GHK-Cu

INCI Name: Copper Tripeptide - 1

Active Peptide

Leading Technology in Peptide Design & Production

Why Buy Copper Peptide from Us?

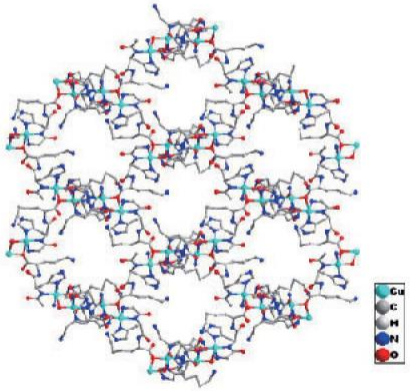
- **Other brands** of copper peptide are usually in powder form, due to the traditional production process of freeze-drying. It takes more time, steps, and resources to produce, so the production cost is high. The powder has a large surface area, which causes it to absorb humidity and stick to the wall of the bottle, making it harder to store and weigh.

- **Our brand** of copper peptide is in crystal format due to our patented liquid-phase synthetic method and crystallization technology. Because of this, our peptide is **not prone to absorbing humidity** from the air and does not stick to the wall of the bottle, which makes it **easier to store and weigh**.

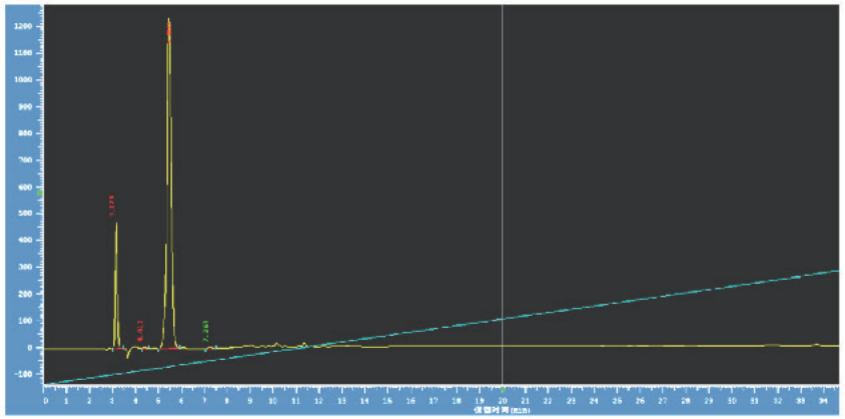
Active Peptide

Proved High Purity with Crystal Format

- High purity copper peptide crystal and its single crystal X-ray absorption spectroscopy



- Active Peptide copper peptide HPLC spectrum



- <u>High purity proved by third-party testing</u>

MICROCONSULT, INC.
MICROBIOLOGICAL & ANALYTICAL TESTING LABORATORY

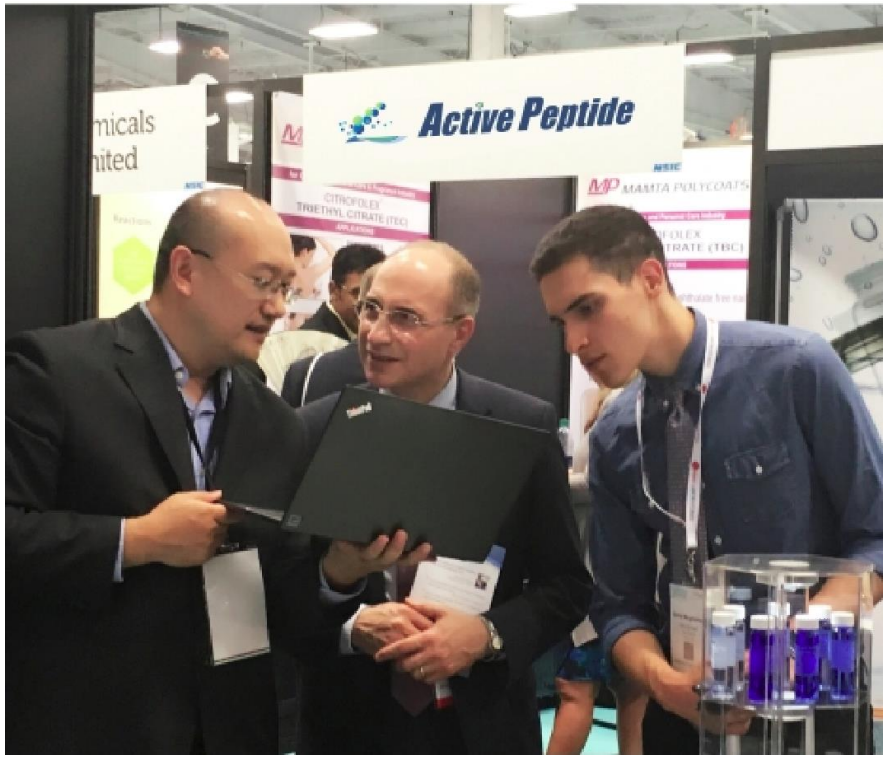
Certificate of Analysis

Product Name:	GHK-Cu 2:1
Lot Number:	N/A
Lab Number:	CD038916
Analysis Date:	May 02, 2016
Analyst Name:	Carlos Parra, Carolyn Vercell
Methods:	CAM 216, CAM 475, CAM 77
Equipment Type:	HPLC, ICP, Karl Fischer
Sample Types:	Raw Material

Active	Test Results
Water Content	2.5%
Copper	6%
GHK-Cu	HPLC Area%:100.0%;Impurities:0.78%

Active Peptide

Produced with Our Patented Technology



We have made a significant breakthrough in kilogram-scale production of high purity peptides. Our unique liquid-phase synthesis technology has the shortest synthetic routes and avoids using any chromatographic purification, which allows us to produce kilograms of pure peptides in a single batch. This process is much faster, more cost-efficient, and eco-friendly.

