GHK-Cu Research Summary

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What the Research Suggests, in Plain Language

GHK-Cu is a tiny protein fragment bound to copper. It is used as an ingredient in skin-care products.

• In people, studies have mostly tested it on the skin. In one controlled trial from 1994, a GHK-Cu gel applied to foot ulcers in people with diabetes was linked to more wound closure than a gel without it. In a small study after laser skin treatment, blinded evaluators found no clear difference, although patients rated their skin quality higher.

• In animal studies, results suggest GHK-Cu may be linked to faster wound closure and more new tissue building up in wounds, mostly in rats.

• No controlled study has tested injected GHK-Cu in people. Two newer human trials are registered and have no results yet.

In short: the skin and animal studies point to possibilities for further research. They do not show that GHK-Cu is safe or effective in people beyond the skin-care settings that were studied.

Overview

GHK-Cu is a copper-binding tripeptide (three amino acids) used as a cosmetic ingredient in topical products. It is not an FDA-approved drug.

What the Research Actually Presents

Human topical studies: A multicenter randomized trial of a topical GHK-Cu gel in diabetic ulcers (1994; evaluator-blinded, placebo-controlled; PMID 17147644) reported greater wound-closure rates versus placebo. In a small study on CO2 laser-resurfaced skin (13 patients completed; PMID 16847171), blinded evaluators found no significant differences between groups, while a patient questionnaire favored GHK-Cu for overall skin quality. Other small cosmetic studies, often of multi-ingredient products, report appearance parameters in other skin conditions.

Animal studies (~76 animal + 33 in-vitro):

• Wound-closure models: Researchers observed faster wound closure, increased collagen deposition, and improved tissue organization compared with controls.

• A 1993 rat study (PMID 8227353) implanted stainless-steel wound chambers under the skin and placed GHK-Cu into the chambers. Researchers reported concentration-dependent increases in dry weight, DNA, protein, collagen, and glycosaminoglycans inside the chambers versus saline.

• Other animal work used injection into joints or into the abdominal cavity in injury or metabolic models.

Administration routes reported in the literature (descriptive only): Published human studies used topical application to the skin. Animal studies used placement into implanted wound chambers, injection into joints (intra-articular) and into the abdominal cavity (intraperitoneal). No published controlled human studies of injected GHK-Cu were identified.

Approximately 79 catalog records are non-biological chemistry or materials papers.

Registered trials, no results posted: a topical wound phase 2 trial (NCT07437586, recruiting) and a skin-patch study measuring blood levels of GHK and GHK-Cu (NCT07706361, not yet recruiting).

What the Research Suggests

Topical human studies report greater wound closure or some appearance improvements versus controls in the conditions tested, but objective measures did not differ in the laser-resurfacing study.

In rodent wound models, including the wound-chamber model, GHK-Cu was associated with increased matrix accumulation and faster closure measures. These are animal findings. Controlled human data for injected forms are absent.

Mechanism and Signaling Pathways (as described in the literature)

In-vitro and rodent studies describe involvement in collagen synthesis, antioxidant activity, and wound-repair processes in the models examined.

Research Landscape

Catalog: 226 records — 4 human randomized controlled trials (RCTs, including registry entries), 15 other human, 76 animal, 33 in-vitro, 17 reviews, 2 systematic reviews/meta-analyses, 79 other.

Key Studies

• Mulder GD et al. 1994: multicenter, randomized, evaluator-blinded, placebo-controlled trial of topical GHK-Cu gel in diabetic foot ulcers (PMID 17147644).

• Miller TR et al. 2006: small controlled study of topical GHK-Cu products on laser-resurfaced skin; 13 patients completed (PMID 16847171).

• Maquart FX et al. 1993: animal study (rats), implanted wound-chamber model (PMID 8227353).

• Registered trials without results: NCT07437586 (phase 2, topical gel on small skin wounds), NCT07706361 (skin patch, blood levels).

Safety Findings Reported in the Studies

Topical use described in cosmetic literature. Controlled safety data for injected forms are absent.

Limitations and Evidence Gaps

No controlled human data for injected GHK-Cu. Most human studies are topical, small, or test multi-ingredient products. Many records are non-biological.

Regulatory Status

Cosmetic ingredient (INCI name: copper tripeptide-1). Not an FDA-approved drug.

References

Mulder GD et al. 1994 (PMID 17147644, diabetic ulcer trial). Miller TR et al. 2006 (PMID 16847171, laser-resurfacing study). Maquart FX et al. 1993 (PMID 8227353, rat wound-chamber study). Registered trials NCT07437586, NCT07706361. Additional animal and cosmetic studies in the research catalog.

Evidence reviewed through November 2026 (PHX research catalog snapshot of PubMed, ClinicalTrials.gov and Europe PMC).

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