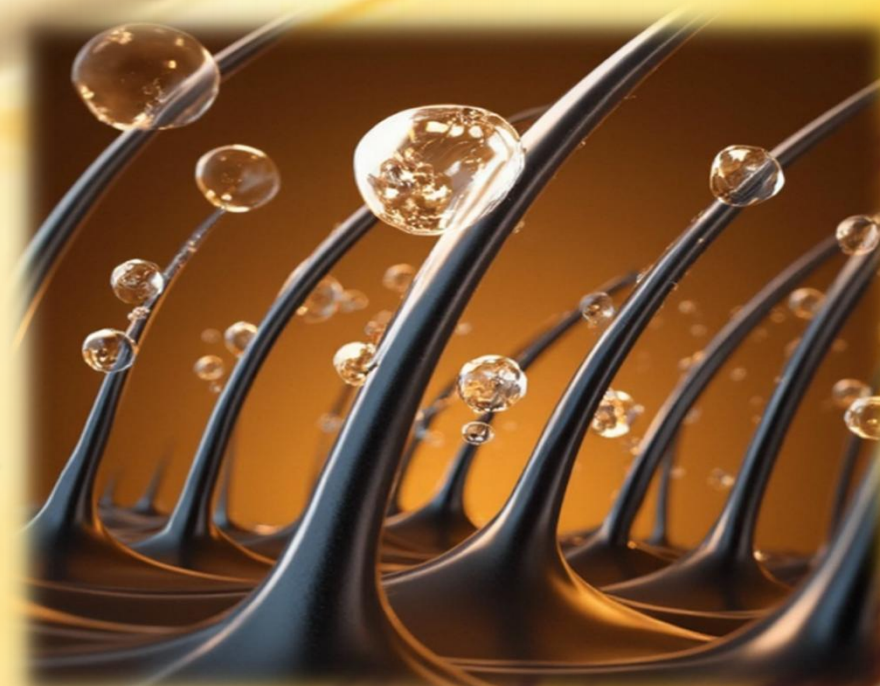


Anti-Hair Loss and Hair Growth API Series

01

Anti-androgens

02

Hair Growth Promoter

03

Peptide Adjuvant



YEAR 2025

ABOUT PHMO

PHMO is a leading supplier of pharmaceutical ingredients, specializing in innovative solutions for the global hair growth market. Leveraging our R&D expertise and rigorous quality control, we provide a portfolio of high-quality APIs, from established actives like **Minoxidil, Finasteride to novel compounds like RU-58841**. We are your strategic partner in developing effective hair loss treatments, offering reliable ingredients from core actives to custom intermediates.