--- Principal Scientist Dr. Yu

Three National Invention Patents Granted for Company's Liquid-phase Technology in 2020

证书号第4036511号

发明专利证书

发明名称：类蛇毒三肽的液相合成方法

发明人：于更立;李江涛;林志乐;卞发财;刘聪;李开庆

专利号：ZL 2019 1 1420787.6

专利申请日：2019年12月31日

专利权人：山东济肽生物科技有限公司

地址：272001 山东省济宁市高新区技术创业服务中心创业园

授权公告日：2020年10月16日　授权公告号：CN 110950926 B

国家知识产权局依照中华人民共和国专利法进行审查，决定授予专利权，颁发发明专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为二十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长
申长雨

第1页(共2页)

证书号第4085415号

发明专利证书

发明名称：一种生物素三肽-1液相合成方法

发明人：于更立;李江涛;林志乐;卞发财;李开庆;司呈元

专利号：ZL 2019 1 1412735.4

专利申请日：2019年12月31日

专利权人：山东济肽生物科技有限公司

地址：272001 山东省济宁市高新区技术创业服务中心创业园

授权公告日：2020年11月10日　授权公告号：CN 111004304 B

国家知识产权局依照中华人民共和国专利法进行审查，决定授予专利权，颁发发明专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为二十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长
申长雨

第1页(共2页)

证书号第4003185号

发明专利证书

发明名称：棕榈酰三肽-5的液相合成方法

发明人：于更立;李江涛;林志乐;卞发财;司呈元;刘聪

专利号：ZL 2019 1 1412657.8

专利申请日：2019年12月31日

专利权人：山东济肽生物科技有限公司

地址：272001 山东省济宁市高新区技术创业服务中心创业园

授权公告日：2020年09月25日　授权公告号：CN 111004306 B

国家知识产权局依照中华人民共和国专利法进行审查，决定授予专利权，颁发发明专利证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。专利权期限为二十年，自申请日起算。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。

局长
申长雨

第1页(共2页)

PATENTS

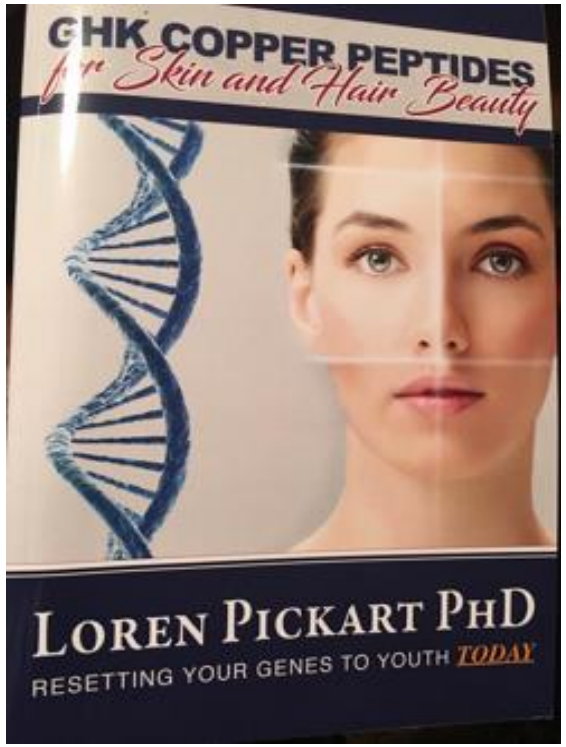
- CN111004304B - Liquid phase synthesis method of biotin tripeptide-1 - Google Patents
- CN110950926B - Liquid phase synthesis method of snake venom-like tripeptide - Google Patents
- CN111004306B - Liquid phase synthesis method of palmitoyl tripeptide-5 - Google Patents

Recommended By Dr. Loren Pickart

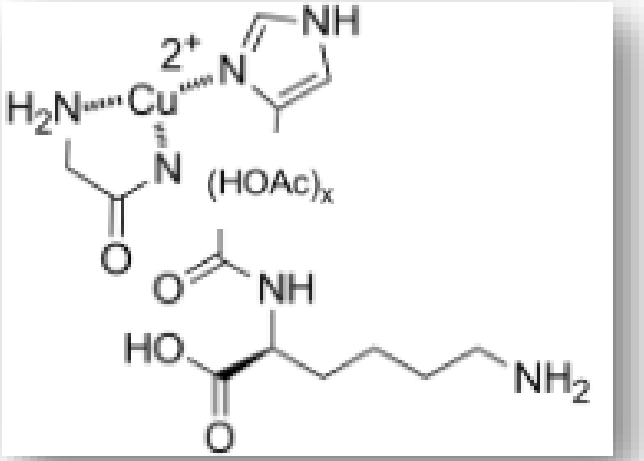
"If you want pure copper peptides, go to activepeptide.com."

– Dr. Loren Pickart

Inventor of GHK copper peptide,
world-renowned biochemist
& Skin Biology Owner



Our GHK-Cu Peptide Specifications



INCI Name Copper tripeptide-1

CAS 89030-95-5

Sequence Gly-His-Lys.Cu.xHAc

Specifications:

Appearance	*Blue Powder*
SKU No.	*AP103002*
Purity (by HPLC)	*> 98%*
Water (k.F)	*< 5%*
Molecular Formula	*C14H23CuN6O4*
Storage	*2 ~ 8°C, dry and dark place*
Package	*Plastic bottles or glass bottles of varied sized, or customized packages based on special requests*

This product is pure powder with purity >99%. No excipients, preservatives, anti-oxidants present, or used during the manufacturing process. It is 100% synthesized in laboratory so not involved with plant, vegetable, or marine. It is neither palm derived nor sustainably sourced.

