

CHINESE LEADING BIOACTIVES PROFESSIONAL & BIOTECHNOLOGY INNOVATOR

中国领先的生物活性物专家和生物技术创新者

SHANGHAI HUAMAO
PHARMACEUTICAL CO. LTD.
上海华茂药业有限公司

INTEGRITY & INNOVATION
诚信 · 科技 · 创新

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01

COMPANY INTRODUCTION

企业介绍



PROFILE 概述

OVERVIEW 概述

Founded in 1999, Huamao Pharmaceutical is a high-tech, innovative and international biopharmaceutical enterprise, committed to the innovation, production and promotion of high-end biopharmaceutical ingredients and preparations

创建于1999年，华茂药业是一家高科技、创新型、国际化的生物医药企业，致力于高端生物医药原料与制剂的创新、生产和推广

POSITIONING 定位

Chinese leading company on synthetic biotechnology

Focusing on high-end APIs, pharmaceutical excipients, preparations and bioactives

中国合成生物技术领军企业；聚焦高端原料药、药物辅料、药物制剂、生物活性物

VISION 愿景

Outstanding Chinese biopharmaceutical enterprise

中国生物医药先进企业

Outstanding global supplier of high-end biopharmaceutical raw materials

全球高端生物医药原料优质供应商

Outstanding listed company domestically or internationally

境内或境外的优质上市公司





CORE TEAM 核心团队



Xiangchun Wei
魏向春

Chairman & Founder

Shenyang Pharmaceutical
University

董事长
沈阳药科大学
公司创始人



Zhe Wei
魏哲

General Manager

Biopharmaceutical Expert
Fudan University

总经理
复旦大学
生物医药首席专家



Guangqi Xu
徐光奇

CTO

Chief Drug Innovation Expert
China Pharmaceutical University

技术总监
中国药科大学
药物创新首席专家



William Garvey
威廉加维

Strategic Consultant

American Senior
Pharmaceutical Expert

战略发展咨询
美国药品资深专家



Chunlan Yang
杨春兰

Deputy General Manager

Chief Pharmaceutical Production
Expert

常务副总经理
制药生产首席专家



Houchen Lv
吕厚臣

Deputy General Manager

Chief Synthetic Biotechnology
Expert

金洋药业总经理
合成生物首席专家



DEVELOPMENT HISTORY 发展历程





SHANGHAI BASE 上海基地

Company 公司	Product 产品	Floor Space 面积	Positioning 定位
Shanghai Huamao Pharmaceutical 上海华茂药业	API, Pharmaceutical Excipient, Preparation 原料药、药用辅料、药物制剂	30,000 m ²	Headquarter, R&D, Manufacturing 总部、研发、生产





SHANDONG ZIBO BASE 山东淄博基地

Company 公司	Product 产品	Floor Space 面积	Positioning 定位
Shandong Jinyang Pharmaceutical 山东金洋药业	API, Bioactives 原料药、生物活性物	100 Acres 100亩	R&D, Manufacturing 研发、生产
Shandong Huamao Pharmaceutical 山东华茂药业	Pharmaceutical Preparation 药物制剂	14,000 m ²	R&D, Manufacturing 研发、生产
Shandong Yimei Biotechnology 山东一美生物	Softgel, Tablet, etc. 软胶囊、片剂等	10,000 m ²	R&D, Manufacturing 研发、生产





CORE TECHNOLOGY 核心技术

WHAT IS SYNTHETIC BIOTECHNOLOGY?

什么是合成生物技术?

Compared with traditional chemical synthesis and plant extraction, synthetic biotechnology, using microbe cells as factory, is regarded as one of the most revolutionary and promising manufacturing technologies in the 21st century, which is efficient, clean, cost-effective and innovative.

与传统的化学合成和植物提取相比，合成生物技术利用微生物细胞作为工厂，被认为是21世纪最具革命性和最有前途的制造技术之一，具备高效、清洁、成本效益和创新的特点。

WHY IS THIS TECHNOLOGY IMPORTANT?

为什么这一技术很重要?

It is mainly with the power of synthetic biotechnology that innovative bioactives have been fast emerging and boosting the progress of pharmaceutical, cosmetics, food and other industries.

正是借助合成生物技术的力量，创新生物活性物不断涌现，并快速推动制药、化妆品、食品等行业的进步。

WHAT IS HUAMA O'S ADVANTAGE?

华茂的优势是什么?

Huamao has been researching and practising synthetic biotechnology for decades and is expert in original innovation, scale-up and industrialization.

华茂从事合成生物技术研究与实践已有数十年，擅长原创创新、规模化和产业化。

02

PRODUCT INTRODUCTION

产品介绍



BIOACTIVES - API, EXCIPIENT, INTERMEDIATE 生物活性物 - 原料药、辅料、中间体

Bioactives are the key ingredients produced by advanced biotechnologies used in pharmaceutical, cosmetics, food and other industries.

生物活性物由先进生物技术生产，应用于制药、化妆品、食品等领域。

A series of advanced pharmaceutical bioactives have been commercialized or are under development by Huamao.

华茂已完成一系列先进药用生物活性物的商业化，部分产品在开发中。

NO. 序号	PRODUCT NAME 产品名称	PURITY/MW 纯度/重均分子量	IDENTITY 身份	CORE ADVANTAGES 核心优势
1	Icodextrin 艾考糊精	In-house	API 原料药	Leading technique, quality, capacity and documentation support 领先的技术、质量、产能和文件支持
2	Lactulose 乳果糖	EP/CP		Innovative and advanced technique; commercial production starts in 2025 创新先进工艺; 2025年开始商业化生产
3	Dextran 右旋糖酐	EP/USP/In-house		Leading supplier with rich grades and documentation support 领先供应商, 拥有丰富规格和文件支持
4	L-Ornithine L-Aspartate 门冬氨酸鸟氨酸	EP/CP		Leading technique, quality and documentation support 领先的技术、质量和文件支持
5	Ornithine Hydrochloride 盐酸鸟氨酸	EP/CP		Leading technique, quality and documentation support 领先的技术、质量和文件支持
6	Lactose Monohydrate 一水乳糖	EP/USP	Pharmaceutical Excipient 药用辅料	Leading supplier in China with 25 years' history 拥有25年历史的国内领先供应商
7	Inhalation Lactose 吸入乳糖	In-house		Used in high-value solid preparations; Leading technique, quality and technical support 用于高价值固体制剂; 领先的技术、质量和技术支持
8	Spray-dried Lactose 喷雾乳糖	In-house		
9	Anhydrous Lactose 无水乳糖	In-house		
10	Granulated Lactose 颗粒乳糖	In-house		
11	Co-processed Lactoses 共处理乳糖	In-house		
12	L-Hydroxyproline L-羟基脯氨酸	In-house	Intermediate 中间体	Advanced and innovative biotechnology; Cost advantage 先进和创新的生物技术; 成本优势
13	L-Aspartic Acid L-天门冬氨酸	In-house		

ICODEXTRIN

艾考糊精

Icodextrin peritoneal dialysate, originally developed by Baxter International Inc., is the current most advanced peritoneal dialysate with multiple clinical advantages and huge market potential worldwide.

艾考糊精腹膜透析液由百特公司原研，是目前最先进的腹膜透析液，拥有多重临床优势，在全球具有巨大的市场潜力。

By rich R&D experience in polysaccharide for decades, Huamao has finished the research and industrialization of Icodextrin, leading in speed and capacity in China.

凭借数十年丰富的多糖研发经验，华茂已经完成了艾考糊精的研发和产业化，产能和进度国内领先。

After comprehensive tests, the quality of Huamao's Icodextrin API can fully meet the strict requirements of peritoneal dialysate production.

通过全面的检测发现，华茂艾考糊精原料药的质量可以完全满足腹膜透析液生产的严格要求。

Rich documentation support is ready, including DMF, WC, DML, MOA, HALAL, MSDS, etc.

可提供丰富的文件支持，包括DMF、WC、DML、MOA、HALAL、MSDS等。



Product Name 产品名称	Generation 代数	Maintenance Time 维持时间	Daily Dialysis Times 每日透析次数	Diabetes Risk 糖尿病风险	Peritonitis Risk 腹膜炎风险	Conclusion 结论
Glucose Peritoneal Dialysate 葡萄糖腹膜透析液	1st 第一代	2-3 hours 2-3小时	4-5 times 4-5次	High 高	High 高	Inferior 差
Icodextrin Peritoneal Dialysate 艾考糊精腹膜透析液	3rd 第三代	8 hours or more 8小时或更多	2 times 2次	No 无	No 无	Superior 优

LACTULOSE

乳果糖

Lactulose oral solution is the first choice worldwide for treating constipation, which has been growing rapidly in the past few years.

乳果糖口服溶液是世界范围内治疗便秘的首选药物，过去数年内增长迅速。

Huamao, innovatively using novel technology in the production process, is potential to become an advanced global supplier of Lactulose API.

凭借创新性地使用新型生产工艺和技术，华茂有潜力成为乳果糖原料药的全球先进供应商。

Huamao's core advantages in Lactulose include:

华茂乳果糖的核心优势包括：

Quality 质量	Lower Impurity Content 更低杂质含量
Polution 污染	No Harmful Waste 无有害污染物
Cost 成本	More Cost-efficient 更低成本

In 2025, Huamao will finish commercial production and documentation preparation of Lactulose.

2025年，华茂将完成乳果糖的商业化生产和文件准备。



LACTOSE

药用乳糖

Lactose is a classic excipient widely used in solid preparations such as tablet, capsule and granule.

乳糖是一种经典的药用辅料，广泛用于片剂、胶囊、颗粒剂等固体制剂中。

Huamao's core advantages in Lactose include:

华茂药用乳糖的核心优势包括：

History
历史

Earliest Producer of Lactose Monohydrate in China, Since 1999
国内最早的一水乳糖生产商，自1999年

Production
生产

Newly Upgraded Workshop, Highly Automated
车间新完成改造，高度自动化

High-end Lactoses
高端乳糖

R&D of Spray-dried, Anhydrous, Granulated, Inhalation and Co-processed Grades Finished
喷雾、无水、颗粒、吸入、共处理规格的研发已经完成

In 2025, Huamao will finish commercial production and documentation preparation of High-end Lactoses.

2025年，华茂将完成系列高端乳糖的商业化生产和文件准备。



DEXTRAN

右旋糖酐

Dextran, originated in 1940s as a natural polysaccharide produced through fermentation, is used in various fields such as plasma substitution, veterinary medicine, vaccine, lyophilized drug and cell cryopreservation.

右旋糖酐诞生于1940年代，是一种发酵法生产的天然葡聚糖，应用于代血浆、兽药、疫苗、冻干药物、细胞冻存等领域。

Huamao's core advantages in Dextran include:

华茂右旋糖酐的核心优势包括：

Technology
技术

World-leading Fermentation and Purification Technologies
世界领先的发酵和提取技术

Quality
质量

Quality Exceeding CP, EP and USP Standard
质量超越中国、欧盟和美国药典标准

Grade
规格

Richest Grades and Specifications Available, Covering Molecular Weight from 1K to 1M Da
可提供最丰富的规格，分子量涵盖一千至一百万道尔顿

Rich documentation support is ready, including DMF, WC, DML, MOA, HALAL, MSDS, etc.

可提供丰富的文件支持，包括DMF、WC、DML、MOA、HALAL、MSDS等。



AMINO ACIDS

氨基酸系列

L-Ornithine L-Aspartate: A classic liver disease API; Huamao has leading technique, quality and documentation support.

门冬氨酸鸟氨酸: 一种经典的肝病原料药; 华茂拥有领先的技术、质量和文件支持。

Ornithine Hydrochloride: An API used in compound amino acid injections; Huamao has leading technique, quality and documentation support.

盐酸鸟氨酸: 一种用于复合氨基酸输液的原料药; 华茂拥有领先的技术、质量和文件支持。

L-Hydroxyproline: A key pharmaceutical intermediate of penems; Huamao uses advanced biotechnology in production and has cost advantage.

L-羟基脯氨酸: 一种培南类药物的关键中间体; 华茂使用先进的生物技术生产, 拥有成本优势。

L-Aspartic Acid: An intermediate of aspartame and polyaspartic acid; Huamao uses innovative leading biotechnology in production and has cost advantage.

L-天门冬氨酸: 一种阿斯巴甜和聚天门冬氨酸的中间体; 华茂使用创新的领先生物技术生产, 拥有成本优势。

Rich documentation support is ready for the APIs, including DMF, WC, DML, MOA, HALAL, MSDS, etc.

原料药可提供丰富的文件支持, 包括DMF、WC、DML、MOA、HALAL、MSDS等。

In 2025, Huamao will finish commercial production of L-Aspartic Acid.

2025年, 华茂将完成L-天门冬氨酸的商业化生产。



BIOACTIVES - COSMETICS & FOOD INGREDIENT 生物活性物 - 化妆品与食品原料

Innovative bioactives are more and more becoming the focus of cosmetics and food industries.

创新的生物活性物越来越成为化妆品、食品行业的焦点。

Huamao has commercialized 11 advanced bioactives used in cosmetics and food.