PHMO Anti-androgens

YEAR 2025

Root Cause Blockade

Precisely inhibits androgens, targeting the core mechanism of hair loss



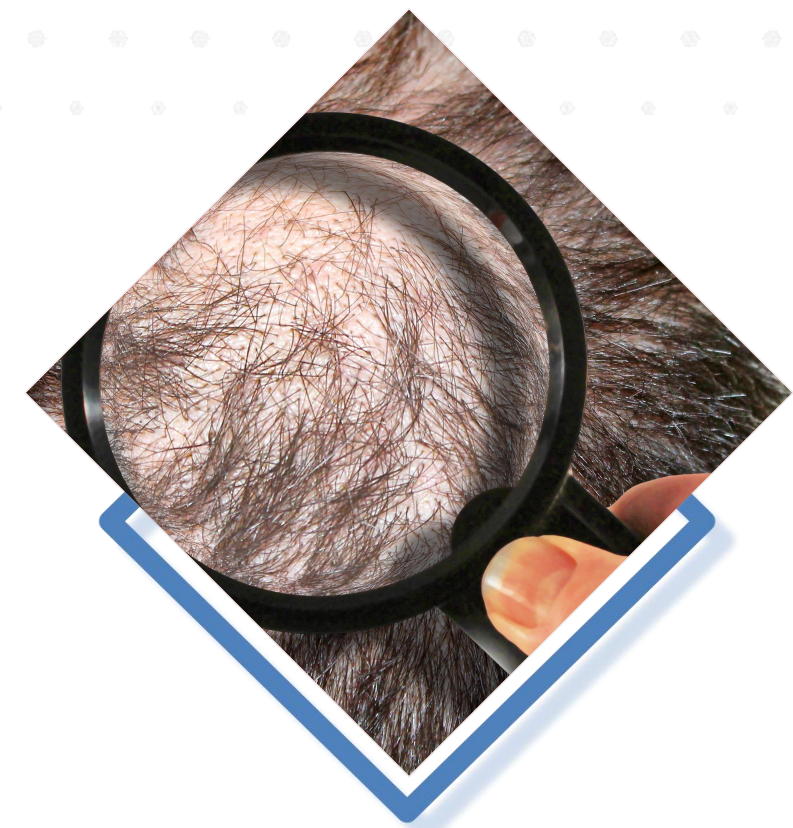
RU-58841

Potent topical androgen
receptor blocker



Finasteride

Oral DHT reducer



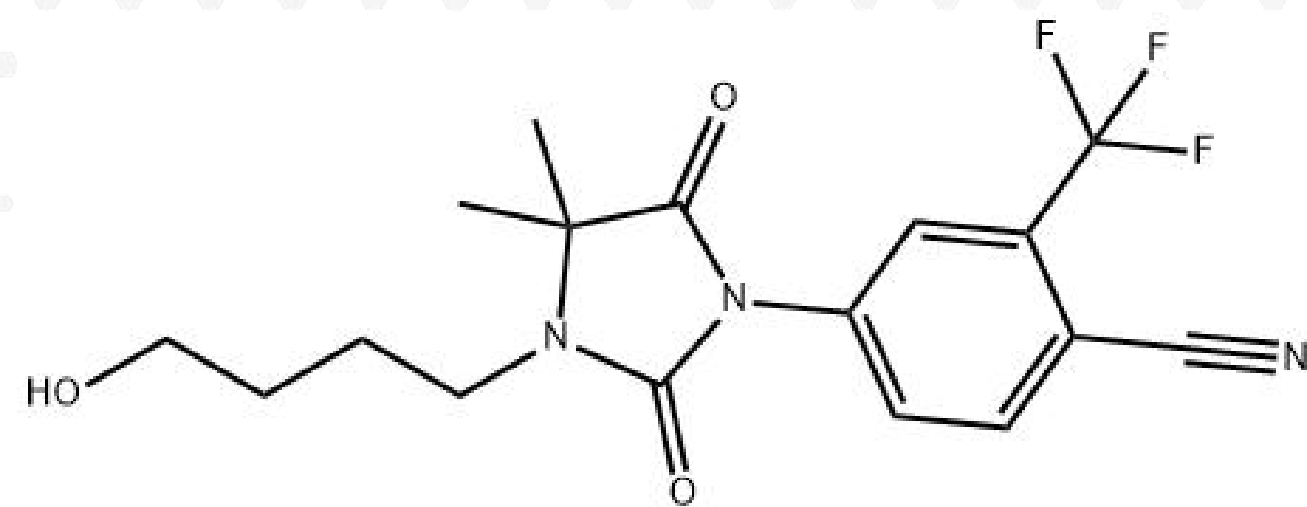
Clascoterone

Targeted topical anti-androgen

PHMO Anti-androgens

YEAR 2025

RU-58841



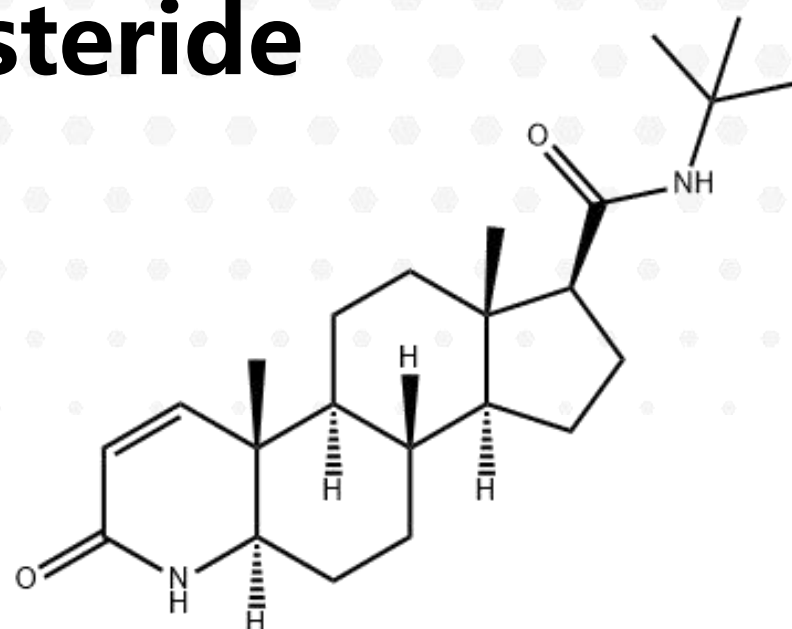
CAS: 154992-24-2
MF: C₁₇H₁₈F₃N₃O₃
MW: 369.34
Therapeutic Target: AR
Specification: > 99%
Package: 1kg; 25kg; 100kg
Storage: Store at -20°C

Specification Standards

Items	Standard
Appearance	White to off-white powder
Identification	¹ HNMR conforms to structure
Residue on ignition	≤0.1%
Loss on drying	≤1.0%
Water	≤1.0%
Purity (HPLC)	≥99.0%

RU-58841 is a novel topical anti-androgen API designed to combat androgenetic alopecia. It competitively blocks androgen receptors in hair follicles, effectively neutralizing DHT's damaging effects to halt hair loss and stimulate follicle regeneration. With its exceptional receptor affinity, high purity, and prolonged 48-hour activity, RU-58841 significantly improves hair density and diameter, making it an ideal active for next-generation hair growth formulations.