Active Peptide

Our GHK-Cu Peptide Highlights

- High Purity and Competitive Prices (due to our unique technology)
- Short Lead Time (we build stock for key customers at our Boston office)
- Environment Friendly (no chromatographic purification needed)
- Recognized brand and quality (Recommended by copper peptide inventor)
- Quality Consistence and Stability: (kilograms produced in each batch)
- Excellent Customer Services

Active Peptide

Our Tips for Formulation

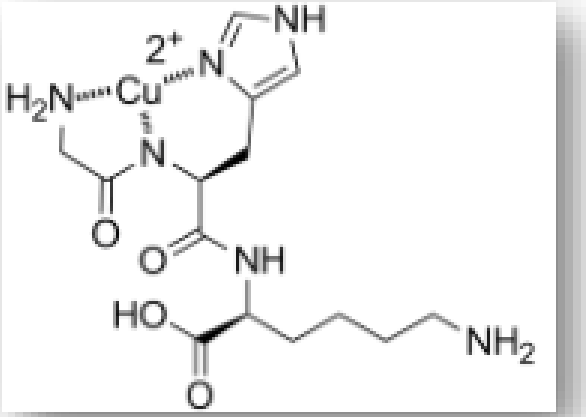
1. Avoid strong oxidation ingredients

2. Avoid ingredients that can form a complex with Cu ion. For example, carnosine has a similar structure to GHK thus so it may compete with Copper ion and change the solution's color to purple. Another example is that EDTA sometimes is used in the formula to remove trace amount heavy metal ion. It may grab copper ion from GHK-Cu and change the solution's color to green.

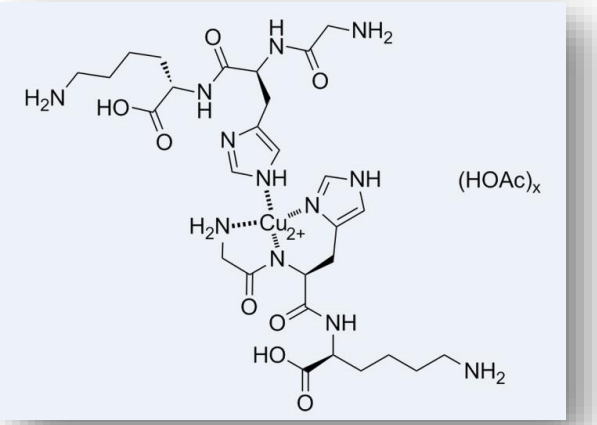
3. GHK-Cu is water soluble (1g GHK-Cu can be easily solved in 5ml water). We suggest taking it as the final step to add GHK-Cu to the solution, which means adding all other ingredients (including preservatives) before adding GHK-Cu. Because too low or too high pH may cause a breakdown of GHK-Cu, and an acid base has more possibility of changing the solution's color, the pH should be adjusted close to 7 (neutral) before having GHK-Cu added in the final step. All process should be done under 40°C.

4. When color change happens, you may want to figure out the responsible ingredients (usually these ingredients are acid-based). Try to mix GHK-Cu with each ingredient and observe the reaction, then consider having the responsible ingredients removed or changed.

Comparison of GHK-Cu 1:1 and 2:1



1:1



2:1

1. GHK-Cu 1:1 is a single compound while 2:1 is a mixture of GHK and GHK-Cu 1:1.

2. Due to our advanced technology, GHK-Cu 1:1 can be purified by recrystallization. GHK-Cu 2:1, as a mixture, usually needs to be formed by Lyophilization method and additional mixing. It costs more to produce GHK-Cu 2:1.

3. GHK-Cu 1:1 has 14% of copper content. GHK-Cu 2:1 has 7% of copper content.

4. There is no article referring to functional differences between the two. Which GHK-Cu to use is usually based on customers' preference. "As long as GHK-Cu 1:1 is pure enough, their functions have no difference." --- Dr. Loren Pickart, inventor of GHK-Cu

GHK-Cu General Introduction

- GHK is a tripeptide possesses a high affinity for copper(II) ions, with which it spontaneously forms a complex (GHK-Cu).
- This peptide was first described as a growth factor for a variety of differentiated cells.
- GHK naturally occurs in human plasma, saliva, and urine. The plasma GHK level is about 200 ng/mL(10−7M) at age 20, but declines to 80 ng/mL at age 60.

Mechanism

- Copper is delivered by copper peptides.
- Copper is essential to vital cellular and enzyme processes required for human health. It plays an important role in the enzyme systems which relate to tissue repair, hair growth and other biological responses.
- Copper is essential to Copper-dependent enzymes, including cytochrome C oxidase (energy production), superoxide dismutase(antioxidation) and lysyl oxidase (cross-linking of elastin and collagen).

GHK-Cu Functions and Applications

Function Summary

GHK-Cu exhibits a broad range of anti-aging, reparative, and protective actions. It can increase production of key skin proteins such as collagen as well as other important components of dermal matrix. GHK-Cu modulates the skin remodeling process, being able to stimulate both breakdown and synthesis of dermal matrix components. It repairs and remodels skin, anti-wrinkle, anti-aging, firm skin. It enlarges hair follicles and stimulating hair growth.