华茂已完成11款先进生物活性物的商业化，用于化妆品与食品。

NO. 序号	PRODUCT NAME 产品名称	PURITY/Mw 纯度/重均分子量	APPLICATION AREA 应用领域	CORE ADVANTAGES 核心优势
1	Hydroxytyrosol 羟基酪醇	≥99.0%	Cosmetics/Food 化妆品/食品	Innovatively using advanced synthetic Biotechnology 创新使用先进合成生物技术
2	Salidroside 红景天苷	≥99.0%	Cosmetics/Food 化妆品/食品	Innovatively using advanced synthetic Biotechnology 创新使用先进合成生物技术
3	Oligomeric Chondroitin Sulfate 寡聚硫酸软骨素钠	≥95.0%/0.8-2k Da	Cosmetics/Shampoo/Food 化妆品/洗发/食品	Innovative; clear joint protection, oil control and hair loss prevention efficacy 创新产品，关节保护、控油、防脱发功效显著
4	Oligomeric β-1,3-Glucan 寡聚β-1,3-葡聚糖	≥99.0%/0.7-0.9 Da	Cosmetics/Food 化妆品/食品	Innovative concept of oligomeric molecules; easier to absorb and more effective 首创寡聚分子概念，更易吸收，更强功效
5	Oligomeric Sodium Hyaluronate 寡聚透明质酸钠	≥95.0%/0.8-2k Da	Cosmetics/Food 化妆品/食品	HA with the smallest molecular weight with excellent efficacy 最小分子量的HA，功效出色
6	Hydrolyzed Sodium Hyaluronate 水解透明质酸钠	≥95.0%/30-50k Da	Cosmetics/Food 化妆品/食品	HA with the best anti-inflammatory effect and excellent efficacy 最佳抗炎效果的HA，功效出色
7	Low-Mw Poly-γ-Glutamic acid 低分子聚谷氨酸钠	≥95.0%/100-300k Da	Cosmetics/Shampoo/Food 化妆品/洗发/食品	Innovative low-molecular concept; moisturizing and anti-aging 首创低分子概念，兼顾保湿抗衰
8	Ectoin 依克多因	≥99.0%	Cosmetics 化妆品	Using advanced synthetic biotechnology; cost advantage 使用先进合成生物技术；价格优势
9	Glycerol Glucoside 甘油葡糖苷	≥99.0%	Cosmetics 化妆品	Using advanced synthetic biotechnology; cost advantage 使用先进合成生物技术；价格优势
10	α-Arbutin α-熊果苷	≥99.0%	Cosmetics 化妆品	Using advanced synthetic biotechnology; cost advantage 使用先进合成生物技术；价格优势
11	α-Glucanase α-葡聚糖酶	≥500 U/ml	Oral Care 口腔护理	Professional dental plaque removal effect 专业去除牙菌斑，效果出色

HYDROXYTYROSOL

羟基酪醇

HMBrighten® HT

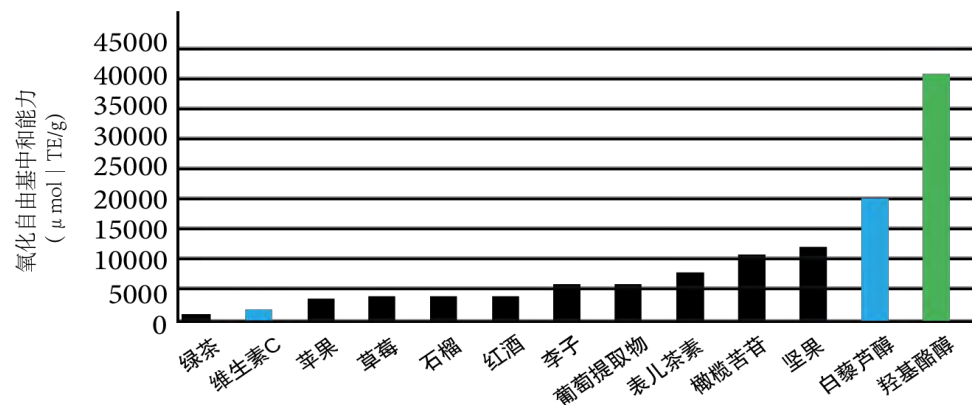
Hydroxytyrosol is the major bioactive polyphenol in olives with amazing antioxidant ability.
羟基酪醇是橄榄中的主要的生物活性多酚，具有惊人的抗氧化能力。

HMBrighten® HT, produced by Huamao's proprietary synthetic biotechnology, is purer (≥99.0%), cheaper, more effective and safe in food and cosmetics.

HMBrighten® HT采用华茂专有合成生物技术生产，在食品和化妆品中更纯净(>99.0%)、更便宜、更有效、更安全。

In October, 2024, Huamao HMBrighten® HT has been approved as a new raw material for Chinese cosmetics.

2024年10月，华茂HMBrighten® HT获批中国化妆品新原料。

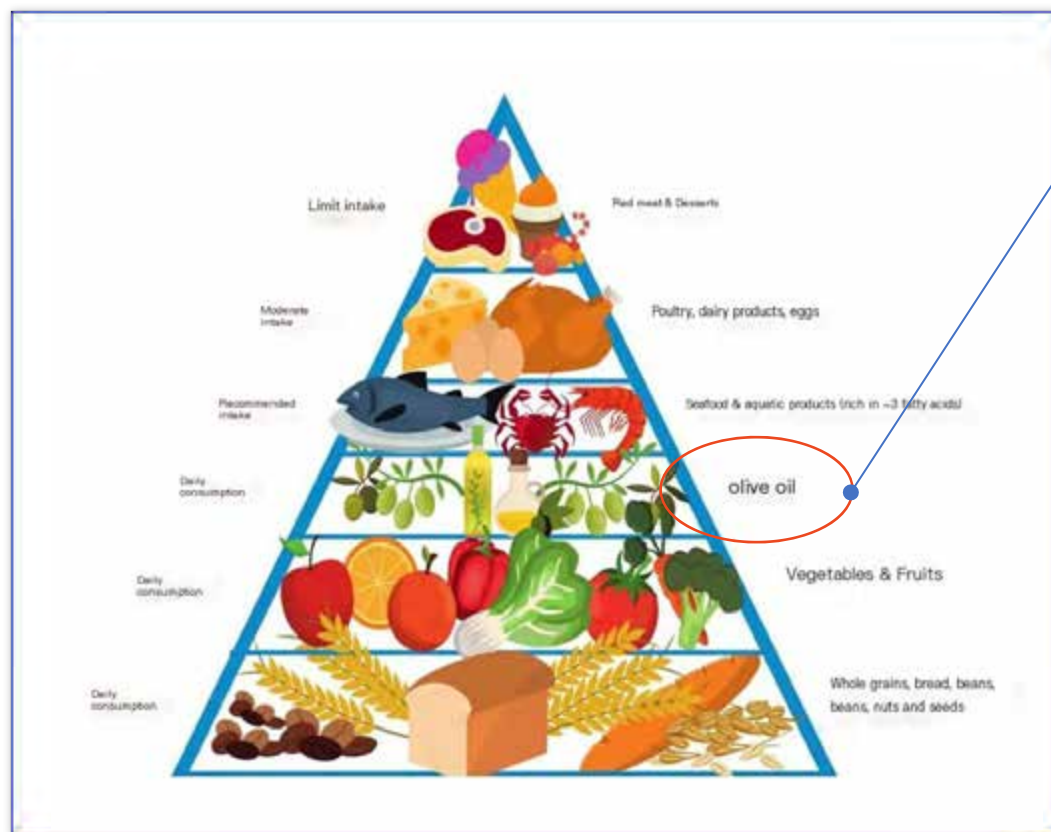




INTRODUCTION OF HYDROXYTYROSOL 羟基酪醇介绍

Mediterranean Diet is a healthy diet recognized by the nutrition community, in which olive oil is the main source of fat.

地中海饮食 (Mediterranean Diet) 是目前营养界公认的健康饮食方式。其中，橄榄油是地中海饮食中脂肪的主要来源。



SUPER ANTIOXIDANT FUNCTION

超强抗氧化功能

Research shows that olive polyphenols in olive and olive oil have super antioxidant function, which is the main reason for their health benefits.

研究表明，橄榄和橄榄油中的橄榄多酚拥有超强抗氧化功能，这是其对健康有益的主要原因。

HYDROXYTYROSOL

羟基酪醇

Hydroxytyrosol is the main antioxidant component of olive polyphenols, accounting for 60-80% 是橄榄多酚的主要抗氧化成分，占比高达60-80%





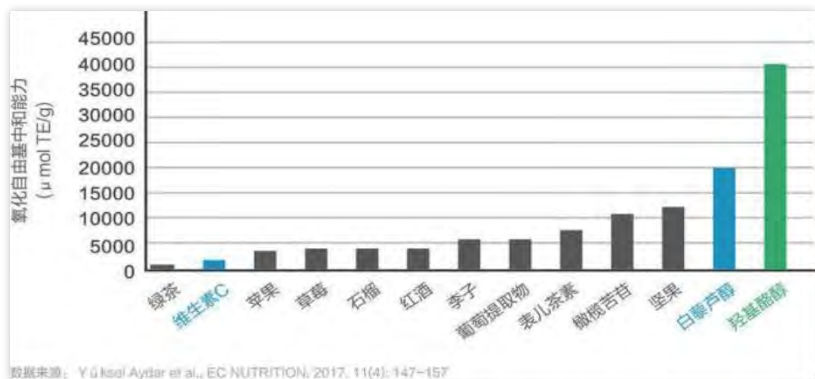
EFFICACY MECHANISM 功效机理



Efficient free radical scavenging
高效清除自由基

Enhance the activity of important antioxidant enzymes in organisms
提升生物体内重要抗氧化酶的活性

- Glutathione peroxidase (GPX)
谷胱甘肽过氧化物酶(GPx)
- Glutathione reductase (GR)
谷胱甘肽还原酶 (GR)
- Catalase (CAT)
过氧化氢酶(CAT)



病原菌名称	测试菌株数量	致病类别	最低抑制浓度 (μg/mL)			
			橄榄苦苷	羟基酪醇	氟康唑	红霉素
流感嗜血杆菌	8	婴儿炎症感染	> 500	1.9-15.6	>500	0.5-15.6
卡他莫拉菌	6	呼吸道感染	> 500	3.2-15.6	0.6-1.95	0.12-0.48
沙门氏菌	15	伤寒	125-250	1.9-7.8	0.97-31.25	无效
肠炎弧菌	1	中毒性肠炎	125	0.97	1.95	无效
溶藻弧菌	2	中毒性肠炎	125	0.97-1.9	1.95	无效
霍乱弧菌	1	霍乱	125	1.9	0.24	无效
金黄色葡萄球菌	5	化脓性感染	62.5-125	3.9-31.25	0.48-15.6	0.24-3.9
耐药毒素金黄色葡萄球菌	6	化脓性感染	31.25-125	3.9-31.25	>500	0.97-125

数据来源: Bisignano et al., J. Pharm. Pharmacol. 1999, 51: 971-974.

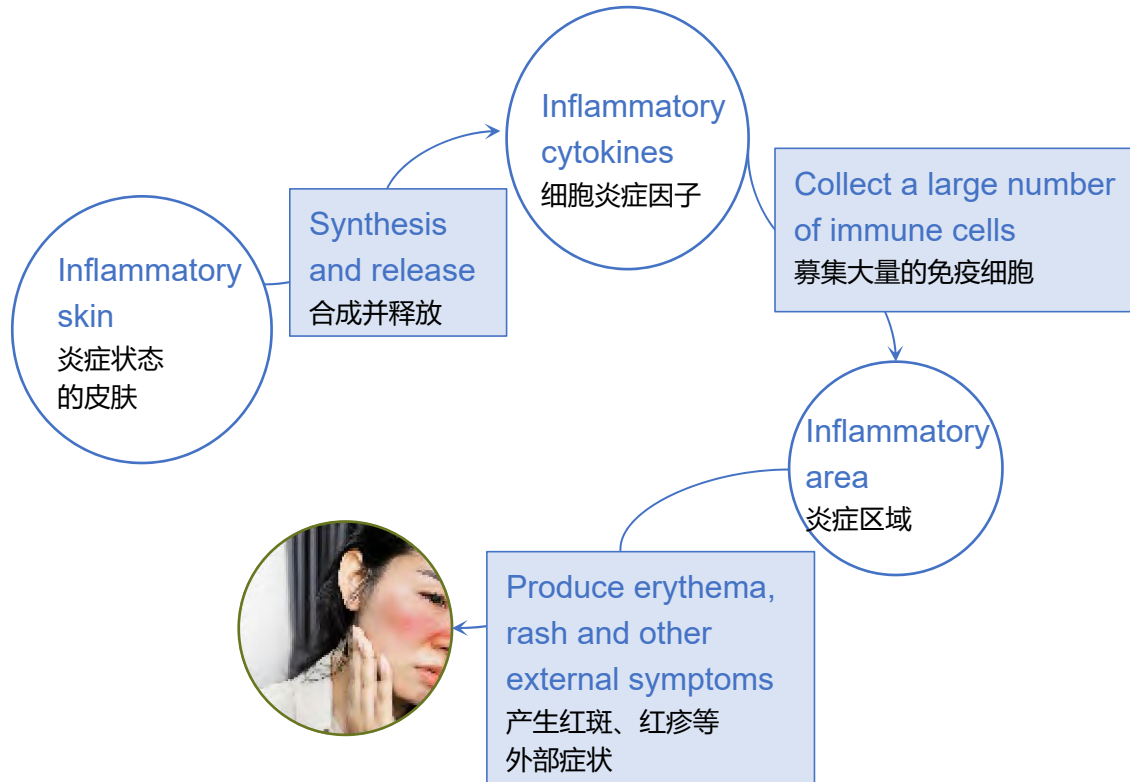
Hydroxytyrosol's antioxidant capacity is much higher than other well-known antioxidants such as vitamin E, coenzyme Q10, vitamin C or resveratrol. 羟基酪醇的抗氧化能力远远高于行业中众所周知的其他抗氧化剂，例如生育酚（维生素E），辅酶Q10，维生素C或白藜芦醇。

Hydroxytyrosol showed a significant ability to inhibit the oxidative damage caused by free radicals: 15.3 μmolte/mg (ORAC test method). 羟基酪醇显示出显著的抑制自由基引起的氧化损伤的能力：15.3μmolte/mg (ORAC 试验方法)。



EFFICACY MECHANISM 功效机理

Inflammation is a protective response to damaged cells, stimuli, or pathogens.
炎症，是对受损细胞、刺激物或病原体的一种保护性反应。



Inflammatory skin is a major characteristic in sensitive muscle populations.
在敏感肌群体中，炎症性皮肤是其一重要特征。

Hydroxytyrosol Has Significant Anti-inflammatory Effects.