Finasteride



Finasteride is an authoritative oral anti-androgen API specifically developed for male pattern hair loss. As a potent 5 α -reductase inhibitor, it effectively blocks the conversion of testosterone to dihydrotestosterone (DHT), significantly reducing DHT levels in the scalp and serum. By reversing the follicular miniaturization process, Finasteride promotes hair regrowth and prevents further loss. It is the only oral prescription drug approved by the U.S. FDA for this condition, with a recommended daily dose of 1mg, making it a clinically proven cornerstone in hair growth therapeutics.

CAS: 98319-26-7

MF: C₂₃H₃₆N₂O₂

MW: 372.54

Therapeutic Target: SRD5A

Specification: > 99%

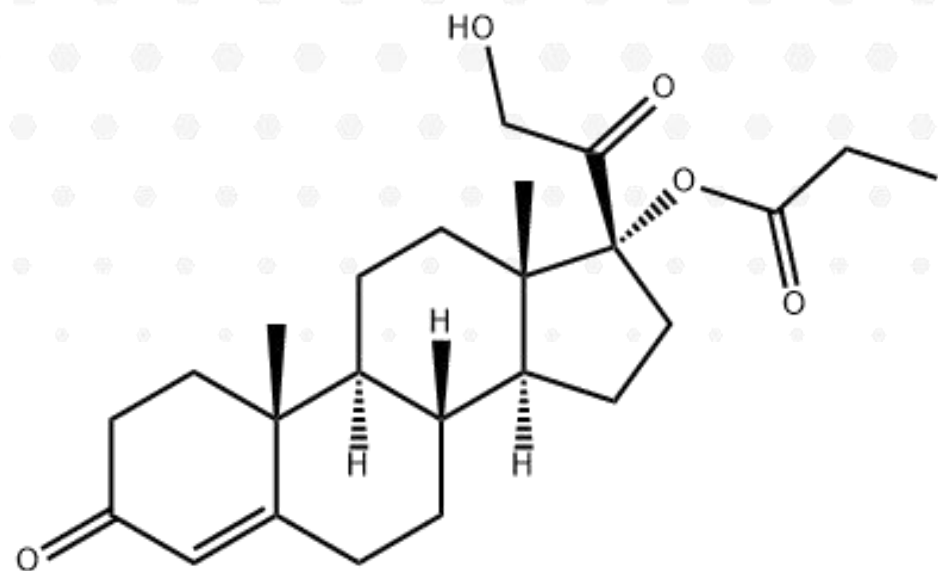
Package: 1kg; 5kg; 25kg

Storage: Store in tight containers at room temp.

Specification Standards

Items	Standard
Appearance	White or off-white crystalline powder
Identification	IR/HPLC
Solubility	Freely soluble in methylene chloride and in alcohol, practically soluble in water.
Residue on ignition	≤0.1%
Specific optical rotation	-56° ~ -60°
Loss on drying	≤1.0%
Water	≤0.3%
Heavy metals	≤10 ppm
Related substances	Any single impurity ≤0.5%
	Total impurities ≤1.0%
Assay by HPLC	98.5% ~ 101.0%

Clascoterone



Clascoterone is a novel topical androgen receptor inhibitor that offers a precise mechanism for addressing androgenetic alopecia. It acts directly on the androgen receptors within hair follicles, effectively blocking the binding of dihydrotestosterone (DHT). This action neutralizes the DHT-driven signals that cause follicle miniaturization and growth suppression. With a safety profile already established in topical acne treatment, Clascoterone presents significant promise for developing effective and well-tolerated topical hair loss solutions, ideal for minimizing systemic side effects.

CAS: 19608-29-8
MF: C24H34O5
MW: 402.52
Therapeutic Target: AR
Specification: > 99%
Package: 1kg; 5kg; 10kg; 25kg
Storage: Store at -20°C

Specification Standards

Items	Standard
Appearance	Off-white to white powder
Melting range	131.0~136.0°C
Residue on ignition	≤0.2%
Loss on drying	≤0.5%
Heavy metals	≤10 ppm
Related substances	Any single impurity≤0.5%
	Total impurities ≤1.5%
Purity (HPLC)	≥99.0%