Applications:

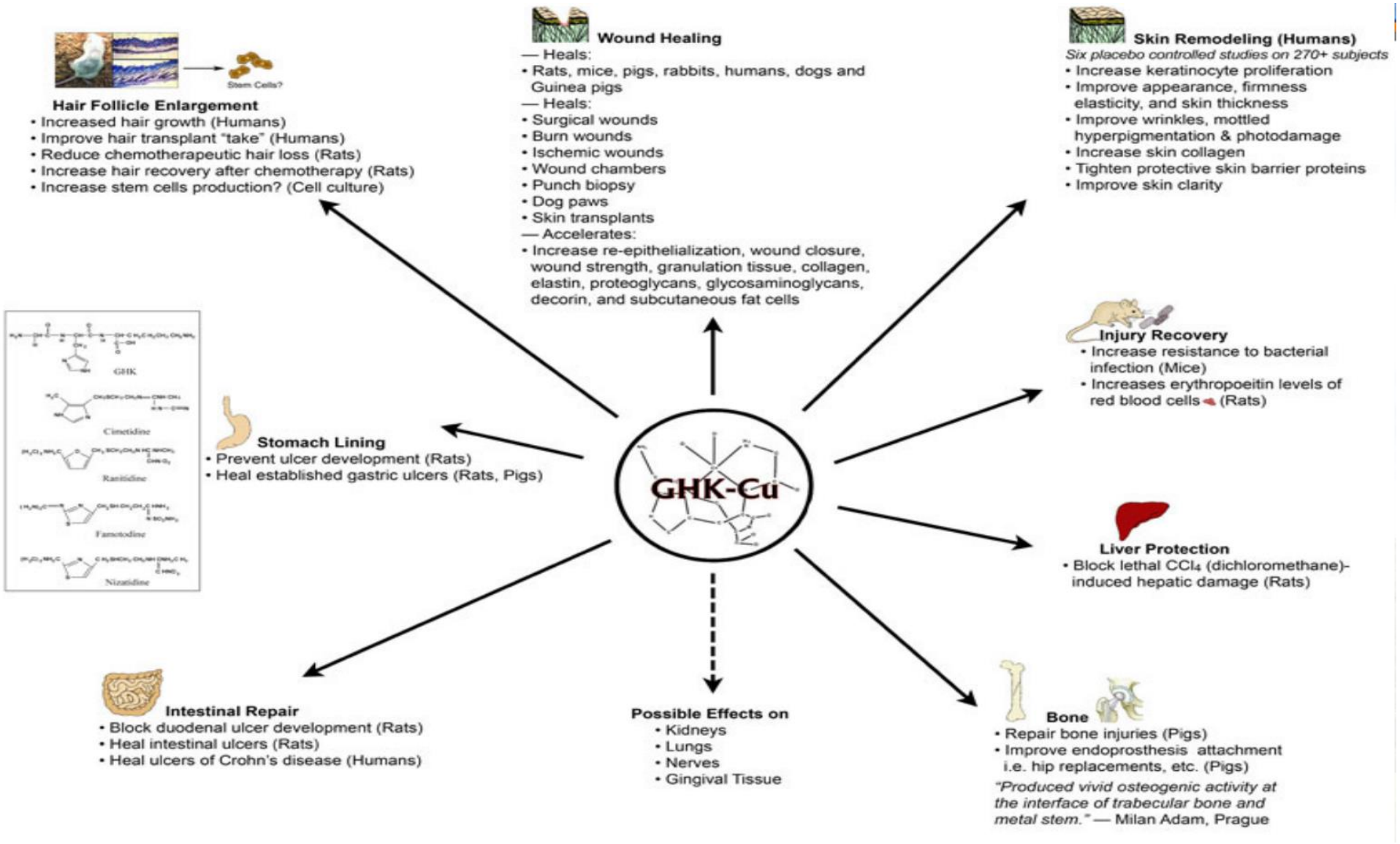
1. Slowing down aging, reducing wrinkles
2. Reducing inflammation and redness and other reparative formulations
3. Sun-protective formulations
4. Stimulation of Hair Growth

Recommended Dosage:

0.03-3%.

Click into http://reverseskinaging.com/ to see how the GHK-Cu inventor Dr. Loren Pickart has been using GHK-Cu in his products

GHK-Cu Effect in Mammals



Active Peptide

GHK-Cu for Skin Remodeling

Summary:

Skin Remodeling is the process that removes proteins and older cells from the skin to smooth skin, remove scars, lesions, and wrinkles Skin remodeling is very active in young people but declines rapidly as human pass age 20. Increasing skin remodeling is the key to producing a biologically younger skin.

- 67 volunteers, GHK-Cu vs. placebo were applied twice daily for 12 weeks on facial skin.

  Result: GHK-Cu Improved skin laxity, clarity and appearance, reduced fine lines, coarse wrinkles and mottled hyperpigmentation and increased skin density and thickness.

  Reference: Leyden, J.J., Stevens, T., Finkey, M.B. and Barkovic,S. Skin care benefits of copper peptide containing eye creams. In: American Academy of Dermatology 60th Annual Meeting (Gaspari, A.A., Goldberg, L.H., Gupta,A.K. et al., ed.), pp. 29, American Academy of Dermatology,New Orleans, LA, USA (2002).

- GHK-Cu was tested in a 12-week placebo controlled study , on facial skin of 71 women with mild to advanced photodamage.

  Result:

  • At week 1, compared with placebo, the skin laxity, clarity, fine lines and overall appearance were improvement.

  • At week 2, skin elasticity significantly improved and consistent with ultrasound increase in overall skin density and thickness.

  Reference: Leyden, J.J., Stevens, T., Finkey, M.B. and Barkovic,S. Skin care benefits of copper peptide containing facial cream. In: American Academy o Dermatology 60th Annual Meeting (Gaspari, A.A., Goldberg, L.H.,Gupta, A.K. et al., ed.), pp. 29, American Academy of Dermatology, New Orleans, LA, USA (2002).