羟基酪醇具有显著的抗炎作用。

Alleviate skin inflammation, relieve sensitive symptoms, and soothe skin discomfort;
能减轻皮肤炎症，缓解敏感肌症状，舒缓肌肤不适；

Improve skin quality for acne prone and sensitive skin;
对于痘痘肌和敏感肌，羟基酪醇也有助于改善肤质；

Hydroxytyrosol can also comprehensively control inflammation, especially chronic inflammation, from the source to downstream factors.
在改善机体炎症尤其是慢性炎症上，羟基酪醇可以从源头到下游因子，全面掌控炎症。

From the source 源头上

Hydroxytyrosol achieves anti-inflammatory effects by inhibiting NF-kB and reducing the expression of inflammation associated genes such as iNOS and COX-2
羟基酪醇通过抑制NF-kB，降低iNOS和COX-2等炎症关联基因表达，达到抗炎效果

Downstream 下游因子

Hydroxytyrosol can also significantly inhibit many well-known inflammatory factors such as TNF - α , IL-6, and chemokine CXCL10 involved in the inflammatory process.
对诸多耳熟能详的炎性因子TNF- α 、IL-6与CXCL10等，羟基酪醇也都能显著抑制。



MARKET APPLICATION - DIETARY SUPPLEMENT 市场应用 - 膳食补充剂

Hydroxytyrosol is a Novel Food(NF) approved by the European Food Safety Authority recommended to be added to fish oil and vegetable oil.

羟基酪醇是一款具有欧洲食品安全局授权批准作为油脂产品的新资源食品配料 (NF) ， 并建议其添加在鱼油和植物油中。

Hydroxytyrosol is mainly excreted in the form of hydroxytyrosol-3-sulfate, with high safety and no genetic toxicity or mutagenicity. 主要以羟基酪醇-3-硫酸盐形式排出体外， 安全性高， 不具有遗传毒性和致突变性。



HIGH SECURITY
安全性高



NO GENOTOXITY
不具有遗传毒性



NO MUTAGENICITY
不具有致突变性



Longevity by Nature Hydroxytyrosol Capsules
Longevity by Nature羟基酪醇胶囊

Efficacy: Delaying cellular aging & reducing pigmentation
功效：延缓细胞衰老，减少色素沉着



MARKET APPLICATION - COSMETICS 市场应用 - 化妆品

Hydroxytyrosol can be applied in the emulsification system of cosmetics to protect skin epidermal cells.
羟基酪醇可被应用于化妆品的乳化体系，达到保护皮肤表皮细胞的效果。

FACE CREAM
面霜

SUNSCREEN
防晒霜

EYE PRODUCT
眼部产品

BODY CARE
身体护理



Recommended Dosage: 0.01%~1%
建议添加量: 0.01%~1%



OLIVEDA Olive Leaf Repair Gel Essence
OLIVEDA 橄榄叶修复啫喱精华

Efficacy: Deeply cleansing pores, removing oil and dirt, regulating skin water oil balance, and resisting the impact of external environmental pollution on skin free radicals

功效：深入清洁毛孔，去除油脂和脏污调节肌肤水油平衡，并抵御外界环境污染对皮肤自由基的

SALIDROSIDE

红景天苷

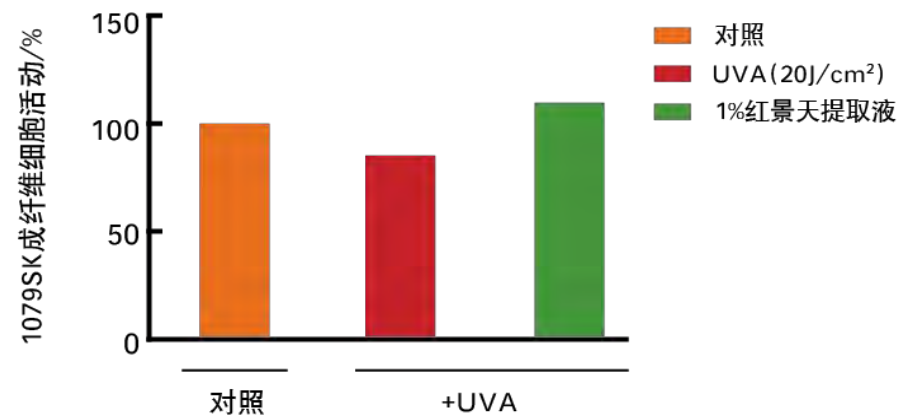
HMBrighten[®] SAL

Salidroside is a key bioactive polyphenol naturally existing in rare plant *Rhodiola rosea* with amazing antioxidant ability.

红景天苷是珍稀植物红景天中天然存在的关键生物活性多酚，具有惊人的抗氧化能力。

HMBrighten[®] SAL, produced by proprietary synthetic biotechnology, is purer (≥99.0%), cheaper, more effective and safer in food and cosmetics.

HMBrighten[®] SAL采用华茂专有合成生物技术生产，在食品和化妆品中更纯净(>99.0%)、更便宜、更有效和更安全。

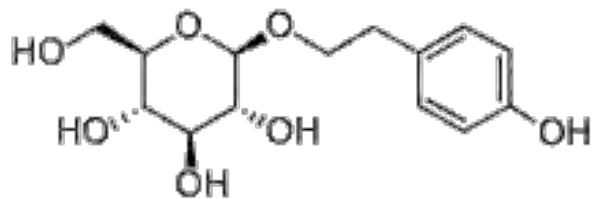
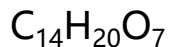




INTRODUCTION OF SALIDROSIDE 红景天苷介绍

SALIDROSIDE

红景天苷



Structure 结构式



Rhodiola rosea (Raw Material)

红景天(原材料)

Perennial herb, a wild plateau plant
是多年生草本植物, 属于野生高原植物之一

Main Growing Areas

主要生长地区

The areas with high altitude of 1600-4000 meters,
hypoxia, dryness and large temperature difference
between day and night.

海拔1600-4000米的高寒、缺氧、干燥、昼夜温差大地区。

PREPARATION METHOD

制备方法

PLANT EXTRACTION

植物提取法

Large consumption of natural
resources Rhodiola; low purity
自然资源红景天的大量消耗; 低纯度

CHEMICAL SYNTHESIS

化学合成法

A small amount of other toxic
chemicals are often left
往往残留少量其它有毒化学品

FERMENTATION

生物发酵法

Low production cost; high
output; environmentally friendly
生产成本低、产量高; 利于保护生态环境

Huamao uses this method.
华茂使用此方法



EFFICACY MECHANISM 功效机理

EFFICACY IN FOOD

在食品方面的功效

①

Antiviral
抗病毒

②

Anti-tumor
抗肿瘤

③

Enhancing
Immunity
增强免疫力

④

Cardiovascular
Protection
保护心血管

⑤

Reducing
Altitude Sickness
减少高原反应



EFFICACY IN COSMETICS

在化妆品方面的功效



01

ANTI-WRINKLE
抗皱紧致

Reduce the excretion of proline in urine
减少尿内羟脯氨酸排出

Inhibit the breakdown of collagen in body
抑制体内胶原蛋白分解

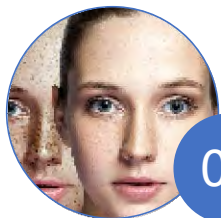


02

ANTI-OXIDATION
抗氧化

Eliminate oxygen free radicals and reduce their oxidative capacity
清除氧自由基，降低其氧化能力

Enhance cell activity and delay cell aging rate
增强细胞的活性，延缓细胞老化速度



03

WHITENING
美白

Inhibit the activity of tyrosinase
抑制酪氨酸酶的活性

Reduce the production of melanin in skin
减少皮肤黑色素的生成



04

ANTI-INFLAMMATION
抗炎

Inhibit bacteria, converge, and relieve pain
本身具有对抗病菌、收敛和镇痛的效果

Inhibit the increase of inflammatory cytokines caused by ultraviolet radiation and protect the skin from sunburn
抑制紫外线照射引起的炎症细胞因子的增加，保护皮肤免受晒伤



MARKET APPLICATION - DIETARY SUPPLEMENT 市场应用 - 膳食补充剂



Rosenrot from elixir pharma of Sweden
瑞典elixir制药 红景天保健食品

Resisting physical and mental pressure, stimulating the nervous system, increasing work efficiency, eliminating fatigue and preventing mountain sickness
抵抗物理上的和精神上的压力，具有刺激神经系统、增加工作效率、消除疲劳和预防高山症等作用



Tihengjian Salidroside soft capsules
体恒健 红景天苷软胶囊

Reducing blood glucose
具有辅助降低血糖的作用



Nanjing Tongrentang Rhodiola oral solution
南京同仁堂 红景天口服液

Anti-fatigue, anti-hypoxia, anti-radiation, anti-aging, anti-toxicity and improving hypoxia tolerance
抗疲劳、抗缺氧、抗辐射、延缓衰老、抗毒、提高缺氧耐受



Natureu dynamic oxygen cylinder
NatureU动氧气瓶

Preventing mountain sickness
预防高山症



MARKET APPLICATION - COSMETICS 市场应用 - 化妆品

HMBrighten® SAL has excellent water solubility and can be added as an aqueous component to cosmetic systems.
HMBrighten® SAL水溶性极好，可作为水相成分加入到化妆品体系中。

Application Efficacy
应用功效

Whitening, anti-sunburn, anti-aging
美白、防晒、抗衰老

Recommended Dosage
建议添加量

0.1-3.0%

Application Fields
适用剂型

Makeup lotion, lotion, essence
化妆水、乳液、精华
Sunscreen, face cream, facial mask
防晒霜、面霜、面膜



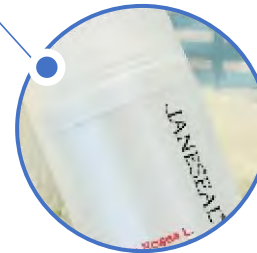
Estee Lauder's Skin Care Brand Origin of Yuemu
雅诗兰黛旗下护肤品牌 悦木之源

In the Icefield Rhodiola firming series skin care products of Origin of Yuemu, Rhodiola root extract from North America is used.
 在悦木之源的冰原红景天紧致系列护肤品中，使用的是来自北美的红景天根提取物。



Sinoway Herb's Rhodiola Series
相宜本草红景天系列

The highly active Rhodiola crenulata root extract independently developed by the brand and a Rhodiola sustained-release microcapsule technology are used to help the skin better absorb the effective ingredients.
 使用品牌自主研发的高活性大花红景天根提取物，还采用了一种红景天缓释微囊技术，以帮助皮肤更好地吸收有效成分。



Jianxi, a novel skin care brand in China
国内新锐护肤品牌简玺

Jianxi Rhodiola Beauty Lotion is added with plant extracts such as Rhodiola crenulata root extract, aloe vera leaves and saffron.
 简玺红景天花漾修颜乳中添加了大花红景天根提取物、库拉索芦荟叶和番红花等植物提取成分。



OLIGOMERIC CHONDROITIN SULFATE

寡聚硫酸软骨素

HMyouth® o-CS

Oligomeric chondroitin sulfate (o-CS) is an innovative form of chondroitin sulfate that is significantly more bio-active and can be used orally or through skin.

寡聚硫酸软骨素 (o-CS) 比传统硫酸软骨素更具生物活性, 可口服或外用。

HMyouth® o-CS, produced by proprietary biotechnology, with about only 1000 Da molecular weight, has excellent ability in joint protection, oil control and hair loss prevention.

HMyouth® o-CS采用华茂专有生物技术生产, 分子量仅有1000Da左右, 具有极佳的关节保护、控油、防脱发等功效。

Function: Joint protection, oil control, hair loss prevention, etc.