PHMO

Hair Growth Promoter

YEAR 2025

Active Activation

Directly stimulates follicles to restart the hair growth cycle



Minoxidil

Classic vasodilator for
hair growth



PYRROLIDINYL DIAMINOPYRIMIDINE OXIDE

Multi-action topical
growth enhancer



Diaminopyrimidine oxide

Anti-fibrosis & anti-DHT dual-
action agent



Advanced Compound Solution

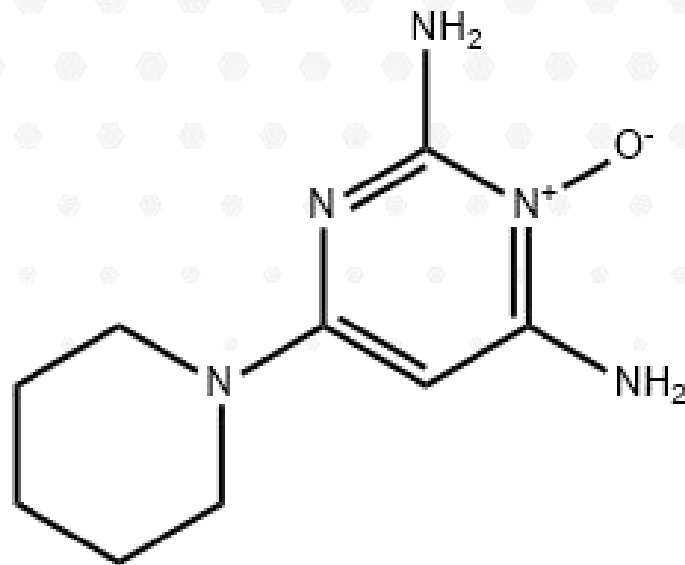
Gentle yet potent
synergistic hair
revitalization

PHMO

Hair Growth Promoter

YEAR 2025

Minoxidil



Minoxidil, this FDA-approved ingredient combats hair loss by opening potassium channels, dilating scalp blood vessels to boost nutrient-rich blood flow to hair follicles. It revitalizes resting follicles, prolongs the growth phase, and transforms fine hairs into thicker terminal strands, increasing hair density. Effective for both men and women with pattern hair loss at 2%-5% concentrations, it requires consistent use with possible initial temporary shedding indicating renewed activity.

CAS: 38304-91-5
MF: C9H15N5O
MW: 209.25
Therapeutic Target: VGKCs
Specification: USP43
Package: 1kg; 5kg; 25kg; 1000kg
Storage: Sealed and store at 2-8°C

Specification Standards

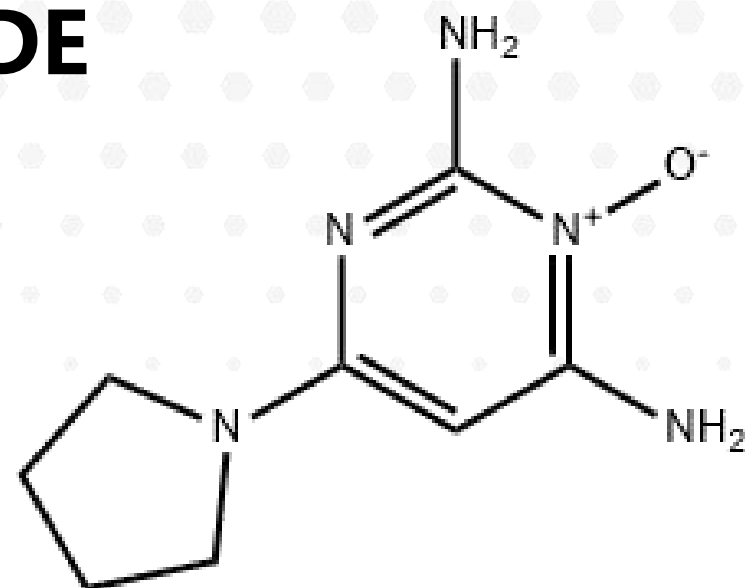
Items	Standard
Appearance	White or off white crystalline powder
Identification (HPLC)	The retention time of the main peak of the test solution should be the same as that of the control solution
Residue on ignition	≤0.5%
Loss on drying	≤0.5%
Organic impurities by HPLC	NMT 1.5%
Pb	≤5 ppm
As	≤2 ppm
Hg	≤1 ppm
Cd	≤3 ppm
Assay by HPLC	≥99.0%
Residue solvents	
Methanol	≤3000 ppm
Acetone	≤5000 ppm
Ethy Acetate	≤5000 ppm

PHMO

Hair Growth Promoter

YEAR 2025

PYRROLIDINYL DIAMINOPYRIMIDINE OXIDE



PYRROLIDINYL DIAMINOPYRIMIDINE OXIDE is an effective ingredient to prevent hair loss and promote growth. As a potassium channel opener, it dilates blood vessels around follicles, enhancing nutrient delivery. It stimulates dermal papilla cell proliferation, relaxes vascular structures, and supplies essential nutrients, transitioning follicles from telogen to anagen phase and extending growth duration for stronger, thicker hair. Ideal for anti-hair loss essences, masks, and conditioners. Recommended: 0.5%-2% for prevention; 2%-5% for treatment. Dissolve in lipophilic solvent before use.

