

Peptides for Skin: A Formulator's Guide

A practical guide to peptide selection, research, and formulation

by Joan Morais



IN THIS GUIDE

Understand signal, expression-line, carrier, and other cosmetic peptides; compare ingredient evidence; and choose the right commercial material for your formulation.

What are peptides?

Peptides are short chains of amino acids linked by peptide bonds. In skincare, specific sequences may act as biological signals or interact with pathways associated with the extracellular matrix, skin appearance, and conditioning. Benefits depend on the exact peptide, delivery system, concentration, and finished formulation.

Why peptides are not interchangeable

“Peptide” describes a broad chemical family, not one cosmetic function. A signal peptide is not necessarily an expression-line peptide; a copper-binding peptide is not equivalent to a barrier lipid or moisturizer. Some marketed “peptide complexes” also contain solvents, humectants, and preservatives.

How peptide research developed

Modern peptide science grew from studies of protein chemistry and amino-acid sequencing in the twentieth century. Cosmetic peptide research expanded as researchers investigated how small amino-acid sequences influence cell signaling and skin appearance. Commercial products subsequently introduced trademarked peptide blends, often supported by supplier-led tests.

JOAN'S FORMULATION NOTE

Always distinguish the percentage of commercial peptide solution from the percentage of pure active peptide. Obtain the current INCI, technical data sheet, active concentration (when disclosed), recommended use rate, pH range, temperature limits, and supporting studies.

Peptides at a Glance

Use this chart to match a cosmetic goal to a peptide category. Evidence descriptions are broad; they do not establish equivalent efficacy between brands.

Ingredient / INCI	Category	Best-fit goal	Evidence perspective
Palmitoyl Pentapeptide-4	Signal peptide	Wrinkle appearance; matrix support	Controlled human studies; formulation-specific
Palmitoyl Tripeptide-1 + Palmitoyl Tetrapeptide-7 (Matrixyl 3000)	Signal blend	Wrinkles; texture	Supplier and formulation-level evidence
Acetyl Tetrapeptide-2 (Uplevity)	Firmness-focused signal peptide	Elasticity; sagging appearance	Small supplier human studies
Acetyl Hexapeptide-8 (Argireline)	Expression-line peptide	Expression wrinkles	Mixed clinical evidence
Copper Tripeptide-1	Copper-binding peptide	Skin conditioning; repair-related pathways	Biological studies; limited robust cosmetic trials
Palmitoyl Tripeptide-5	Signal peptide	Firmness; wrinkle appearance	Mostly supplier-led evidence
Acetyl Octapeptide-3 (SNAP-8)	Expression-line peptide	Expression wrinkle appearance	Predominantly supplier data

How to interpret the studies

In vitro studies assess cells or isolated systems and cannot establish a visible benefit on human skin. Supplier-sponsored human trials can be useful, especially when randomized, blinded, placebo-controlled, and instrumentally measured. Independent replication increases confidence. Compare participant number, duration, concentration, controls, statistical methods, and whether the tested formula matches yours.

Uplevity example

The supplied Uplevity brochure reports a 2% commercial solution used twice daily for approximately 8 weeks, with instrumental elasticity results in 20 women. It also reports separate laboratory collagen and elastin findings. These are not the same as proving a 47.3% collagen increase in a person's skin. The brochure identifies Acetyl Tetrapeptide-2—not Tetrapeptide-1.

Which Peptide Should You Choose?

Your main product goal	Candidates to investigate	What to verify
Fine lines and photoaging appearance	Palmitoyl Pentapeptide-4; Matrixyl 3000	Human wrinkle endpoints and vehicle controls
Expression lines	Acetyl Hexapeptide-8; Acetyl Octapeptide-3	Controlled evidence for the exact commercial grade
Loss of firmness and elasticity	Acetyl Tetrapeptide-2; Palmitoyl Tripeptide-5	Cutometer data, placebo comparison, realistic claims
General mature-skin support	Complementary signal peptides	Compatibility, sensory and cost
Sensitive or barrier-impaired skin	Barrier-supporting base plus a well-tolerated peptide	Irritation testing; do not replace ceramides

Formulation Considerations

- Choose the precise commercial grade and check the complete INCI and preservative system.
- Use supplier-specific pH, temperature, solubility, and processing guidance; many aqueous peptides are added in cool-down.
- Confirm compatibility with electrolytes, surfactants, acids, metal chelators, and other actives; avoid assuming all copper-peptide rules apply to every peptide.
- Evaluate emulsion or serum stability, odor, color, packaging, preservative efficacy, and peptide retention where feasible.
- Avoid claiming that a finished product “lifts” tissue or produces Botox-equivalent effects without appropriate finished-product substantiation.

Supplier vs. Independent Evidence

Supplier data are not automatically unreliable, but independent, blinded, placebo-controlled studies and replicated findings carry more weight. Ask whether a claim reflects cell data, instrumental skin measurements, participant perception, or a demonstrated clinical change. Results from a trademarked blend should not be assigned to every ingredient sharing its INCI.

Formulator's Decision Checklist

- Define the primary cosmetic claim: wrinkle appearance, firmness, expression lines, or conditioning.
- Verify exact peptide INCI, trade name, concentration, carrier, and recommended use rate.
- Read full study design: sample size, controls, duration, dose, and outcomes.
- Separate laboratory findings from controlled human results and independent replication.
- Check solubility, pH, temperature, preservative compatibility, and manufacturing sequence.
- Test finished-product stability, microbial safety, packaging, skin tolerance, and claim substantiation.

The Main Takeaway

Choose peptides by the job they are meant to do and the quality of the supporting evidence—not by the number of peptides on the label or the highest percentage of a supplier solution.

LEARN MORE

Read the companion article “Peptides in Skincare: What They Are, How They Work, and How to Choose” and explore the Professional Natural Skin Care Formulation Course at www.JoanMorais.com.

[Explore the Peptide Cream and Ceramide Serum and in the Professional Natural Skin Care Formulation Course.](#)

[Make the Radiant Aging Peptide Serum in the LAB Class.](#)

Selected references for further evaluation

Lubrizol/Lipotec. Uplevity™: Counteracting the Force of Gravity. Supplier technical brochure (provided).

Robinson LR et al. Topical palmitoyl pentapeptide provides improvement in photoaged human facial skin. International Journal of Cosmetic Science (2005).

Schagen SK. Topical peptide treatments with effective anti-aging results. Cosmetics (2017).

Verify up-to-date peer-reviewed literature and supplier documentation before publishing quantitative claims.

Educational formulation reference. Supplier specifications and finished-product validation take precedence over generic recommendations.