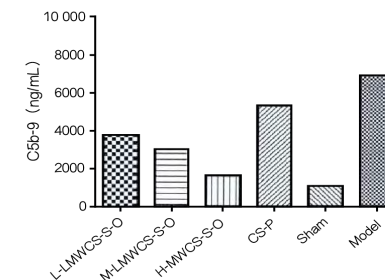
Purity: ≥95.0% (HPLC)

Mw: 800-2000 Da

功效: 保护关节、控油、防脱发等

纯度: ≥95.0% (HPLC)

分子量: 800-2000 Da



Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe
Huamao's Advantages •Ultra-low Mw •Cost-effective •Rich study and testing

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •超低分子量 •高性价比 •丰富功效及安全研究

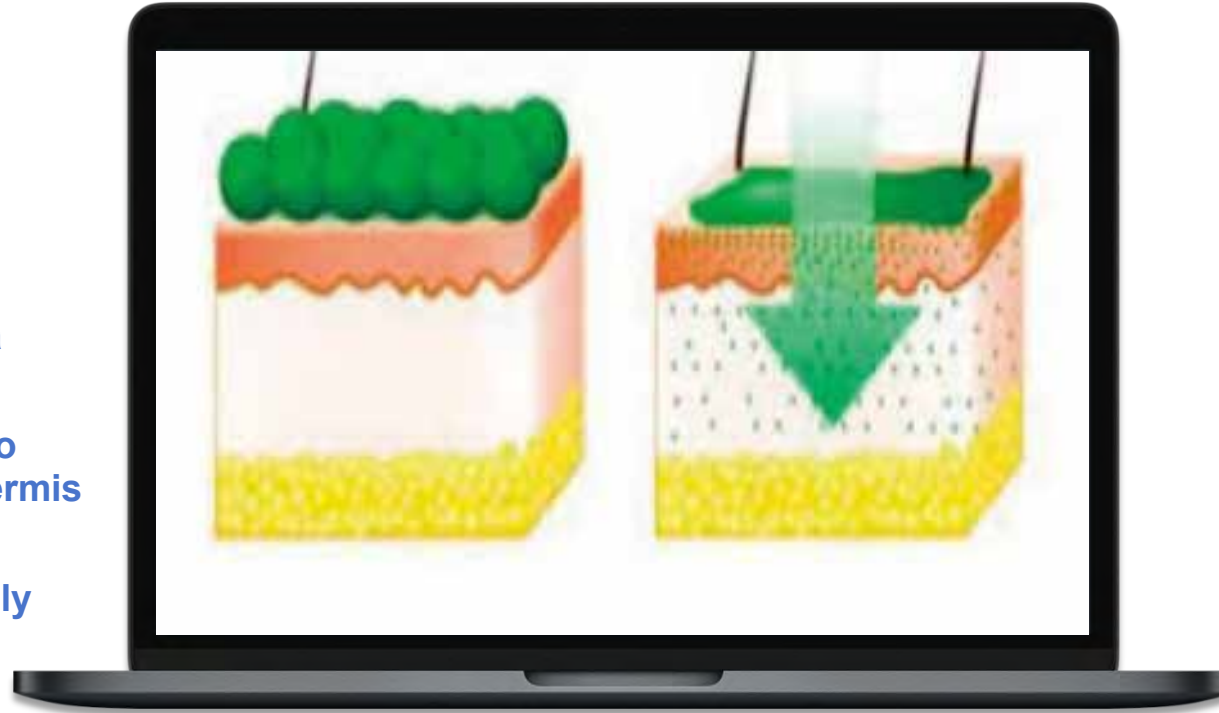


INTRODUCTION OF OLIGOMERIC CHONDROITIN SULFATE 寡聚硫酸软骨素介绍

NORMAL SODIUM CHONDROITIN SULFATE

普通硫酸软骨素钠

- **Molecular Weight: 10-50k Da**
分子量在10000到50000之间
- **Poor Permeability, Difficult to Penetrate Through the Epidermis**
渗透性差，很难透过表皮
- **Unable to Function Effectively**
无法有效发挥作用



HMyouth® o-CS OLIGOMERIC CHONDROITIN SULFATE

寡聚硫酸软骨素钠

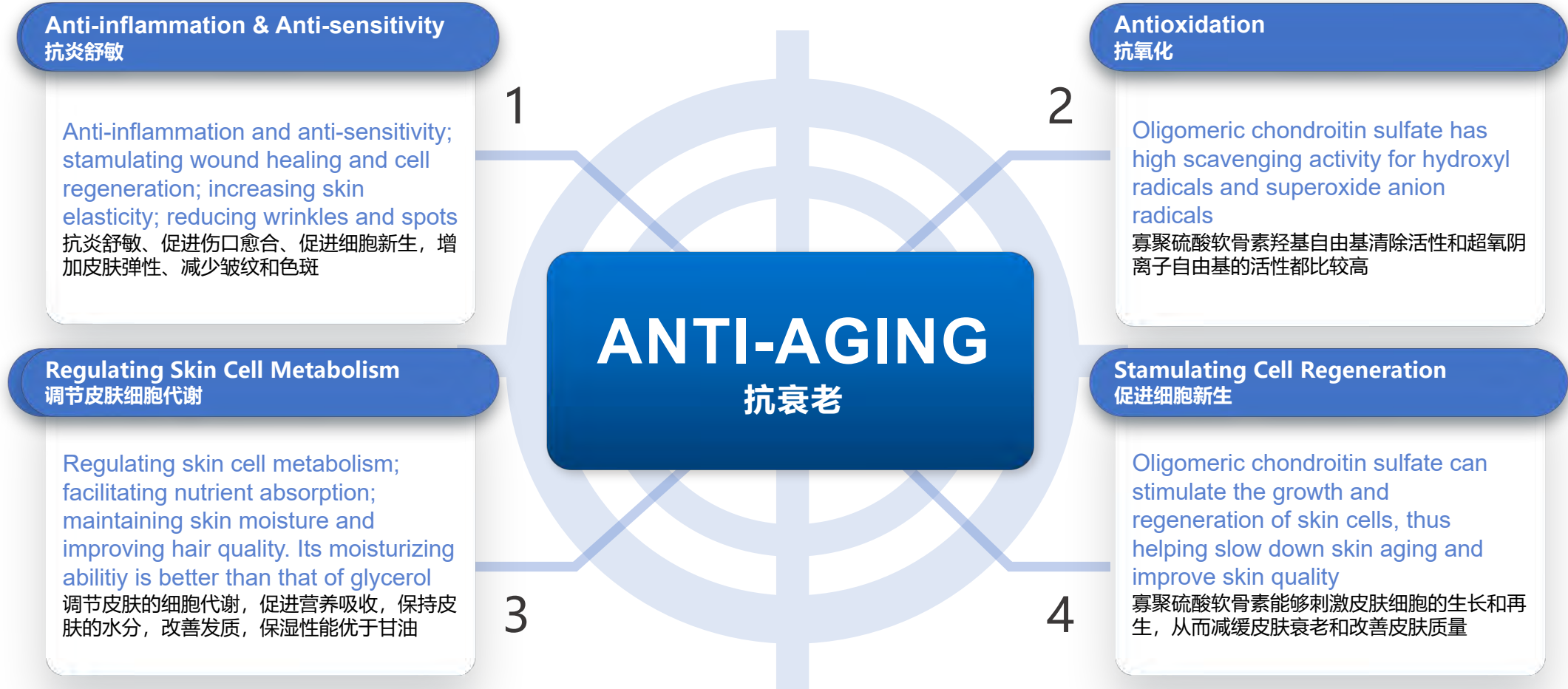
- **Molecular Weight: $\leq 2.5k$ Da**
分子量 ≤ 2500 Da
- **Good Permeability**
渗透性好
- **Bioactivity Greatly Improved**
生物活性极大提高

Due to its small molecular weight, oligomeric chondroitin sulfate has greatly improved its anti-inflammatory, anti-sensitivity, wound healing and cell regeneration stimulating functions.

寡聚硫酸软骨素钠由于分子量小，它的抗炎舒敏、促进伤口愈合、促进细胞新生等功能有很大提高。



EFFICACY MECHANISM - IN SKIN 功效机理 - 皮肤



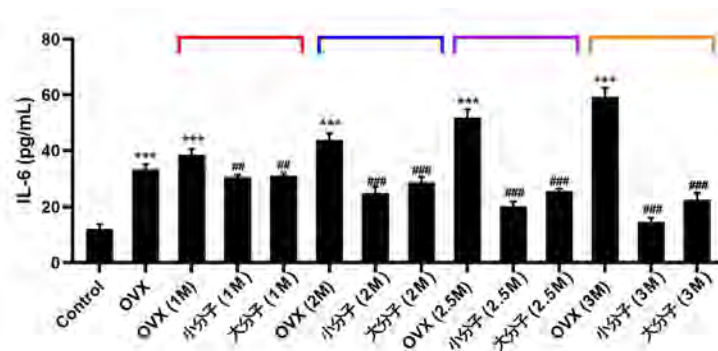
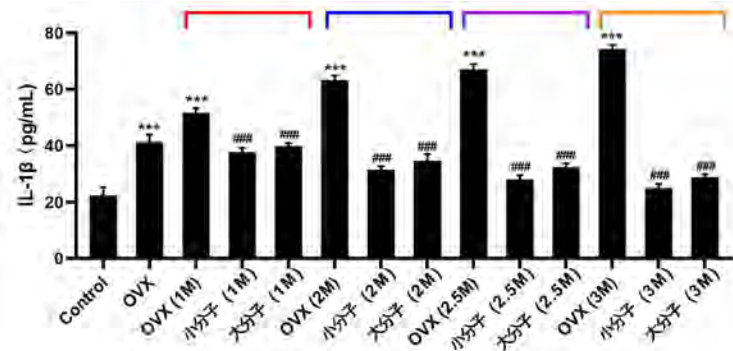
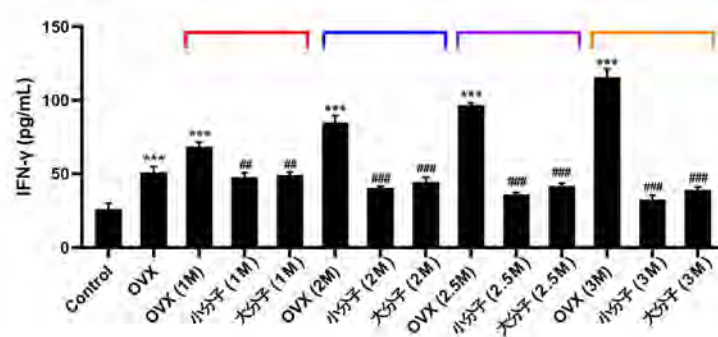
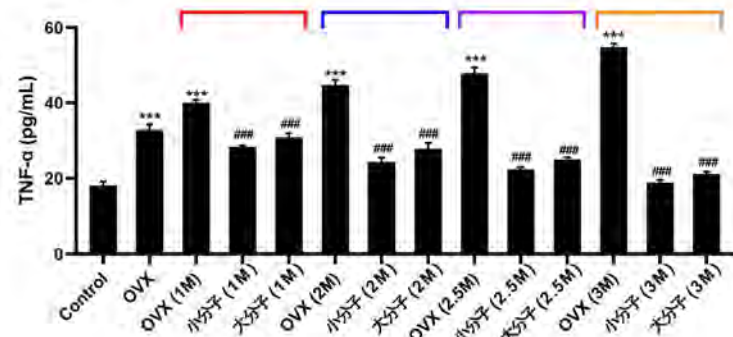


EFFICACY TEST - IN BONE (IN VIVO; IN MICE) 功效实验 - 骨骼 (小鼠; 体内)

Detection of Inflammatory Factors 炎症因子检测

The test results showed that: the level of inflammatory factors in OVX mice increased significantly after osteoporosis, and then the level of inflammatory factors in the serum of OVX mice without drug intervention gradually increased with time, while the serum inflammatory factors of OVX mice after HMyouth® o-CS intervention gradually decreased with time, and the anti-inflammatory effect of HMyouth® o-CS group was better than large molecule group.

检测结果显示: 骨松后(OVX) 炎性因子水平显著升高, 随后未经药物干预的OVX 小鼠血清中炎性因子水平随着时间延长逐渐升高, 而经过HMyouth® o-CS干预后的 OVX 小鼠血清炎性因子随着时间延长逐渐降低, 且HMyouth® o-CS组的抗炎效果要优于大分子组。



CONCLUSION 结论

HMyouth® o-CS has the effect of anti-inflammation, improving bone mineral density and alleviating bone loosening. HMyouth® o-CS具有抗炎、提高骨密度缓解骨松的功效。

And the effect of the oligomeric chondroitin sulfate is better than the large molecule chondroitin sulfate. 且寡聚硫酸软骨素效果优于大分子硫酸软骨素。



EFFICACY TEST - IN HAIR(IN VIVO; IN MICE) 功效实验 - 毛发 (小鼠; 体内)

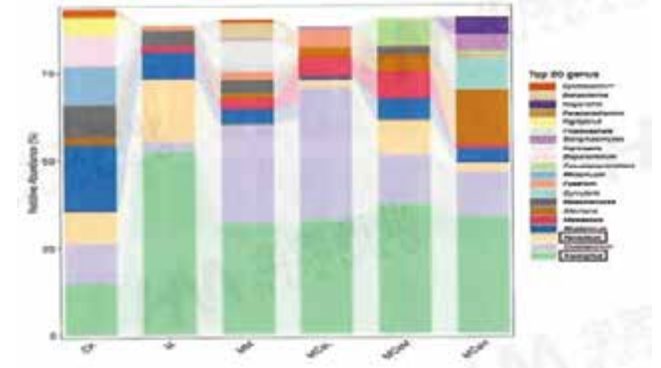
Test 1: HMyouth® o-CS's Effects on Microorganisms

实验1-HMyouth® o-CS对微生物的影响

Results 实验结果

The content of *Aspergillus* and *Penicillium*, which may cause dermatitis and alopecia, decreased significantly in minoxidil positive drug group (MMD) and HMyouth® o-CS intervention group.