CAS: 55921-65-8

MF: C₈H₁₃N₅O

MW: 195.22

Specification: > 99%

Package: 1kg; 5kg; 10kg; 25kg. Aluminum laminate bag (lined with polyethylene plastic bag).

Storage: Store in a cool and dry place with a shelf life of one year.

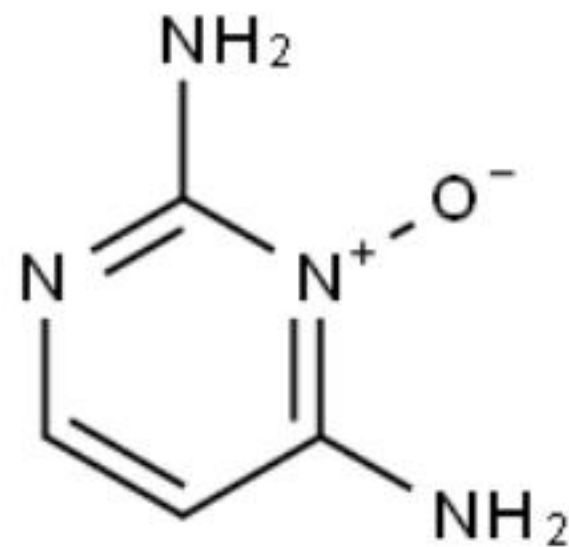
Specification Standards

Items	Standard
Appearance	Off-white to white powder
Odor	Slight characteristic odor
Identification	IR/HPLC
Solubility	Soluble in DMSO
Water	≤0.5%
pH (2% ethanol/water = 70:30 solution, 25°C)	7.6-9.6
Solubility (2% ethanol/water = 70:30 solution)	Colorless and transparent
Heavy metals	≤20 ppm
Purity (HPLC)	≥99.0%

PHMO Hair Growth Promoter

YEAR 2025

Diaminopyrimidine oxide



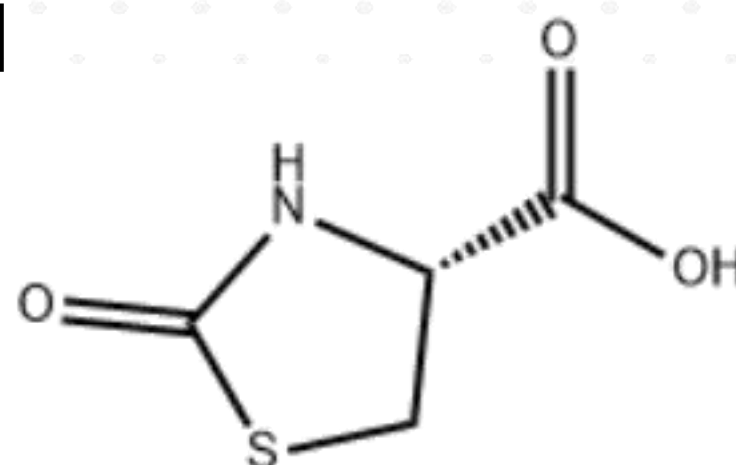
Diaminopyrimidine Oxide softens collagen, aiding hair care products to treat hair loss from premature root damage. It inhibits lysyl hydroxylase to prevent fibrosis: this enzyme hydroxylates collagen lysines, causing accumulation, hardening, and follicle contraction, delaying growth and leading to follicle death. It also suppresses 5 α -reductase, reducing testosterone conversion to DHT. Suitable for hair oils, conditioners, tonics, shampoos, gels, and seasonal hair loss treatments. Recommended dosage: 0.5%-2% for prevention; 2%-5% for treatment.

CAS: 74638-76-9
MF: C₄H₆N₄O
MW: 126.12
Specification: > 99%
Package: 1kg; 5kg; 10kg; 25kg. Aluminum laminate bag (lined with polyethylene plastic bag).
Storage: Store in a cool and dry place with a shelf life of one year.

