

BPC-157 + GHK-Cu + Thymosin β -4 (Combined Preparation)

A three-component lyophilized research preparation combining a gastric-derived angiogenic pentadecapeptide, an endogenous copper-tripeptide complex, and an actin-binding-domain fragment of a G-actin sequestering protein — assembled into a multi-axis regenerative combination.

CATALOG REFERENCE

BM-LYO-023

FORM FACTOR

Lyophilized vial

STRENGTH

70 mg total

DATE OF ISSUE

May 2026

This research preparation is a three-component lyophilized combination of **BPC-157**, **GHK-Cu**, and **Thymosin β -4 (TB-500 designation)** co-lyophilized at 70 mg total mass per vial. The combination is mechanistically related to the four-component preparation BM-LYO-022 but omits the KPV anti-inflammatory tripeptide, retaining the three principal regenerative-axis components. **BPC-157** contributes angiogenesis and growth factor pathway engagement. **GHK-Cu** contributes extracellular matrix remodelling and fibroblast collagen synthesis stimulation. **Thymosin β -4** contributes G-actin sequestration and cell migration support. The combination is intended for laboratory study of multi-axis regenerative peptide pharmacology without concurrent anti-inflammatory pharmacophore engagement. **This monograph summarises published cellular pharmacology and preclinical findings for laboratory research reference only.**

01 Component Composition

COMPONENT A — BPC-157	Pentadecapeptide GEPPPGKPADDAGLV · CAS 137525-51-0 · gastric juice protein-derived
COMPONENT B — GHK-CU	Glycyl-L-histidyl-L-lysine copper(II) complex · CAS 49557-75-7 · Pickart endogenous tripeptide-copper
COMPONENT C — THYMOSIN B-4 (TB-500 DESIGNATION)	Actin-binding-domain fragment of the full-length parent protein · CAS 885340-08-9
TOTAL MASS PER VIAL	70 mg lyophilized solid (component-level distribution per BIOMOD Labs internal formulation specification)
FORM FACTOR	Lyophilized vial · sterile water reconstitution
PHYSICAL FORM	Blue-tinted lyophilized solid (the blue colour reflects the Cu(II) d-d electronic transition of the GHK-Cu component) co-lyophilizate
ANALYTICAL SPECIFICATION	Component-level ≥ 95 % purity by HPLC; composition verified by HPLC quantification of each component (BIOMOD Labs internal release specification)

02 Rationale for Combined Composition

THE THREE-COMPONENT COMBINATION ENGAGES THREE DISTINCT MOLECULAR-TARGET AXES CONVERGING ON TISSUE repair. **BPC-157** contributes early-phase angiogenesis and granulation tissue formation through eNOS pathway engagement and growth factor receptor effects in rodent musculoskeletal and gastrointestinal injury preparations. **GHK-Cu** contributes extracellular matrix remodelling through MMP/TIMP regulation, fibroblast collagen and elastin synthesis stimulation, and copper-dependent lysyl oxidase cofactor function. **Thymosin β -4 (TB-500)** contributes G-actin sequestration and cell migration support through actin biology. The three-component combination is mechanistically related to the four-component preparation (BM-LYO-022) but omits the KPV α -MSH-derived anti-inflammatory tripeptide.

03 Critical Chemistry-Handling Notes for the Combined Preparation

CRITICAL: GHK-CU COPPER CHELATE PRESERVATION

The most critical handling consideration is preservation of the GHK-Cu Cu(II) chelate. Bacteriostatic water (containing benzyl alcohol) MUST NOT be used for reconstitution. Acetic acid solutions MUST NOT be used. Chelating buffer components (EDTA, EGTA, high-concentration citrate) must be excluded. Sterile water for injection at neutral pH is the only acceptable reconstitution vehicle. The other two components (BPC-157, Thymosin β -4) are not damaged by these constraints, so the GHK-Cu preservation requirement governs the handling of the combined preparation.

04 Laboratory Handling, Reconstitution, and Storage

LYOPHILIZED SOLID STORAGE AT $-18\text{ }^{\circ}\text{C}$, DESICCATED, LIGHT-PROTECTED (THE GHK-CU COMPONENT IS MILDLY photo-reactive). **Reconstitute with sterile water for injection at neutral pH only.** Reconstituted solutions held refrigerated $2\text{--}8\text{ }^{\circ}\text{C}$ for short-term work; aliquoted long-term storage at $-18\text{ }^{\circ}\text{C}$ with minimised freeze-thaw. Working concentrations are determined by the investigator's experimental design.

05 References

- 1 Sikiric P, Seiwerth S, Rucman R, et al. Stable gastric pentadecapeptide BPC 157: novel therapy in gastrointestinal tract. *Curr Pharm Des.* 2011;17(16):1612–1632. [PMID: 21548867](#)
- 2 Pickart L, Margolina A. Regenerative and Protective Actions of the GHK-Cu Peptide in the Light of the New Gene Data. *Int J Mol Sci.* 2018;19(7):1987. [PMC6073405](#)
- 3 Goldstein AL, Hannappel E, Sosne G, Kleinman HK. Thymosin β 4: a multi-functional regenerative peptide. *Expert Opin Biol Ther.* 2012;12(1):37–51. [PMID: 22074294](#)

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