GHK-Cu For Hair Growth

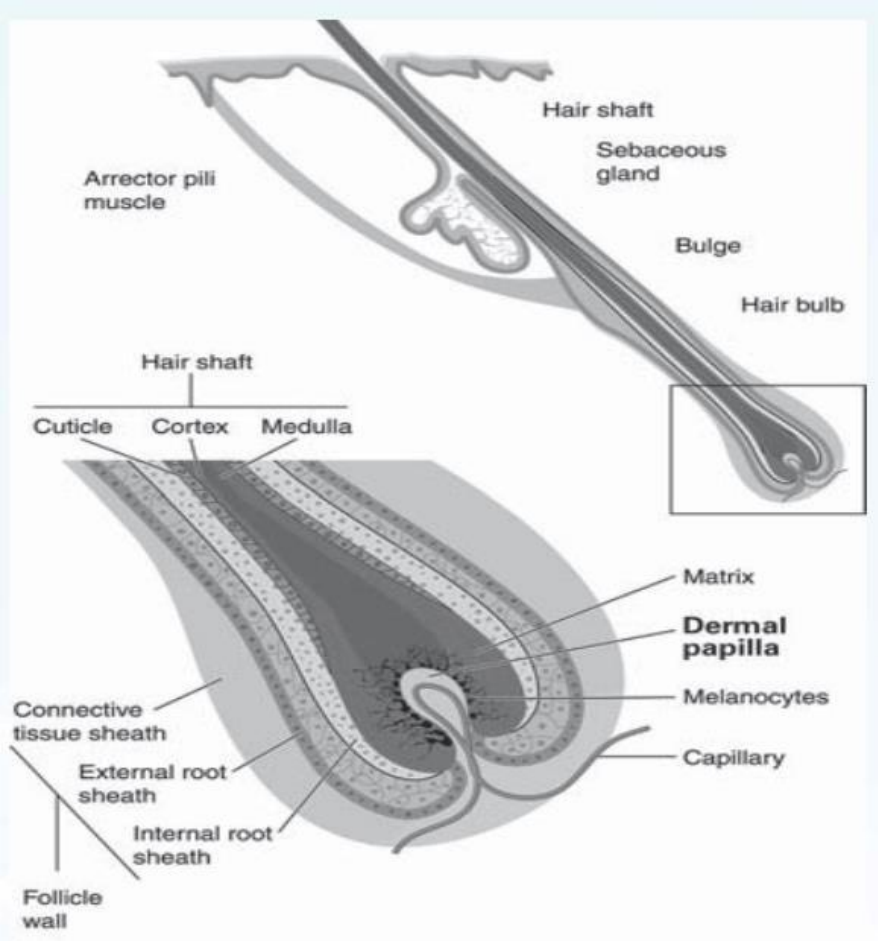
GHK-Cu increase hair growth by many ways:

1. Enlarging hair follicles and stimulating hair growth
2. Inhibit DHT expression
3. Improvement scalp damage and inflammation

How Copper Peptide Help Reduce Hair Thinning and Loss

Changes Associated with Thinning and Loss	SOLUTIONS
DHT accumulation	Copper ions are potent inhibitors of 5-Alpha Reductase
Follicle miniaturization	Copper peptides increase follicle size and this produces thicker hair.
The follicle's cycle shorten	Copper peptides increase follicle cell proliferation and decreases programmed cell death of follicles (apoptosis).
Inflammation	Copper peptides increase superoxide dismutase expression and reduce damage caused from interleukin-1, TGF-beta 1, and reactive carbonyl species.
Scalp damage	Copper peptides help repair scalp damage.
Hair grays with age	Copper peptides supply copper that tyrosinase needs to produce melanin.

http://www.folligen.com/



Active Peptide

Copper Peptide, Dr. Loren Pickart and Us

Copper peptide was Active Peptide's first product. After half a year of research and development from our team of PhDs, we successfully developed advanced technologies to produce kilograms of copper peptide in each batch.

We are particularly grateful to our company's first customer, the inventor of copper peptides, Dr. Loren Pickart. In the 1970's, Dr. Pickart invented copper peptides and became the world's most famous expert in copper peptide research. In the 1980 's, Dr. Pickart founded Procyte, the first company that applied peptides to skin care products. It later went public and was listed on Nasdaq. After the success with Procyte, Dr. Pickart and his wife established Skin Biology, another famous professional skin care company.

Dr. Loren Pickart, the Inventor of Copper Peptide, Uses Kilograms of Our Products in His Famous Cosmeceutical Brand