曲霉菌和青霉菌在米诺地尔阳性药物组(MMD)和HMyouth® o-CS干预组中含量明显下降, 二者可能引起皮炎和脱发。



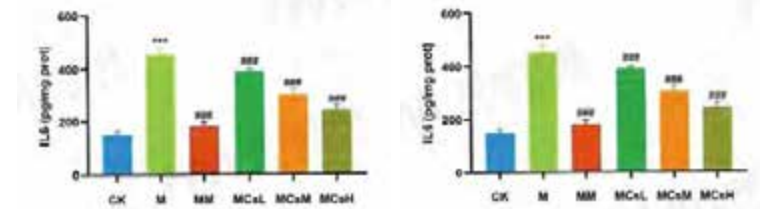
Test 2: HMyouth® o-CS's Effects on Inflammation

实验2-HMyouth® o-CS对炎症的影响

Results 实验结果

The inflammatory level of model group (M) was higher...but the inflammatory level of HMyouth® o-CS medium concentration (MCsM) and high concentration (MCsH) groups decreased significantly.

模型组(M)的炎性水平较高.....但HMyouth® o-CS中浓度(MCsM)和高浓度(MCsH)组的炎性水平降低较为明显。



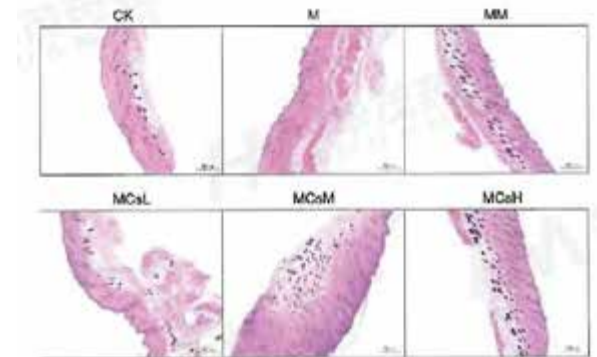
Test 3: HMyouth® o-CS's Effects on the Number of Hair Follicles

实验3-HMyouth® o-CS对毛囊数量的影响

Results 实验结果

Pathological HE staining showed that the number of hair follicles in the model group was significantly reduced...but the number of hair follicles in the HMyouth® o-CS medium concentration (MCsM) and high concentration (MCsH) groups was significantly increased.

病理 HE 染色可以看出, 模型组的毛囊数量明显减少.....但HMyouth® o-CS中浓度(MCsM)和高浓度(MCsH)组的毛囊数量则显著增多。



CONCLUSION 结论

HMyouth® o-CS can prevent hair loss by inhibiting fungi, lowering inflammatory level and increasing hair follicles number.

HMyouth® o-CS可以通过抑制真菌、降低炎症水平和增加毛囊数量来预防脱发。



EFFICACY TEST - OIL CONTROL (IN VIVO) 功效实验 - 控油 (体内)

Oil Red O Staining Experiment 油红O染色实验

Oil red O is a strong lipid solvent and dyeing agent, easy to combine with triglycerides in the form of small lipid droplets, and has a slightly poor binding force with phospholipids.

油红 O 是很强的脂溶剂和染脂剂，较易与甘油三脂结合呈小脂滴状，与磷脂结合力稍差。

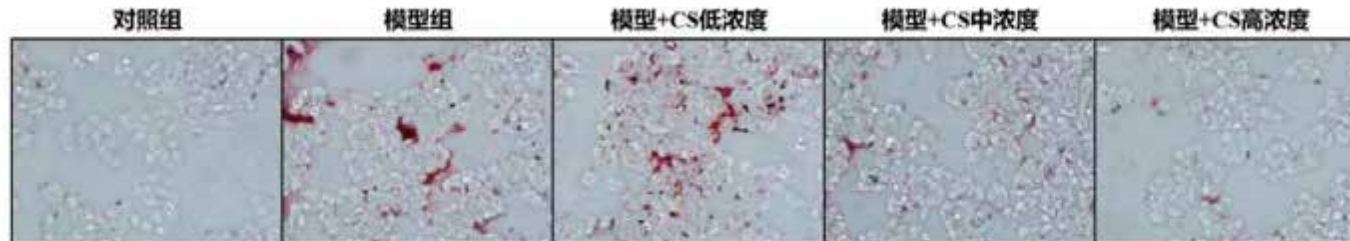
The solubility of dyes in intracellular lipids is greater than that in the original solvent, so the dyes are transferred from organic solvents to lipids to stain the fat during dyeing.

染料在细胞内脂质的溶解度较原溶剂中的溶解度更大，所以在染色时染料就从有机溶剂转移入脂质而使脂肪染色。

RESULTS 实验结果

After the induction of dihydrotestosterone and linoleic acid in SZ95 cells, the number of oil droplets in the model group increased significantly, while the formation of oil droplets decreased after HMyouth® o-CS intervention... The results showed that HMyouth® o-CS at medium concentration could significantly inhibit the formation of oil droplets.

SZ95 细胞在双氢睾酮和亚油酸诱导后，模型组的油滴明显增多，而HMyouth® o-CS 干预后油滴形成减少.....实验结果表明中浓度的HMyouth® o-CS 可明显抑制油滴形成。



CONCLUSION 结论

HMyouth® o-CS can resist oxidative stress (ROS/SOD), inhibit the level of MMP, improve the expression level of COL I, and stimulate the migration of skin fibroblasts. Therefore, it has a certain tightening and anti-wrinkle effect.

HMyouth® o-CS 具有抗氧化应激(ROS/SOD)、抑制 MMP 水平、提高 COL I 表达水平、促进皮肤成纤维细胞迁移，因此具有一定的紧致抗皱功效。

HMyouth® o-CS can also inhibit the secretion of oil and has a certain oil control effect.

HMyouth® o-CS 还能抑制油脂的分泌，具有一定的控油功效。



MARKET APPLICATION - DIETARY SUPPLEMENT 市场应用 - 膳食补充剂

HMyouth® o-CS: NEW HIGHLIGHT FOR JOINT FORMULA

HMyouth® o-CS: 关节配方新亮点



NaturaStar Glucosamine & Small Molecule Chondroitin Sulfate Tablets(USA)
NaturaStar氨糖小分子硫酸软骨素片(美国)

Efficacy: Relieving joint inflammation and repairing joint tissue damage
功效: 舒缓关节炎症、修护关节组织损伤

SEMAI Glucosamine & Chondroitin
SEMAI氨糖软骨素

Efficacy: Anti-inflammation, pain relief, lubrication, repair
功效: 消炎、缓痛、润滑、修复



Nature's Way Liquid Glucosamine & Chondroitin

Nature's Way液体氨糖软骨素

Efficacy: Replenishing cartilage, comforting joints, lubricating joints
功效: 补充软骨, 舒适关节, 关节润滑



Double-Heart Bone Collagen Oral Solution
双心骨胶原蛋白口服液

Efficacy: Joint injury, cartilage damage, joint pain, etc
功效: 关节受伤、软骨受损、关节疼痛等





MARKET APPLICATION - COSMETICS 市场应用 - 化妆品

HMyouth® o-CS: NEW STAR OF OIL CONTROL & ANTI-AGING

HMyouth® o-CS: 控油抗衰新明星



HABA Moisturizing and Softening Lotion
HABA 润泽柔肤水

Efficacy: Softening skin, balancing water & oil
功效: 柔嫩肌肤, 平衡水油

Lepeni Caviar Essence Filling Cream
莱珀妮鱼子精华充盈面霜

Efficacy: Moisturizing and tightening skin
功效: 补水保湿、紧致肌肤



Estee Lauder Miracle Anti-Wrinkle Essence
雅诗兰黛奇迹抗皱精华露

Efficacy: Repairing skin, regenerating collagen, tightening and anti-wrinkle
功效: 修护肌肤自身胶原再生, 紧致抗皱

WIS Capsule Mask
WIS 胶囊面膜

Efficacy: Deep moisturizing, soothing and repairing, long-term moisturizing
功效: 深彻补水, 舒缓修护, 长效保湿



OLIGOMERIC β -1,3-GLUCAN

寡聚 β -1,3葡聚糖

HMyouth[®] o-BG

β -glucan, generally derived from yeast or oat, has excellent immunity enhancing effects and is widely used in food and cosmetics.

β -葡聚糖，一般源自酵母或燕麦，具有优良的提高免疫力等功效，广泛应用与食品与化妆品中。

HMyouth[®] o-BG is a unique, innovative, water-soluble and 100% β -1,3 bond(bioactivity source) β -glucan. Produced by proprietary biotechnology, it has great application potential.

HMyouth[®] o-BG, 是华茂采用专有生物技术生产的一款全新的创新型 β -葡聚糖，具有高水溶性和100% β -1,3键的特点，具有巨大的应用潜力。

Function: Immunity improvement, soothing, anti-wrinkle, etc.

功效：增强免疫、舒缓、抗皱等

Purity: $\geq 99.0\%$ (HPLC) 纯度: $\geq 99.0\%$ (HPLC)

Mw: 700-900 Da 分子量: 700-900 Da

Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe

Huamao's Advantages •Unique •Nice solubility •100% β -1,3 bond

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •独一无二 •高水溶性 •100% β -1,3 键



EFFICACY TEST - ANTI-WRINKLE(IN VITRO) 功效实验 - 抗皱 (体外)

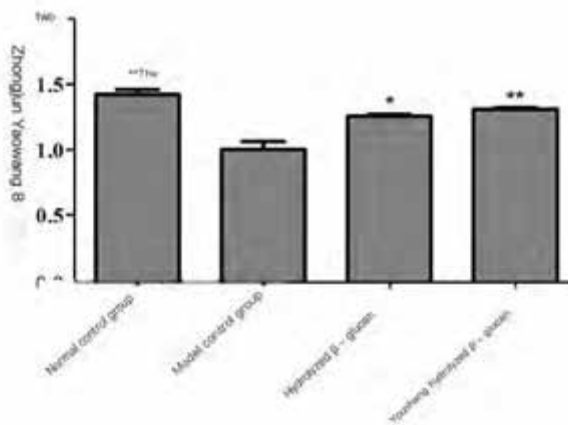
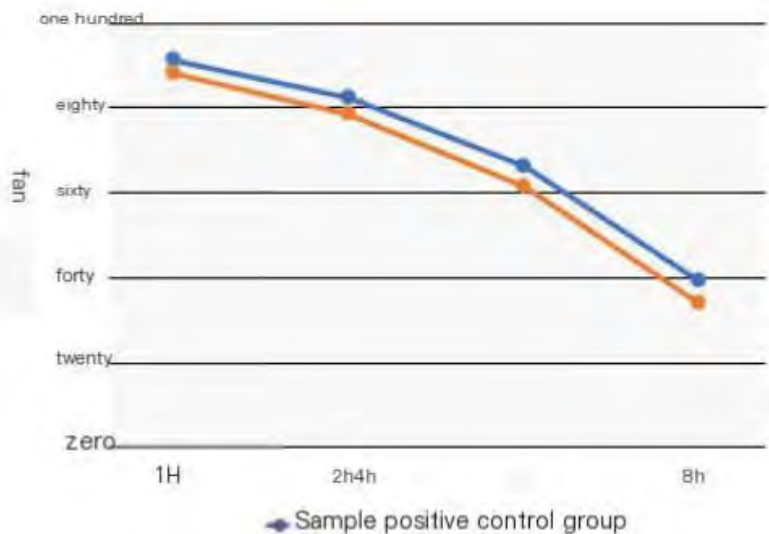


Figure 1. Column chart of relative expression of COL1A1 gene Compared with the model control group, * $p < 0.05$, ** $p < 0.01$

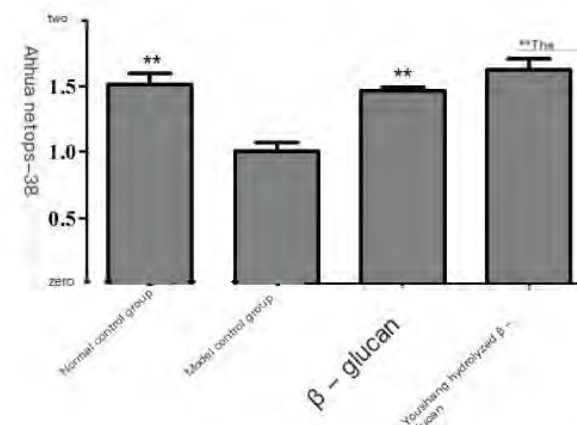


Figure 2. Column chart of relative expression of COL3A1 gene Compared with the model control group, ** $p < 0.01$

RESULTS 实验结果

It was observed that the relative expression of COL1A1 and COL3A1 genes in the sample HMyouth® o-BG group was significantly increased compared with the model control group, revealing that the sample has anti wrinkle effect.
观察发现, 样品HMyouth® o-BG组的 COL1A1、COL3A1 基因相对表达量与模型对照组相比均明显增加, 揭示了该样品具有抗皱功效。

CONCLUSION 结论

Under the conditions of this experiment, the HMyouth® o-BG sample has significant anti-wrinkle effect.

