

GHK-Cu

GHK-Cu is the copper(II) complex of GHK (glycyl-histidyl-lysine), a tripeptide found in human plasma. It is widely used as a cosmetic ingredient and studied in cell, animal and small human skin studies.



■ Hydrophobic ■ Acidic ■ Basic ■ Polar ■ Gly, Pro, Cys ■ Non-standard

Length	3 residues
Formula	$C_{14}H_{24}N_6O_4$
Average mass	340.38 g/mol
Monoisotopic mass	340.1859 Da
Evidence	Early clinical studies
US status	Not FDA-approved for any use
WADA	Check the current Prohibited List

Values shown are for free GHK. The 1:1 copper(II) complex is about 401.9 g/mol ($C_{14}H_{22}CuN_6O_4$); salt forms shift this further.

Expected ions (monoisotopic)

$[M+H]^+$	$[M+2H]^{2+}$	$[M+3H]^{3+}$	$[M+4H]^{4+}$
341.1932	171.1002	114.4026	86.0538

What the COA should show

A good certificate of analysis should distinguish GHK from GHK-Cu and quantify both components. Identity of the peptide should be confirmed by mass spectrometry, with the expected mass shown on this page; note that the copper complex may partly dissociate under electrospray conditions, so spectra can show free GHK alongside copper-bound species. HPLC purity of the peptide should be reported. Copper content should be measured independently, for example by ICP-MS, ICP-OES or atomic absorption, and expressed as a percentage or molar ratio, since an excess of free copper or a 2:1 complex changes the material's behavior. The counter-ion, water content and net peptide content should also be stated.

Storage and stability

Store lyophilized GHK-Cu sealed at -20 °C, protected from light and moisture; the powder can be hygroscopic. Equilibrate vials to room temperature before opening. In solution, the copper complex can be affected by pH, strong chelators such as EDTA, and reducing agents that can change the copper oxidation state, so choose buffers with care. Keep solutions refrigerated for short-term lab use, aliquot for frozen storage, and avoid repeated freeze-thaw cycles. A color change from blue may signal changes in copper coordination.