Skin Biology

LOREN PICKART PhD Products Based on Real Published Science

Active Peptide

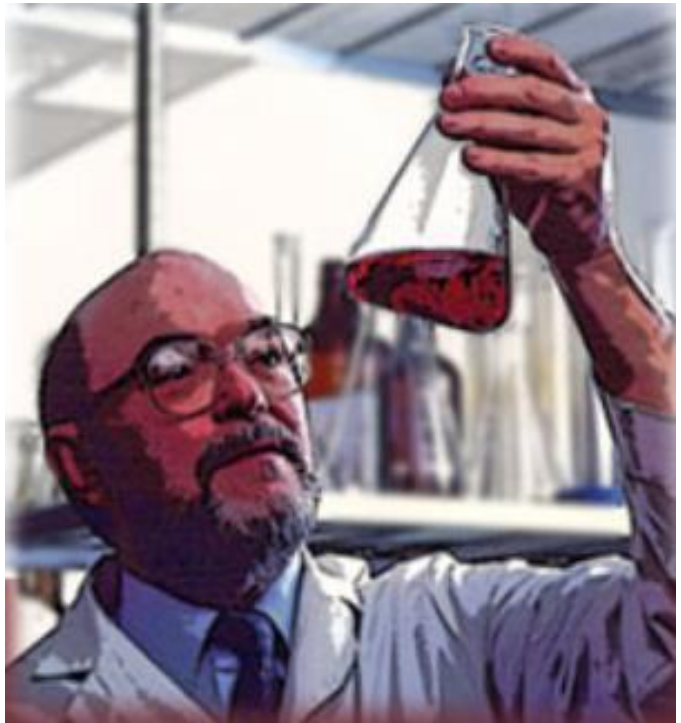
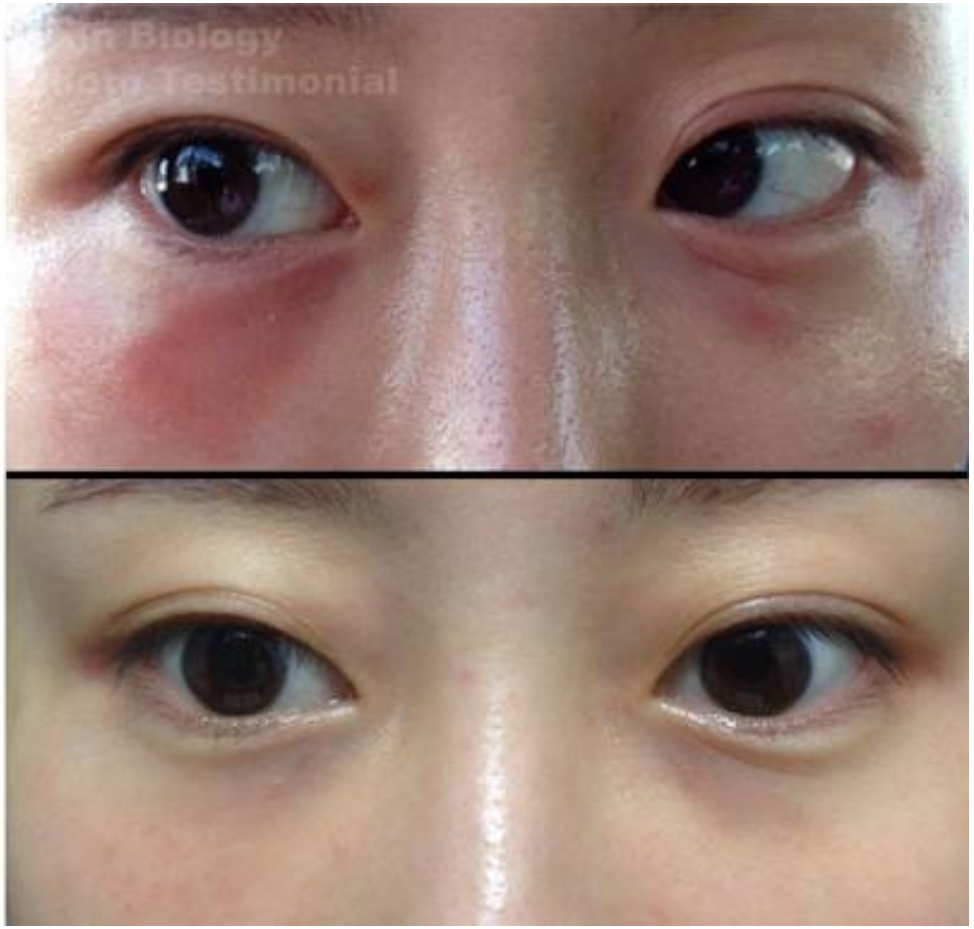


Photo Testimonials



3 weeks, before and after

3 weeks, before and after

Skin Biology
LOREN PICKART PhD Products Based on Real Published Science

*All pictures were submitted by users; for more photo testimonials, go to www.skinbiology.com

Photo Testimonials

Day 1

Day 15

Day 30

Day 60

Skin Biology
LOREN PICKART PhD Products Based on Real Published Science

*All pictures were submitted by users; for more photo testimonials, go to www.skinbiology.com

Photo Testimonials

Day 1 | Day 10 | Day 18

Skin Biology
LOREN PICKART PhD Products Based on Real Published Science

*All pictures were submitted by users; for more photo testimonials, go to www.skinbiology.com

Dedicated to Providing Cosmetic Companies, Pharmaceutical Companies, Distributors and Research Institutions with Our High Quality Copper Peptides

(Up to October 2020)

Active Peptide

Serving The World's Most Reputable Customers

Johnson & Johnson

Skin Biology
LOREN PICKART PhD Products Based on Real Published Science

kdc

THE HARVARD MEDICAL SCHOOL

STANFORD SCHOOL OF MEDICINE

서울대학교
SEOUL NATIONAL UNIVERSITY

OSMOTICS COSMECEUTICALS

THE SCRIPPS RESEARCH INSTITUTE

UNIVERSITY OF OXFORD

Pôle Cosmétique

BEAUTÉ PACIFIQUE

Active Peptide

Global Customer Comments

(Excerpts from emails)

" **I do appreciate your effort and integrity. I'll likely get more in the near future.**

- N. Bauer, CEO of Nyles7 at Arizona USA

" **Thank you ! LOVING the GHK-Cu, so glad you found me!**

- N. Nivolo, CEO of NCN Professional SkinCare at Connecticut USA

" **I love to talk to you guys. You are very professional and knowledgeable.**

- F. Priet, Researcher of JFA Ceuticals in India

" **The package reached to us so quickly!**

- F. Jang, Scientist of Seoul National University, Korea

" **Thank you for your strong technical support and working so hard to help us!**

- G. Floyd, Pole Cosmetique, Purchasing Manager, France

" **The Sample you provided was the best peptide our customers have ever seen!**

- H. Cheng, CEO of Shanghai Ruidong Biotech, China

" **The issue was all solved. Thank you for working so hard to help us!**

- J. Gottlieb of InnoCent International GmBH in Germany

" **Thank you for your excellent services. It was such a pleasure to do business with you!**

- R. Cloete of DRA Pharmaceuticals, South Africa

Active Peptide

Company Introduction

- Established in 2013, Active Peptide Company is headquartered in Boston, USA. Its manufacturing center is located at China National High-Tech Industrial Development Zone.
- We produce kilogram-scale batches of high purity peptides with patented technologies for cosmetic companies and distributors.
- We serve the world's most reputable customers in 28 countries and areas.