在本次实验条件下, 样品HMyouth® o-BG具有显著的抗皱功效。



EFFICACY TEST - SOOTHING(IN VITRO) 功效实验 - 舒缓 (体外)

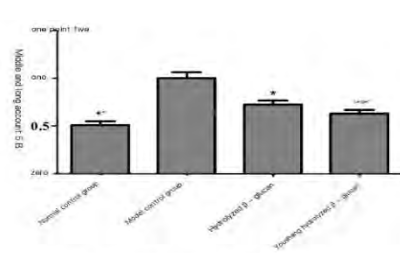


Figure 1. Column diagram of TNF-α gene relative expression compared with the model control group. *p<0.05, **p<0.01

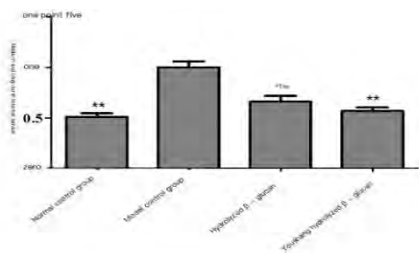


Figure 2. Column diagram of relative expression of IL-6 gene compared with the model control group. *p<0.05, **p<0.01

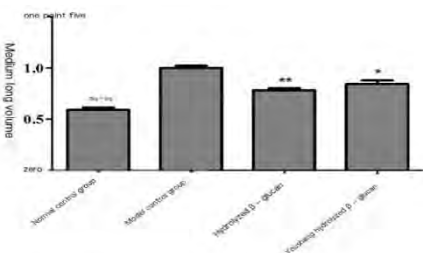


Figure 3. Column diagram of relative expression of IL-8 gene compared with the model control group. *p<0.05, **p<0.01, ***p<0.001

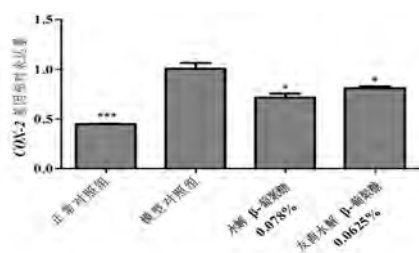


图 4. COX-2 基因相对表达量柱形图与模型对照组比较, *p<0.05,***p<0.001

Test items	Sample name	Detection concentration	Relative expression of TNF-α gene	P value	detection result
Soothing effect	Hydrolyzed β-glucan	0.078%	zero point seven two four	< 0.05	remarkable
	Youshang hydrolyzed β-glucan	0.0625%	zero point six three zero	< 0.01	remarkable

Test items	Sample name	Detection concentration	Relative expression of IL-6 gene	P value	detection result
Soothing effect	Hydrolyzed β-glucan	0.078%	zero point six six four	< 0.05	remarkable
	Youshang hydrolyzed β-glucan	0.0625%	zero point five seven two	< 0.01	remarkable

Test items	Sample name	Detection concentration	Relative expression of IL-8 gene	P value	detection result
Soothing effect	Hydrolyzed β-glucan	0.078%	zero point seven eight three	< 0.01	remarkable
	Youshang hydrolyzed β-glucan	0.0625%	zero point eight four five	< 0.05	remarkable

Test items	Sample name	Detection concentration	Relative expression of COX-2 gene	P value	detection result
Soothing effect	Hydrolyzed β-glucan	0.078%	zero point seven one six	< 0.05	remarkable
	Youshang hydrolyzed β-glucan	0.0625%	zero point eight one one	< 0.05	remarkable

RESULTS 实验结果

It was observed that the relative expression of TNF-α, IL -6, IL-8, COX-2 genes in the HMyouth® o-BG group was significantly reduced compared with the model control group, revealing that the sample has a soothing effect.

观察发现, HMyouth® o-BG样品组的 TNF-α, IL -6, IL-8, COX-2基因相对表达量与模型对照组相比, 均明显减少, 揭示了该样品具有舒缓功效。

CONCLUSION 结论

Under the conditions of this experiment, the HMyouth® o-BG sample has significant soothing effect.

在本次实验条件下, 样品HMyouth® o-BG具有显著的舒缓功效。



EFFICACY TEST - MOISTURIZING(IN VITRO) 功效实验 - 保湿 (体外)

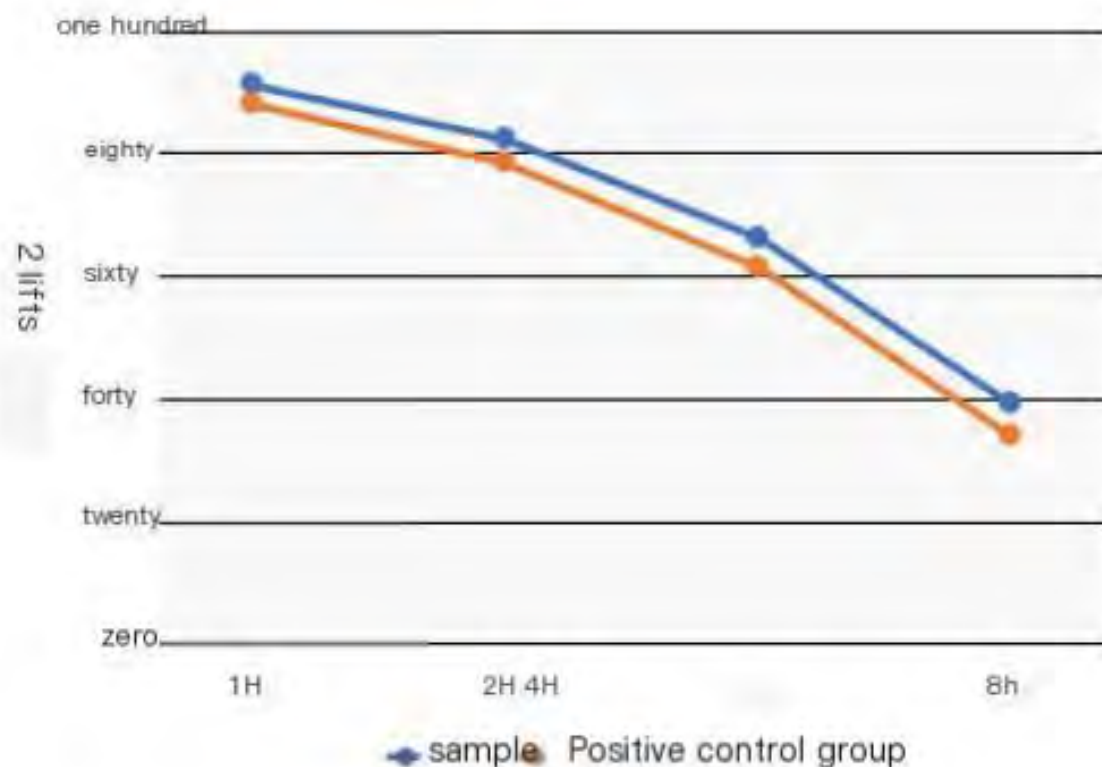


Figure 1. moisture retention curve

RESULTS 实验结果

It was observed that the moisture retention rates of the sample HMyouth® o-BG group for 1h, 2h, 4h and 8h were 91.12%, 82.13%, 65.96% and 39.07%, respectively, which were better than those of the positive control group, indicating that HMyouth® o-BG has moisture retention effect under this experimental condition.

观察发现, 样品HMyouth® o-BG组1h、2h、4h和8h的保湿率分别为91.12%、82.13%、65.96%、39.07%, 优于阳性对照组, 表明HMyouth® o-BG在该实验条件下具有保湿功效。

CONCLUSION 结论

Under the conditions of this experiment, the HMyouth® o-BG sample has moisturizing effect.

在本次实验条件下, 样品HMyouth® o-BG具有保湿功效。



MARKET APPLICATION - COSMETICS 市场应用 - 化妆品



Yuquan β - Glucan Essence
禹泉 β -葡聚糖精华液

Moisturizing, forming a protective film,
reducing water loss and improving
skin moisture content
补水保湿，形成锁水保护膜，减少水分流失提
升肌肤含水量



**Elementary Repair and Soothing
Ampoule Essence**
肌本演绎修护舒缓次抛精华液

Moisturizing, soothing and repairing
skin, suitable for people with sensitive
muscle
补水保湿，舒缓修护肌肤，适用于敏感肌人群



**John Jeff β - Glucan High Moisturizing
Cream**
John Jeff β -葡聚糖高保湿霜

With good skin affinity and forming a protective
film with good permeability on the skin surface
to prevent water loss and moisturize
亲肤性好，在皮肤表层形成一层渗透性好的保护膜，阻
止水分流失，保湿滋润





MARKET APPLICATION - DIETARY SUPPLEMENT 市场应用 - 膳食补充剂



Ameri-Vita Yeast β -Glucan
艾美唯他瑞酵母 β -葡聚糖

Significantly effective in improving
baby's immunity
在提升宝宝免疫力方面具有显著的效果



NOW[®] β -1,3/1,6-D-Glucan
NOW[®] β -1,3/1,6-D-葡聚糖

Playing a vital role in the function of
healthy body resistance system
在健康的机体抵抗系统功能中起着至关重要的作用。



XX Glucosamine Capsules
某氨糖胶囊

Supporting overall immune system
function
and physical defense mechanism
支持整体免疫系统功能和身体防御机制

OLIGO/MICRO SODIUM HYALURONATE

寡聚/水解透明质酸钠

HMbiowatery® o/m-HA

Oligo/Micro sodium hyaluronates are the smallest HAs in nature, showing outstanding bioactivities compared with other HAs.

寡聚/水解透明质酸钠是自然界中最小的透明质酸，显示出与其他透明质酸相比更优秀的生物活性。

HMbiowatery® o/m-HA, produced by proprietary biotechnology, can easily reach dermis and show outstanding bioactivities.

HMbiowatery® o/m-HA, 由华茂专有生物技术生产，可以轻松到达真皮层并显示出出众的生物活性。

Function: Anti-inflammation, repairing, moisturizing, etc.

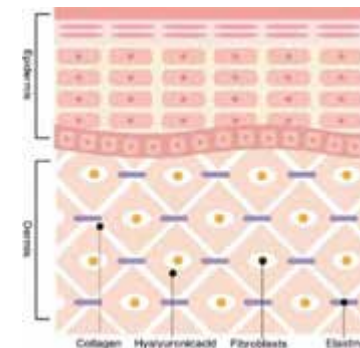
Purity: $\geq 95.0\%$ (HPLC)

Mw: 800-2000 Da / 30-50k Da

功效: 抗炎、修复、保湿等

纯度: $\geq 95.0\%$ (HPLC)

分子量: 800-2000 Da / 30-50k Da



Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe

Huamao's Advantages •Ultra-low Mw •Cost-effective •Rich study and testing

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •超低分子量 •高性价比 •丰富功效及安全研究



INTRODUCTION OF OLIGO/MICRO SODIUM HYALURONATE 寡聚透明质酸钠介绍

Hyaluronic acid(HA), is one of the components of human skin and the most widely distributed acidic mucose in human body.

HAs with different molecular weights have different skin care effects.

In general, the smaller the molecular weight, the better bioactivity and absorption the HA will have.

透明质酸(HA)是人体皮肤的构成之一，是人体内分布最广的一种酸性黏糖。

不同分子量的透明质酸钠，护肤效用也不同。

总的来说，分子量越低，透明质酸就拥有越好的生物活性和吸收性。

MICRO-MOLECULE SODIUM HYALURONATE

小分子透明质酸钠
(10k Da - 1m Da)

Made by enzymatic hydrolysis on the basis of conventional molecular weight HA, playing a better moisturizing and anti-inflammatory effect in the essence.

