demonstrated superiority over the placebo in inhibiting plaque re-growth over a 5-day period in the absence of mechanical plaque control.

BACK

Jockel-Schneider Y. et al., Clin Oral Investig. 2021 Jul;25(7):4681-4689. Read Online

Investigate plaque inhibition of 0.1% Octenidine mouthwash vs. placebo over 5 days in the absence of mechanical plaque control.

Randomized, placebo controlled double-blind clinical study

201 healthy adults

5 days

Octenidine mouthwash is recommended to maintain healthy oral conditions

The use of 0.1% OCT mouthwash:

- inhibited plaque formation up to 93% and gingivitis up to 68% versus placebo and was either superior or comparable to chlorhexidine.
- significantly reduced the number of bleeding sites, papilla bleeding index, sulcus bleeding index, and gingival fluid flow.
- eliminated atypical oral microbe species, even at 1 month after therapy.
- well-tolerated and safe and can be an effective alternative to CHX and other contemporary mouthwashes.

BACK