Active Peptide

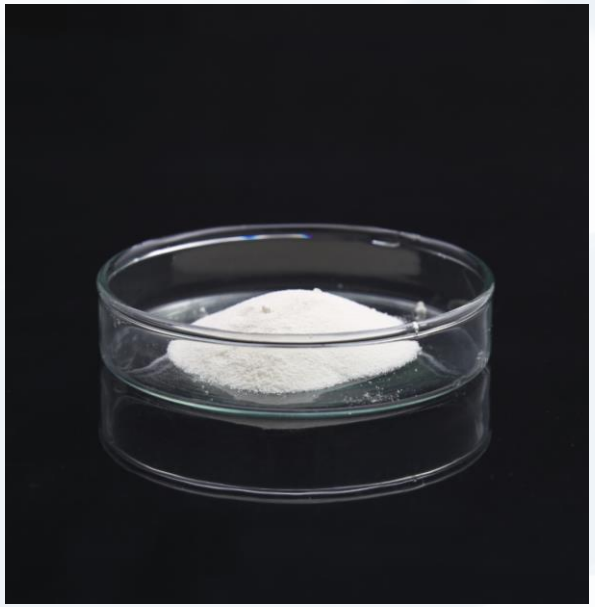
Producing High Quality Cosmetic Powder & Solution

- Anti-wrinkle
- Hair Growth
- Eye Bag Reduction
- Skin Lightening & Elasticity
- Muscle Relaxation & Skin Comfort
- Skin Firming
- Whitening

Active Peptide

Our Pure Peptide Powder

Peptide Powder Standard Packages



Copper Peptide (Blue) and Other Peptide Powder

We Produce a Broad Range of Cosmetic Peptides (Purity>98%)

Active Peptide

Our Broad List of Peptide Powder

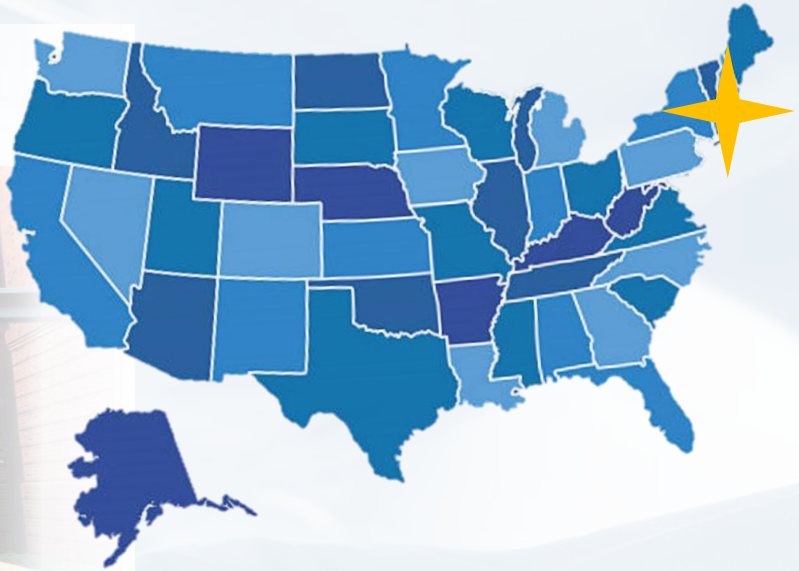
Anti-Wrinkle | Hair Growth | Eye Bag Reduction | Skin Lightening and Elasticity
Muscle Relaxation & Skin Comfort | Skin Firming | Lip Fullness | Skin Moisturizing | Whitening

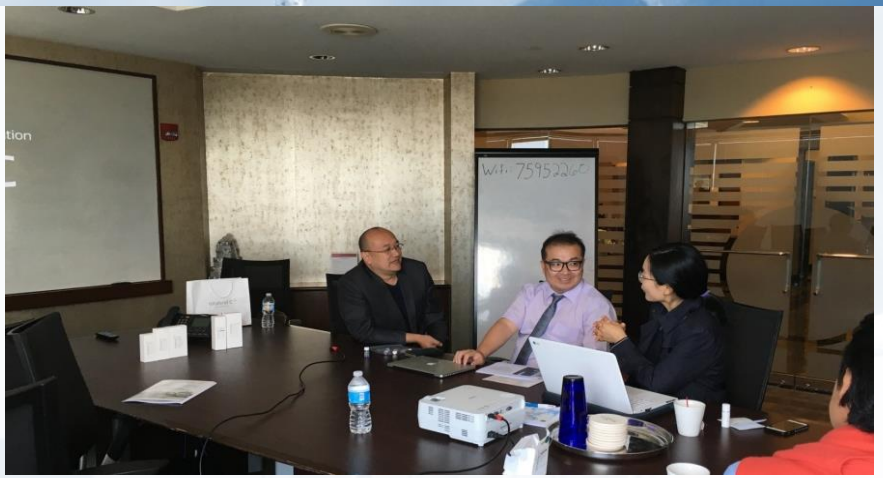
INCI	Other Name	Cat. No.
Copper Tripeptide-1	GHK-Cu 1:1	AP103002
Bis(Tripeptide-1) Copper Acetate	GHK-Cu 2:1	AP103001
Acetyl Dipeptide-1 Cetyl Ester	NATAH	AP102002
Hexapeptide-11		AP106005
Dipeptide-2	VW	AP102001
Tripeptide-1	GHK	AP103008
Palmitoyl Tripeptide-1	Pal-GHK	AP103005
Palmitoyl-Tripeptide-5 *	Pal-KVK	AP103006
Dipeptide Diaminobutyroyl Benzylamide Diacetate *		AP103011
Biotinoyl Tripeptide-1	Biotin-GHK	AP103010
Palmitoyl Tetrapeptide-7	Pal-GQPR	AP104001
Palmitoyl-Pentapeptide-4	Pal-KTTKS	AP105001
Nonapeptide-1 *		AP109001
Acetyl Hexapeptide-8	Argireline**	AP106003