Specification Standards

Items	Standard
Appearance	White to off-white crystalline powder
Purity (HPLC)	≥ 99%
Assay (Perchloric acid titration)	98.0–102.0%
Chloride content	≤ 0.05%
Diaminomercaptopyrimidine impurity	≤ 0.60%
Diaminopyrimidine impurities	≤ 0.20%
Solubility(Ultrasonic dissolution method at room temp.)	a. 1 g Diaminopyrimidine oxide in 30 mL water b. 1 g Diaminopyrimidine oxide in 10 mL propylene glycol c. 1 g Diaminopyrimidine oxide in 25 mL ethanol and 5 mL water mixture d. 1 g Diaminopyrimidine oxide in 30 mL ethanol and 12 mL water mixture

Oxothiazolidinecarboxylic acid



Compound I : Nutrient Supply and Follicle Activation

The combination of **Pyrrolidinyl Diaminopyrimidine Oxide + Oxothiazolidinecarboxylic Acid** dilates blood vessels around hair follicles (via potassium channel opening mechanism), significantly improving scalp microcirculation to ensure dermal papilla cells receive ample nutrients and oxygen. It effectively promotes dermal papilla cell proliferation, activates telogen follicles to the anagen phase, and extends the hair growth cycle. Meanwhile, Oxothiazolidinecarboxylic Acid acts as a potent antioxidant, converting intracellularly to cysteine and elevating glutathione levels, creating a healthy growth environment for follicles protected from oxidative stress damage.

Compound II: Root Protection and Fibrosis Inhibition

The combination of **Diaminopyrimidine Oxide + Oxothiazolidinecarboxylic Acid** targets the root causes of hair loss. Diaminopyrimidine Oxide effectively inhibits 5 α -reductase, reducing the production of dihydrotestosterone that causes follicle atrophy; it also suppresses lysyl hydroxylase to prevent abnormal collagen accumulation and follicle fibrosis from the source, avoiding follicle shrinkage due to hardening. Combined with the antioxidant defense of Oxothiazolidinecarboxylic Acid, this compound provides deep protection for follicles, resisting internal and external damage factors to fundamentally strengthen hair roots.

Advanced Dual-Compound Solution for Hair Loss with Oxothiazolidinecarboxylic Acid

PHMO Hair Growth Promoter

YEAR 2025

Compound I Specification Standards

Items	Standard
Appearance	White crystalline powder
Purity (HPLC)	≥ 99%
Pyrrolidinyl Diaminopyrimidine Oxide Content	50-60% (w/w)
Oxothiazolidinecarbox ylic Acid	40-50% (w/w)
Water	≤ 2.0%



Compound II Specification Standards

Items	Standard
Appearance	White to off-white crystalline powder
Diaminopyrimidine oxide	50-60% (w/w)
Oxothiazolidinecar boxylic Acid	40-50% (w/w)
Water	≤ 2.0%