是在常规分子量基础上通过酶解降低制得的，在精华液中可以发挥更好的保湿和抗炎效果。

OLIGOMERIC SODIUM HYALURONATE

寡聚透明质酸钠
(<10k Da)

Able to rapidly penetrate into dermis, slightly expand capillaries, stimulate blood circulation and nutrient absorption of skin cells, improve metabolism, enhance skin elasticity and delay skin aging
能快速渗入真皮，轻微扩张毛细血管，促进血液循环，改善新陈代谢，促进皮肤细胞营养吸收，增强皮肤弹性、延缓皮肤衰老



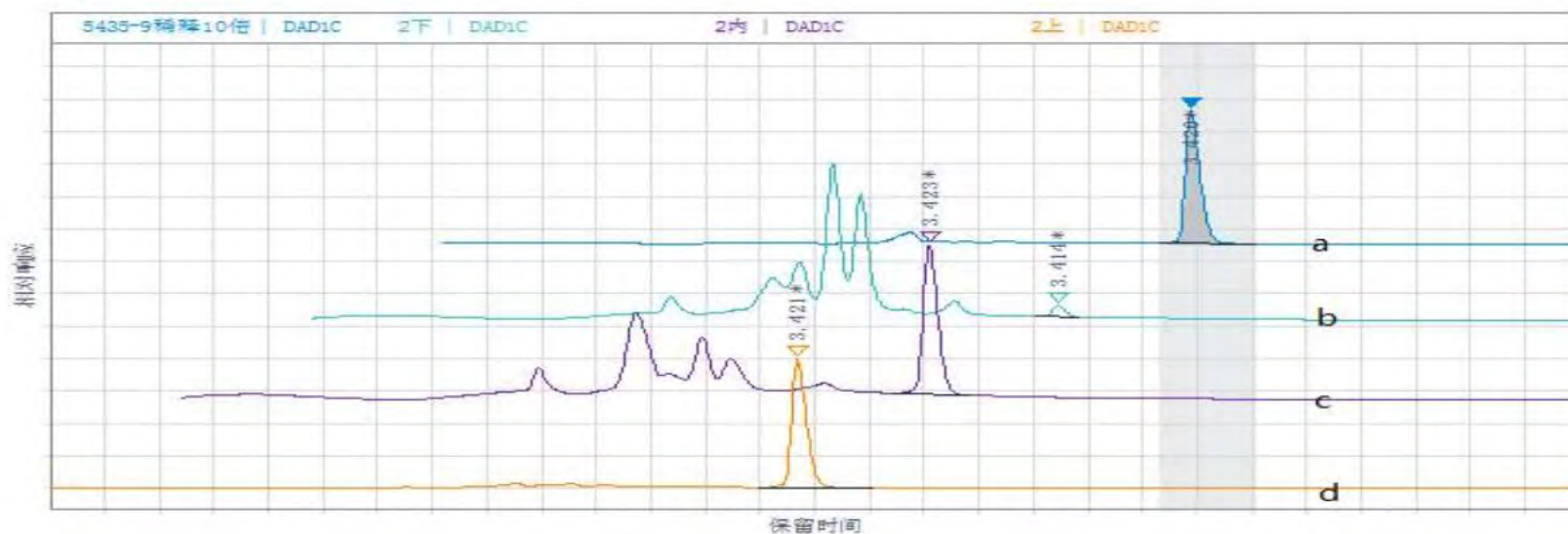


EFFICACY TEST (IN VITRO) 功效实验 (体外)

Through professional experiments, it is proved that HMbiowatery® o-HA has excellent transdermal properties.

专业实验证明, HMbiowatery® o-HA拥有极佳的透皮性。

Sample name 样品名称	Transmittance (%) 透过率 (%)	Diffusivity (%) 扩散率 (%)	Permeability (%) 渗透率 (%)	Recovery rate (%) 回收率 (%)
HMbiowatery® o-HA	8.6	8.2	16.8	93.4



RESULTS 实验结果

Under the conditions of this experiment, HMbiowatery® o-HA showed transdermal property with a permeability of 16.8%.
在本次实验条件下, HMbiowatery® o-HA显示透皮性, 渗透率为16.8%。

LOW-MW POLY- γ -GLUTAMIC ACID

低分子聚谷氨酸钠

HMbiowatery® PGA

Low-Mw Poly- γ -glutamic acid is a natural polymer with extraordinary moisturizing ability and nice scavenging effect on free radicals.

低分子谷氨酸钠是一种天然聚合物，具有非凡的保湿能力和良好的清除自由基的效果。

HMbiowatery® PGA, produced by proprietary biotechnology, shows remarkable moisturizing and free redical scavenging capabilities.

HMbiowatery® PGA采用华茂专有生物技术生产，显示出卓越的保湿和清除自由基能力。

Function: Moisturizing, anti-aging, whitening, etc.

Purity: $\geq 98.0\%$ (HPLC)

Mw: 100-300 Da

功效: 保湿、抗衰、美白等

纯度: $\geq 98.0\%$ (HPLC)

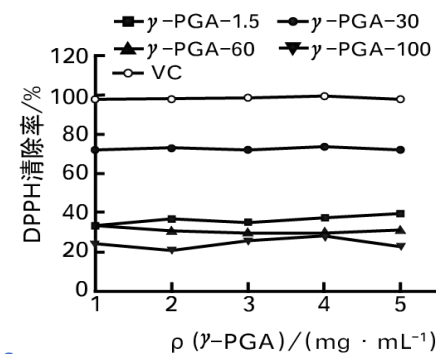
分子量: 100-300 Da

Product's Advantages •Mildness •Multifunctional •Natural •Safe

Huamao's Advantages •Better Antioxidation •Cost-effective •Rich study and testing

产品优势 •温和 •多效 •天然 •安全

华茂优势 •更强抗氧化性 •高性价比 •丰富功效及安全研究





INTRODUCTION & EFFICACY MECHANISM 介绍与功效机理

What is Special for HMbiowatery® PGA?

HMbiowatery® PGA有什么特别之处?

HMbiowatery® PGA has a specially-designed molecular weight that gives it better anti-aging and repairing abilities compared with normal PGAs.

HMbiowatery® PGA具有特别设计的分子量，因此与普通PGA相比，具有更好的抗老化和修复能力。

MOISTURIZING

保湿

HMbiowatery® PGA's water gel is colorless, odorless, transparent and soft, with a unique three-dimensional space structure and super strong water absorption and moisturizing ability.

HMbiowatery® PGA水胶为无色无味透明柔软胶质，有独特的三维空间结构，有超强的吸水保湿能力。

REPAIRING

修护

HMbiowatery® PGA has anti-aging effect, helping the skin rebuild a structurally intact three-layer barrier and stimulating the barrier-damaged skin to return to a healthy status.

HMbiowatery® PGA具有抗衰老的功效，帮助皮肤重新建立结构完整的三层屏障，促使屏障受损肌肤重回健康状态。

ANTI-AGING

抗衰老

HMbiowatery® PGA has anti-wrinkle effect, improving cell viability, inhibiting the activity of hyaluronidase, alleviating the degradation of HA in skin connective tissue, preventing the skin from losing elasticity and wrinkles.

HMbiowatery® PGA具有抗皱的功效，可以提高细胞活力抑制透明质酸酶活性的作用，可缓解皮肤结缔组织中透明质酸的降解，进而防止因皮肤失去弹性和产生皱纹。



ECTOIN

依克多因

HMskcare® ECT

Ectoin is a multifunctional bioactive substance found in salt lake bacteria, widely used in skincare as an excellent moisturizer and repairer.

依克多因是一种存在于盐湖细菌中的多功能生物活性物质，作为优良的保湿和修护剂广泛应用于护肤品中。

HMskcare® ECT, produced by proprietary synthetic biotechnology, is purer (≥99.0%), cheaper, more effective and safer in food and cosmetics.

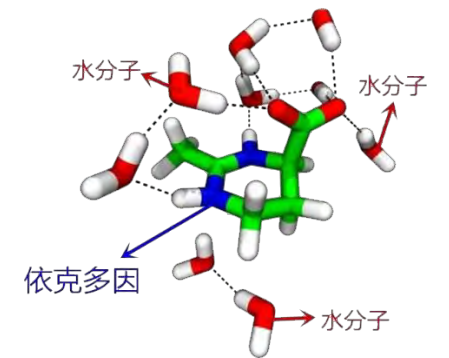
HMskcare® ECT采用华茂专有合成生物技术生产，在食品和化妆品中更纯净(>99.0%)、更便宜、更有效和更安全。

Function: Repairing, anti-aging, moisturizing, etc.

Purity: ≥99.0% (HPLC)

功效：修护、抗衰老、保湿等

纯度：≥99.0% (HPLC)



Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe

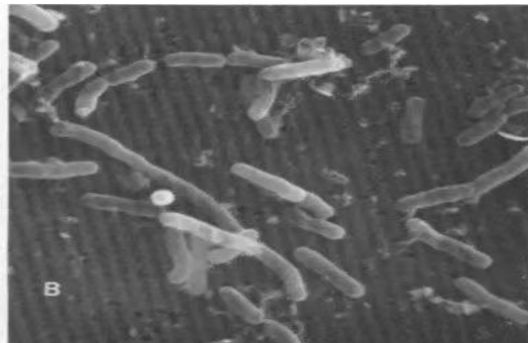
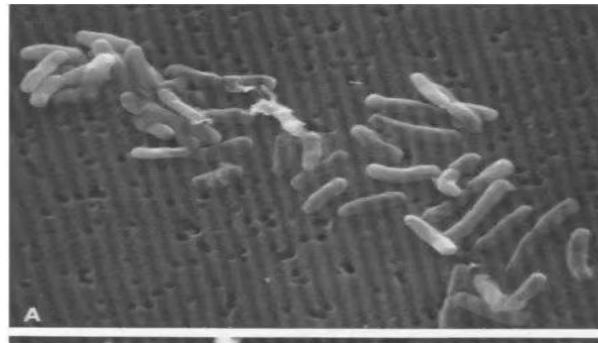
Huamao's Advantages •Pure •Odorless •Cost-effective •Rich study and testing

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •高纯度 •无气味 •高性价比 •丰富功效及安全研究



INTRODUCTION OF ECTOIN 依克多因介绍



MOTHER OF ECTOIN 依克多因之母

In 1985, German scientist Professor Galinski found halophilic bacteria in Wadielnatron Salt Lake in the desert area of Egypt.

1985年，德国科学家Professo Galinski在埃及沙漠地区Wadieinatron盐湖中发现了嗜盐菌。

Halophytes will produce a natural protective component - **Ectoin** in the outer layer of cells under high temperature, dry, strong UV irradiation and high salinity environment.

盐菌会在高温、干燥、强UV 照射、高盐度环境下，在细胞外层生成一种天然保护成分---**Ectoin**。



MARKET APPLICATION - COSMETICS 市场应用 - 化妆品

产品	名称	规格	功效	京东价格
	珀莱雅 (PROYA) 弹润透亮青春精华液	30ml	抗氧化 提亮肤色	¥ 269.00
	934 熬夜眼霜	18ml	补水保湿 提拉紧致 淡化细纹、黑眼圈 舒缓眼周	¥ 99.00
	迪奥 (Dior) 凝世金颜美容液	180ml	抗衰老 维稳肌肤 提亮肤色	¥ 1200.00
	瑗尔博士 (Dr.Alva) 益生菌精研深层修护面膜	10片	补水 保湿 修护	¥ 99.00
	娇兰 (Guerlain) 珍珠透白隔离防护乳	30ml	修饰肤色	¥ 590.00
	荷诺 (Histoire naturelle) 依克多因复活面霜	50ml	保湿、舒缓修护、舒缓镇定	¥ 158.00

Ectoin has been used in cosmetics for more than 30 years.
依克多因被用于化妆品有30多年的历史

Products from prestigious bands like Estee Lauder, Beidema, Shiseido, etc. have added Ectoin, which are welcomed by the market.

知名品牌如雅诗兰黛、贝德玛、资生堂等都在产品中添加了依克多因，很受市场欢迎。

Now, Ectoin has become a representative of emerging bioactives and is widely used.

如今，依克多因已成为新兴生物活性物的代表，应用十分广泛。

Recommended Dosage: 0.5-3.0%

建议添加量：0.5-3.0%

GLYCERYL GLUCOSIDE

甘油葡糖苷

HMbiowatery® GG

Glyceryl glucoside is a multifunctional bioactive substance found in a kind of desert plant that is used in skincare as a novel moisturizer and repairer.

甘油葡糖苷是一种在沙漠植物中发现的多功能生物活性物，被用作护肤品中的新型保湿剂和修复剂。

HMbiowatery® GG, produced by proprietary synthetic biotechnology, is purer (≥99.0%), cheaper, more effective and safer in food and cosmetics.

HMbiowatery® GG采用华茂专有合成生物技术生产，在食品和化妆品中更纯净(>99.0%)、更便宜、更有效和更安全。

Function: Moisturizing, repairing, anti-aging, etc.

Purity: ≥98.0% (HPLC)

功效：保湿、抗衰、抗皱等

纯度：≥98.0% (HPLC)



Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe

Huamao's Advantages •Pure •Cost-effective •Rich study and testing

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •高纯度 •高性价比 •丰富功效及安全研究



INTRODUCTION OF GLYCERYL GLUCOSIDE 甘油葡糖苷介绍

1

NATURAL PLANT COMPONENTS
天然植物成分



Survival for decades
losing 98% water
失去98%水分
也可生存数十年



Recovering quickly
given a little water
满“水”复活
遇水迅速恢复生命

2

7 ANTI-AGING EFFECTS
七大抗衰功效

Aquaporin Activation
水通道蛋白激活

Tissue Regeneration
组织再生

Free Radical Scavenging
自由基清除

Anti-microinflammation
抗微炎症

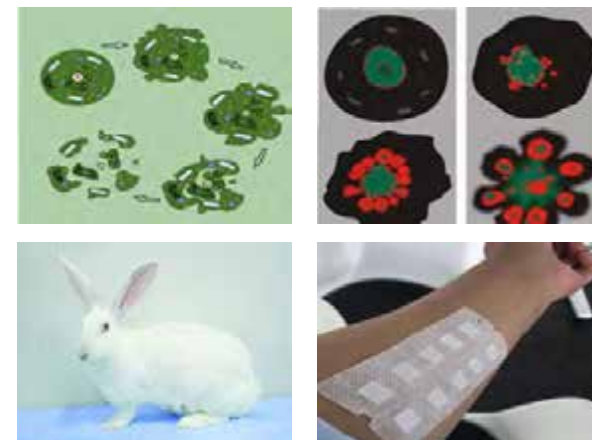
Collagen Regeneration
胶原蛋白再生

Cell Vitality Enhancement
增强细胞活力

Anti-photoaging
抗光老化

3

SAFE, NON-TOXIC, NON-IRRITATING
安全无毒无刺激性





MARKET APPLICATION - COSMETICS 市场应用 - 化妆品



Moisturizing Products
保湿产品

HMbiowatery® GG is an excellent moisturizer, which can provide long-term moisturizing effect.

