

GHK-Cu, Honestly

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ABSTRACT — The copper tripeptide GHK-Cu has fifty years of published science, a genuinely interesting biology, a lawful topical life, an unlawful injectable one, and a marketing ecosystem that routinely confuses all of the above. This paper separates the layers: the discovery, what the evidence actually supports, the four legal lives of one molecule, and how to read a copper-peptide label.

1. Fifty Years in Three Paragraphs

GHK (glycyl-L-histidyl-L-lysine) was identified by biochemist Loren Pickart in the early 1970s while investigating why blood plasma from young donors affected aged liver tissue differently than plasma from old donors. The tripeptide binds copper avidly — hence GHK-Cu — and its plasma concentration declines substantially between youth and older age, an observation that has anchored its 'regenerative signal' framing ever since.

In cell and animal studies across five decades, GHK-Cu stimulates collagen and glycosaminoglycan synthesis in fibroblasts, modulates metalloproteinase activity, and accelerates wound closure in animal models.

Gene-expression work reports it resetting the activity of a strikingly large number of genes toward a 'healthier' profile — a finding that is intriguing, heavily cited, and almost entirely pre-clinical.

Human evidence is thinner and concentrated in cosmetics: small controlled studies of topical GHK-Cu creams on photoaged skin report improvements in skin density, firmness, and the appearance of fine lines, generally versus vehicle or comparator actives. There are no large, independent, randomised human trials of GHK-Cu for any medical outcome. Honest summary: excellent pre-clinical story, real but modest cosmetic-grade human data, and a wide gap between the two that marketing loves to jump.

2. The Four Legal Lives

Presentation	Status (US & Canada, Aug 2026)	The line
Topical cosmetic (creams, serums)	LAWFUL with appearance claims	'Improves the look of aging skin' — yes. 'Rebuilds collagen' as a physiological claim — drifting toward drug territory.
Oral supplement	CONTESTED	Not an established supplement ingredient; drug-preclusion questions unresolved. Approach claims sceptically.
Injectable (online vials)	NOT LAWFUL	Removal from FDA Category 2 (Apr 2026) changed its review status, not its legality. No sterile, approved injectable exists.
Approved drug	NONE	No GHK-Cu drug approval anywhere; would require the full development pathway.

3. Reading a Copper-Peptide Label

Concentration: studies used defined concentrations; many products disclose none. Ask. **Delivery:** a peptide that stays on top of the stratum corneum moisturises; encapsulation and delivery-system data are what separate serious topical formulation from blue water. **Colour:** GHK-Cu is naturally blue — but blue dye is cheaper, and colour proves nothing. **Claims:** per WP-001, appearance language is the lawful lane; a topical product

promising wound healing or 'systemic regeneration' is making drug claims without a drug licence, which tells you about the seller before it tells you anything about the science. **Pairing:** copper peptides can be destabilised by strong direct acids in the same routine — formulation context matters, another marker of a serious product.

4. Why This Molecule Is a Fair Test of Any Brand

GHK-Cu rewards honesty and punishes hype in equal measure: the science is good enough to build real cosmetic products on, and not good enough to support the medical claims that surround it online. A brand's GHK-Cu copy is therefore a diagnostic. If it cites cell studies as if they were human trials, or sells 'cosmetic' vials with injection instructions winked at, everything else it says is suspect. If it states the topical case plainly and stops there, you have found a seller who respects both the molecule and you.

References & Sources

- [1] Pickart L. — identification of GHK in human plasma and early activity work (1973 onward).
 - [2] GHK-Cu fibroblast collagen/GAG synthesis and MMP-modulation studies (1980s–2010s).
 - [3] Animal wound-healing model literature for GHK-Cu (multiple species).
 - [4] Pickart L., Margolina A. — reviews of GHK-Cu gene-expression and skin studies, Int J Mol Sci and elsewhere (2018).
 - [5] Controlled cosmetic studies of topical GHK-Cu on photoaged facial skin (skin density, firmness, fine-line appearance).
 - [6] Federal Register, Docket FDA-2025-N-6895 (April 22, 2026) — GHK-Cu among 12 peptides removed from Category 2.
- Companion papers: WP-001 (four worlds), WP-002 (the 2026 review), WP-005 (grey-market formulary).

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