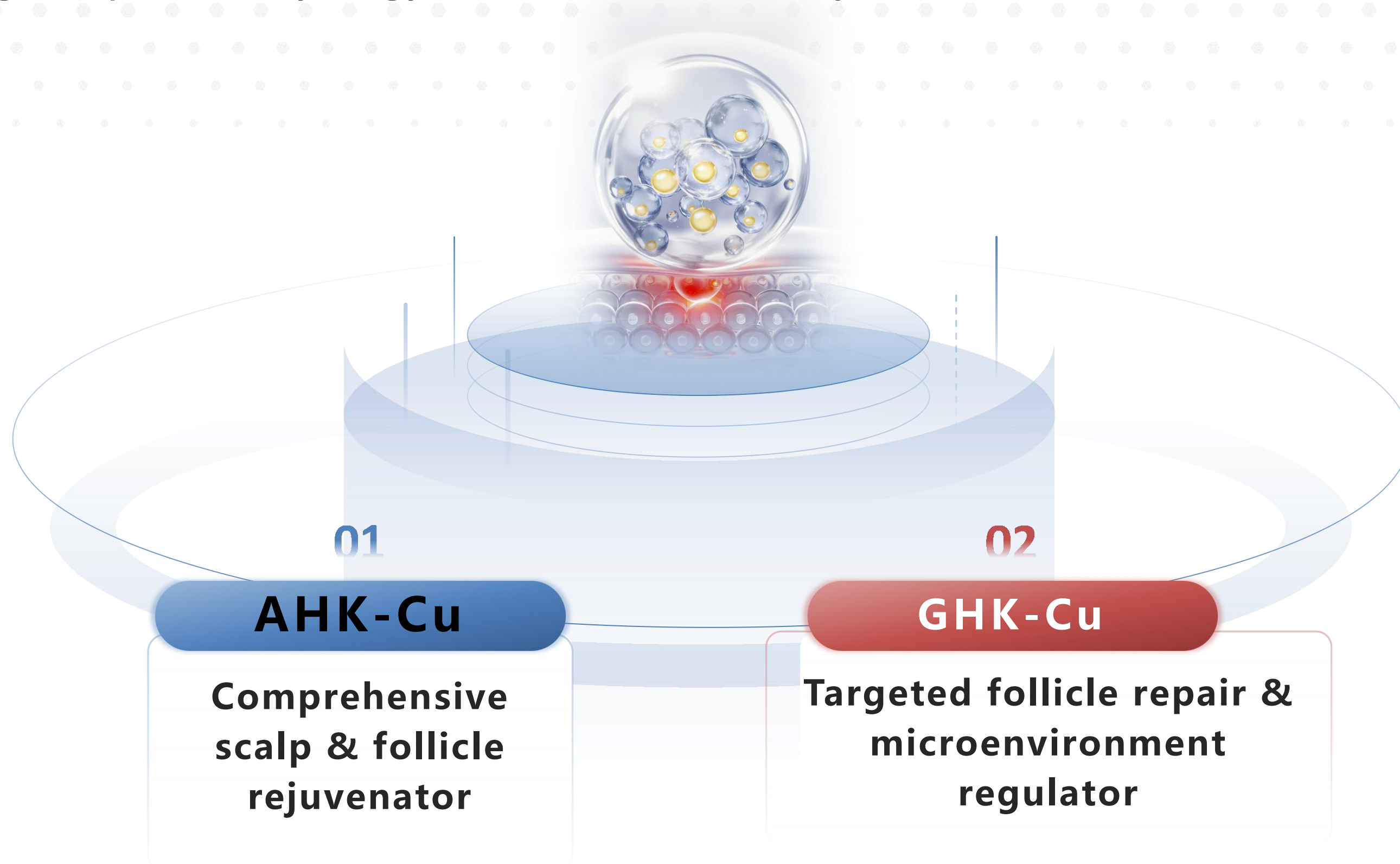
PHMO

Peptide Adjuvant

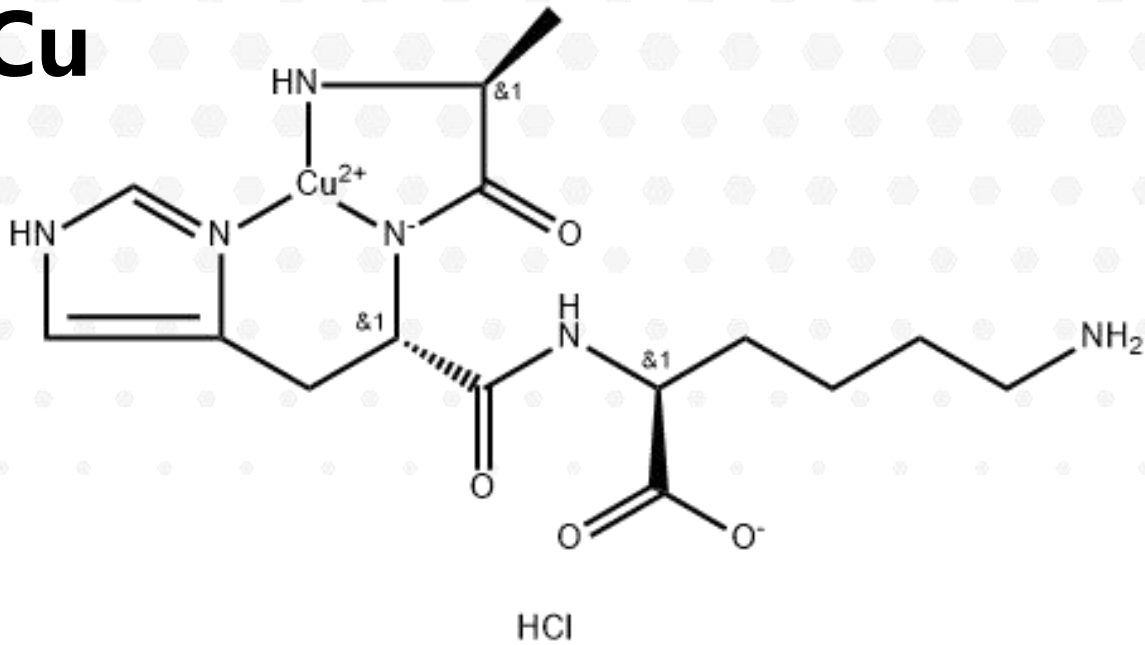
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Cutting-Edge Empowerment

