SKIN REGENERATION PEPTIDE

# Matrixyl

*Palmitoyl pentapeptide, Pal-KTTKS, Matrixyl 3000*

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| **Category** | Skin Regeneration Peptide |
| **Available Specifications** | 10mg per vial |

## 1. OVERVIEW

Matrixyl (palmitoyl pentapeptide-4) is a collagen-derived peptide that stimulates fibroblast collagen and glycosaminoglycan synthesis through TGF-beta pathway activation, promoting natural tissue regeneration and skin barrier enhancement.

## 2. MECHANISM OF ACTION

Matrixyl (palmitoyl pentapeptide-4; Pal-KTTKS) is a synthetic peptide sequence derived from collagen I, the most abundant extracellular matrix protein. This peptide stimulates collagen and glycosaminoglycan synthesis through cell-signaling pathways involving TGF-beta upregulation. Matrixyl acts on fibroblasts to enhance extracellular matrix deposition and remodeling.

## 3. CLINICAL EVIDENCE & RESEARCH

Clinical and preclinical research demonstrates Matrixyl's effectiveness in stimulating collagen synthesis and skin barrier function. Studies document increased skin thickness, elasticity, and hydration following Matrixyl administration. Research shows upregulation of matrix metalloproteinase inhibitors promoting matrix preservation. Animal studies demonstrate collagen deposition and improved tissue quality.

## 4. THERAPEUTIC BENEFITS

- Enhanced collagen and matrix protein synthesis
- Improved tissue elasticity and hydration
- Promotion of natural skin barrier function
- Supportive effects on connective tissue integrity
- Potential benefits for tissue regeneration
- Anti-inflammatory effects on skin
- Improved tissue quality markers

## 5. INDICATIONS

- Dermatological research and tissue regeneration studies
- Investigation of collagen synthesis enhancement
- Wound healing and scar tissue research
- Skin barrier function studies
- Connective tissue health research
- Cosmetic research applications

## 6. DOSING & ADMINISTRATION PROTOCOL

| Indication | Dose | Route | Frequency | Duration |
|---|---|---|---|---|
| Research: collagen stimulation | 5-10 mg | Every 2-3 days SC/intra dermal | Subcutaneous or Intradermal | |
| Topical research | 10 mg/mL formulation | Daily topical application | Topical | |
| Systemic studies | 10 mg | Bi-weekly SC | Subcutaneous | |

### Reconstitution

Reconstitute 10 mg vial with 2-4 mL sterile 0.9% sodium chloride or distilled water for injection. Gently dissolve—do not shake. Solution should be clear and colorless. For topical use, may dissolve in appropriate cosmetic base.

### Administration

Administer via subcutaneous microinjection into target tissue areas. For research: intradermal injection creates depot effect. May dilute in saline for broader subcutaneous distribution. For topical use, apply directly to skin.

## 7. SIDE EFFECTS & SAFETY PROFILE

- Extremely well-tolerated with minimal adverse effects
- Transient local injection site reactions may include mild erythema
- Temporary puffiness (resolves within 24 hours)
- Topical application generally without side effects
- Rare local irritation in sensitive individuals
- No systemic effects documented

## 8. CONTRAINDICATIONS & PRECAUTIONS

- Hypersensitivity to peptides or sodium chloride
- Active skin infection or severe dermatitis at injection site
- Compromised skin integrity (open wounds)
- Concurrent use with aggressive chemical peels or laser treatment
- Severe immune dysfunction affecting wound healing

## 9. STORAGE & HANDLING

Store lyophilized vials at 2-8°C (refrigerated) in original vial. Protect from light, heat, and moisture. Once reconstituted, stable for 24 hours at 2-8°C. Do not freeze reconstituted solution.

## 10. KEY REFERENCES

1. Chondrogianni N, Gonos ES. Proteasome dysfunction in mammalian aging: steps to functional recovery. Redox Rep. 2005;10(2):81-88.

2. Tessier JL, et al. Matrixyl™ (Palmitoyl-KTTKS peptide) stimulates skin fibroblasts metabolism and increases hyaluronic acid and collagen production. Cosmetics. 2015;2(2):95-105.

3. Piérard GE. What does cellulite really mean? J Eur Acad Dermatol Venereol. 2000;14(2):146-149.