* Research Use Only
** Product Trademark of Origin Company

Active Peptide

Customer Office in Boston, USA

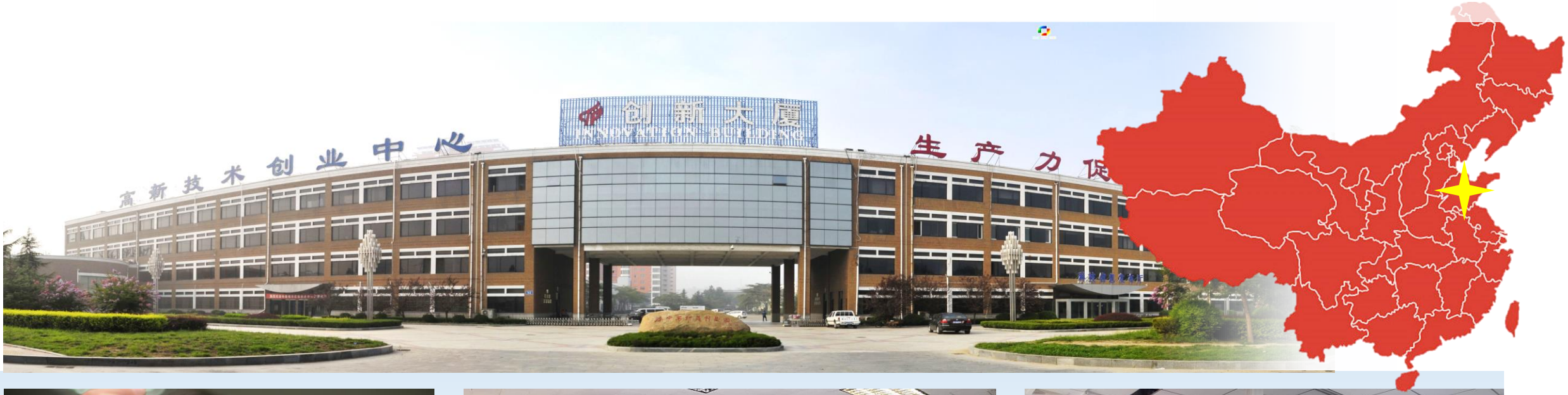




Our Team Providing Technical Support, Global Customer Service, and Shipping

Active Peptide

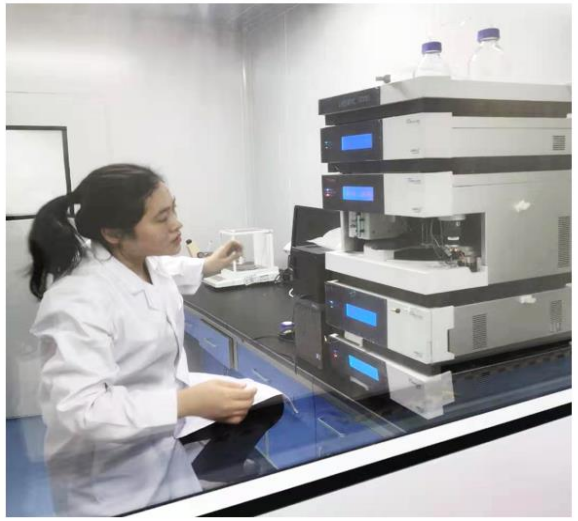
R&D AND PRODUCT DEVELOPMENT LABRATORY



A 12,000 square-foot laboratory equipped with advanced instruments and technology and located in the China High-tech Industrial Development Zone

Active Peptide

GMP ROOM FOR POWDER PURIFICATION & PEPTIDE SOLUTION PRODUCTION



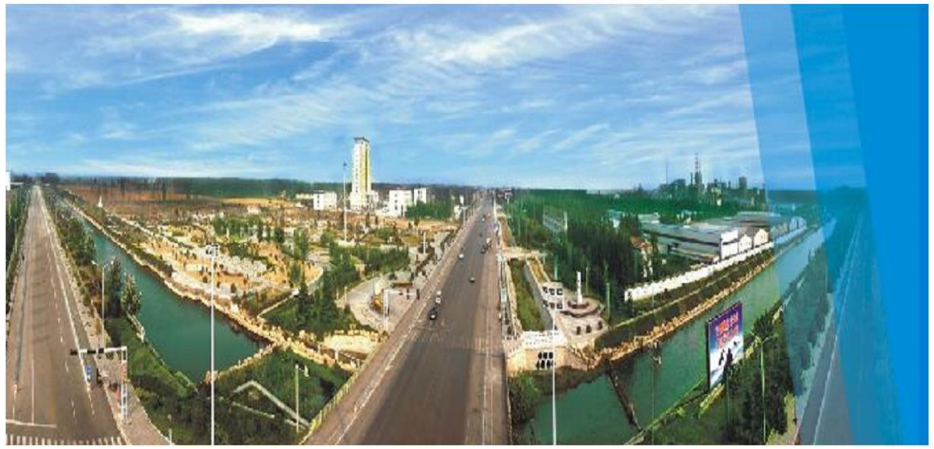
5,000 Square Foot GMP Room Located at National High-tech Industrial Development Zone in China

Active Peptide

Passed Customer Audit from HYUNDAI IBT, an FDA Regulated Cosmetic Company

Active Peptide

LARGE-SCALE PRODUCTION BASE



30,000 square feet with three floors (opens in May 2021)
Located at the High-tech New Medical Park Incubation Center in Zoucheng, Shandong

Active Peptide

We are Committed to Becoming Your Best Resource for Peptides!

info@activepeptide.com

www.activepeptide.com

245 First Street,
Suite 1800-131,
Cambridge MA 02142 USA

Active Peptide