Multi-target repair and synergy for enhanced efficacy



AHK-Cu



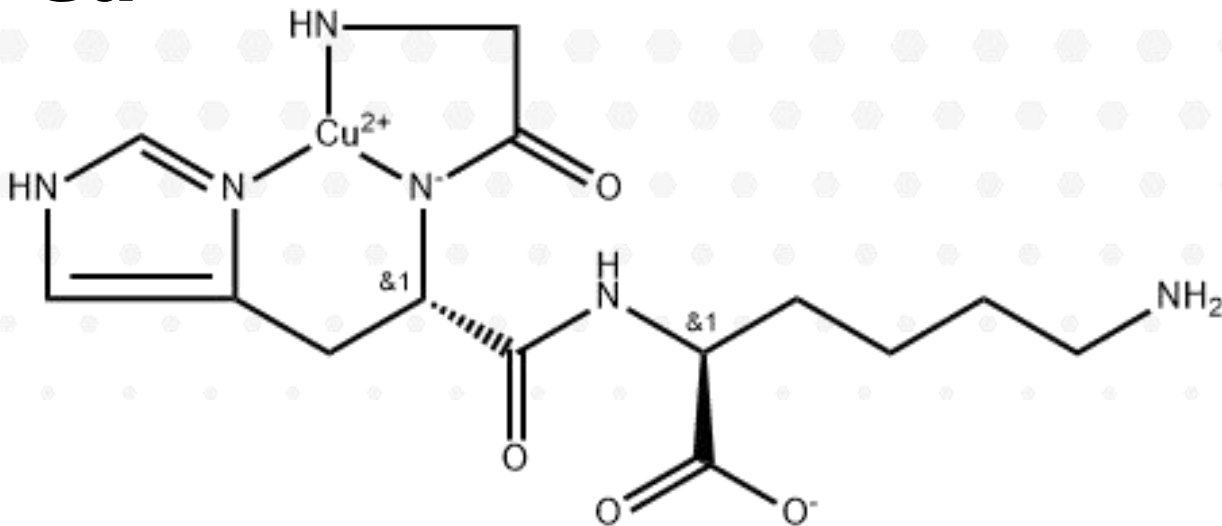
CAS: 682809-81-0
MF: C15H24ClCuN6O4
MW: 451.39
Specification: > 99%
Package: 1kg; 5kg; 10kg; 25kg
Storage: Store at cool dry place(-20°C, away from the light)

AHK-Cu (Copper Peptide 1) is a highly efficient ingredient renowned for its distinctive blue color and exceptional bioactivity. Through multi-targeted mechanisms, it addresses the root causes of hair loss by effectively restoring the scalp environment and promoting the growth of healthy, strong hair. Its core benefits include: acting as a signaling peptide to stimulate the synthesis of key proteins such as collagen, thereby strengthening the follicle structure; providing powerful antioxidant protection to neutralize free radicals and delay follicular aging; and repairing damaged scalp while improving barrier health to create an optimal growth environment for hair follicles. It is widely used in scalp care products such as hair growth serums and anti-hair loss shampoos.

Specification Standards

Items	Standard
Appearance	Blue powder
Identity by ESI-MS	Theoretical MW
Purity (HPLC)	≥99%
PH	6.0-8.0
Water (K.F.)	≤5.0%
Cu+ content	8.0-16.0%
Peptide content	≥65.0%
Chloride Content(IC)	≤10.0%
Solubility	≥100mg/ml (H2O)
Lead (mg/kg)	≤10
Arsenic (mg/kg)	≤2
Mercury (mg/kg)	≤1
Cadmium (mg/kg)	≤5
Total plate count (cfu/g)	≤1000
Yeast & mould (cfu/g)	≤100

GHK-Cu



GHK-Cu (Copper tripeptide) is a naturally occurring tripeptide-copper complex that, unlike AHK-Cu, specializes in tissue repair and microenvironment regeneration. Beyond promoting collagen production like AHK-Cu, it uniquely guides repair cells to follicles by mimicking wound healing processes. It also precisely regulates copper ion balance, providing antioxidant protection while preventing metal ion-induced oxidative damage. This creates an optimal microenvironment for hair follicles, making GHK-Cu ideal for scalp regeneration and widely used in hair growth serums and scalp treatments.

CAS: 89030-95-5
MF: C14H21CuN6O4
MW: 400.91
Specification: > 99%
Package: 1kg; 5kg; 10kg; 25kg
Storage: Store under inert gas (nitrogen or Argon) at 2–8 °C

Specification Standards

Items	Standard
Appearance	Blue powder
Identity by ESI-MS	Theoretical MW
Purity (HPLC)	≥99%
PH	5.5-7.5
Water (K.F.)	≤8.0%
Copper content	8.0-16.0%
Acetic Acid	≤2.5%
Peptide Content	≥80.0%
Chloride Content(IC)	≤10.0%
Solubility	≥100mg/ml (H2O)
Lead (mg/kg)	≤10
Arsenic (mg/kg)	≤2
Mercury (mg/kg)	≤1
Cadmium (mg/kg)	≤5
Total plate count (cfu/g)	≤1000
Yeast & mould (cfu/g)	≤100

PHMO

THANK YOU

Let's Build the Future of Medicine Together !

At PHMO, we are committed to advancing pharmaceutical innovation through reliable quality, scientific excellence, and partnership.

Whether you're looking for high-quality APIs, customized intermediates, or integrated CDMO solutions, our team is ready to support your next breakthrough.

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