HMbiowatery® GG是一种优秀的保湿剂，可以提供长效的保湿效果。



Anti-aging Products
抗衰老产品

HMbiowatery® GG has antioxidant properties and helps improve skin elasticity and tightness and reduce the appearance of fine lines and wrinkles.

HMbiowatery® GG具有抗氧化性质，可以帮助改善皮肤弹性和紧致度，减少细纹和皱纹的出现。



Repairing Products
修复产品

HMbiowatery® GG helps repairing of skin cells, stimulates the synthesis of collagen and HA and accelerates the wound healing and repair process.

HMbiowatery® GG有助于促进皮肤细胞的修复，刺激胶原蛋白和透明质酸的合成，加速伤口愈合和创伤修复过程。



Emollient Products
柔润剂

HMbiowatery® GG has a good soft effect, which can make the product texture smoother and improve the user's experience.

HMbiowatery® GG具有良好的柔润效果，可以使产品质地更加滑爽，提升使用体验。



Sunscreen Products
防晒产品

HMbiowatery® GG can provide a certain degree of UV absorption and scattering, which helps reduce UV damage to the skin.

HMbiowatery® GG可以提供一定程度的紫外线吸收和散射作用，有助于减少紫外线对皮肤的损伤。

α -ARBUTIN

α -熊果苷

HMBrighten® ABT

α -Arbutin is a natural bioactive substance that is famous for its strong whitening and anti-glycation abilities. Particularly, it is much more stable and effective than β -Arbutin.

α -熊果苷是一种天然生物活性物，具有强大的美白和抗糖能力。特别是，它比 β -熊果苷显著地更加稳定和有效。

HMBrighten® ABT, produced by proprietary synthetic biotechnology, is purer ($\geq 99.0\%$), cheaper, more effective and safer in food and cosmetics.

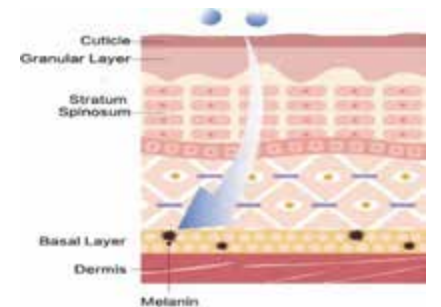
HMBrighten® ABT采用华茂专有合成生物技术生产，在食品和化妆品中更纯净($>99.0\%$)、更便宜、更有效和更安全。

Function: Whitening, anti-glycation, repairing, etc.

Purity: $\geq 99.0\%$ (HPLC)

功效：美白、抗糖、修护等

纯度： $\geq 99.0\%$ (HPLC)



Product's Advantages •Highly Bio-active •Multifunctional •Natural •Safe

Huamao's Advantages •Pure •Stable •Cost-effective •Rich study and testing

产品优势 •高生物活性 •多效 •天然 •安全

华茂优势 •高纯度 •高稳定性 •高性价比 •丰富功效及安全研究



INTRODUCTION OF α -ARBUTIN α -熊果苷介绍

α -Arbutin has good photothermal stability, no cytotoxicity within the safe dose and the whitening effect more than 10 times better than that of β - Arbutin.

α -熊果苷具有良好的光热稳定性，在安全剂量内无细胞毒性，而且美白效果比 β -熊果苷好10倍以上。

Product 产品	Solubility 水溶性	Stability 稳定性	Preparation Method 制备方法	Remarks 备注
α-Arbutin α -熊果苷	Soluble in water 溶于水	Tolerant to high temperature; Intolerant to strong acid alkali and UV 耐高温; 不耐强酸强碱、紫外线	Biotransformation 生物转化	High safety; The whitening effect is more than 10 times better than that of β - Arbutin 安全性较高; 美白效果比 β -熊果苷强10倍以上
β- Arbutin β -熊果苷	Soluble in hot water 溶于热水	Decomposition occurs above 50 ° C 50°C以上会分解	Chemical Synthesis 化学合成	Low whitening effect; Poor safety 美白效价较低; 安全性较差



EFFICACY MECHANISM & APPLICATION 功效机理与应用

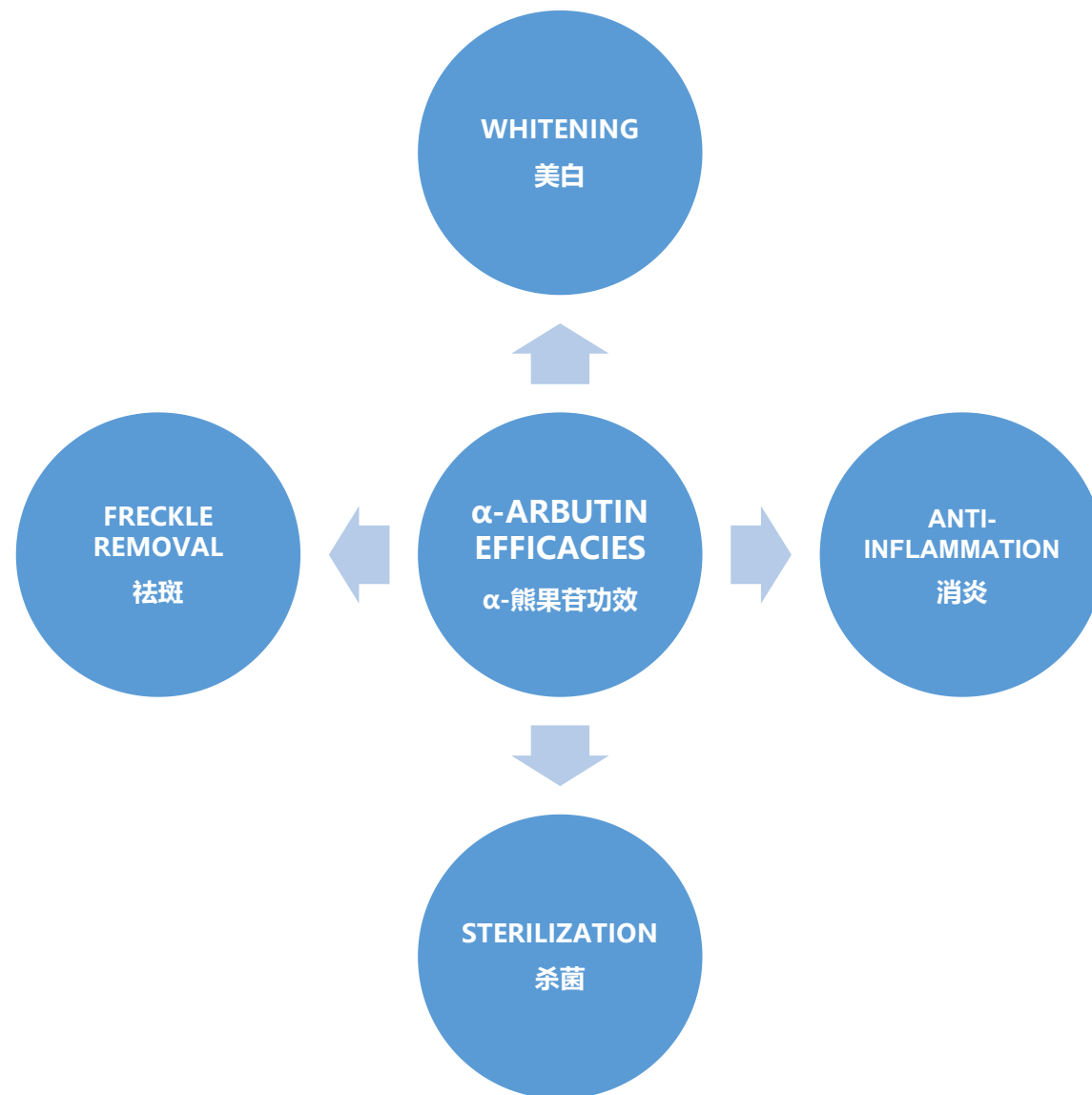
α-Arbutin is one of the safest and most effective whitening ingredients and an ideal bioactive agent of skin whitening and freckle removing.

α-熊果苷是当今流行的最为安全有效的美白原料之一，也是理想皮肤美白祛斑活性剂。

BRANDS WITH ARBUTIN ADDED (INCLUDING α & β)

添加熊果苷(含α、β类)的部分品牌

国货之光	国外品牌
<p>UNES 优理氏® 专注护肤领域</p> <p>柏氏®</p> <p>DERFRIEND 蝶兰®</p> <p>PROYA 珀莱雅</p> <p>WINGNA 薇诺娜</p> <p>COGI 高姿</p> <p>LUCENBASE 透真</p> <p>美肤宝 MEIFUBAO®</p> <p>片仔癀®</p> <p>WETCODE® 水密码</p> <p>御泥坊®</p> <p>OKADY 欧佩</p>	<p>Aocilenda 澳兰黛</p> <p>innisfree</p> <p>The Ordinary.</p> <p>DS DERMASENSA</p> <p>geoskincare 纽西之谜</p> <p>HOLA AUSTRALIA</p> <p>MISSHA</p> <p>TUNEMAKERS 调音师</p> <p>花印 HANAJIRISRI</p> <p>HEXSE 韩熙贞</p> <p>PHYTO-C SKIN CARE</p>
新兴品牌	
<p>HomeFacial Pro Beauty Creates</p> <p>XDG</p> <p>CHIOTURE 稚优泉®</p> <p>小迷糊</p> <p>NARUKO 牛尔亲研</p> <p>BISUTANG 碧素堂®</p>	



α-DEXTRANASE

α-葡聚糖酶

HMBrighten® α-DNase

α-Dextranase is a natural enzyme with clear and remarkable capability of targeted and efficient degrading of dextran, the main component of dental plaque.

α-葡聚糖酶是一种天然生物酶，可以高效降解右旋糖酐，后者是口腔中牙菌斑的主要成分。

HMBrighten® α-DNase, produced by proprietary biotechnology, has high enzyme activity and is highly promising in oral care application.

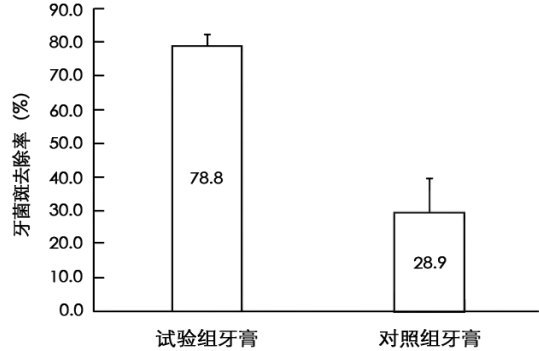
HMBrighten® α-DNase采用华茂专有生物技术生产，拥有高酶活，在口腔护理领域具有良好的应用前景。

Function: Anti-dental plaque, anti-dental caries, etc.

Enzyme Activity: ≥100k U/g

功效：预防牙菌斑、龋齿等

酶活：≥500 U/ml



Product's Advantages •Highly Bio-active •Efficient •Natural •Safe

Huamao's Advantages •High enzyme activity •Cost-effective •Rich study and testing

产品优势 •高生物活性 •高效 •天然 •安全

华茂优势 •高酶活 •高性价比 •丰富功效及安全研究



EFFICACY TEST(FROM LITERATURE) 功效实验 (来自文献)

Table 2 Absorbance (550nm) and plaque removal rate

Sample name	Absorbance (550nm)	Plaque removal rate (%)
PBS buffer	0.317 (± 0.002)	-
Toothpaste of test group	0.067 (± 0.012)	78.8 (± 3.79)
Control toothpaste	0.226 (± 0.033)	28.9 (± 10.47)

表2 吸光度(550nm)和牙菌斑去除率

样品名称	吸光度(550nm)	牙菌斑去除率(%)
PBS 缓冲液	0.317 (± 0.002)	-
试验组牙膏	0.067 (± 0.012)	78.8 (± 3.79)
对照组牙膏	0.226 (± 0.033)	28.9 (± 10.47)

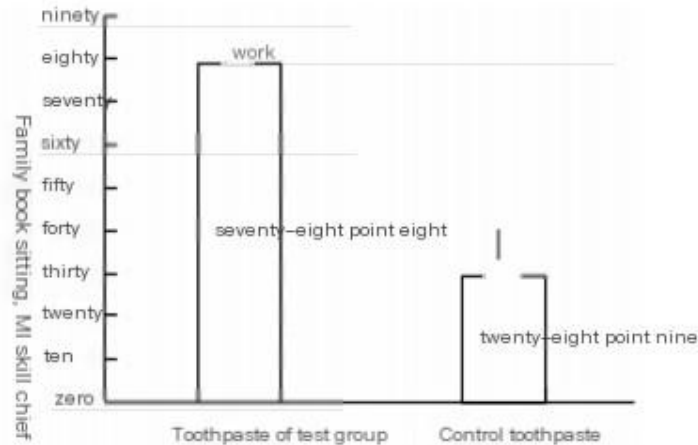


Figure 2 Comparison of plaque removal rate between toothpaste containing glucanase and toothpaste without glucanase

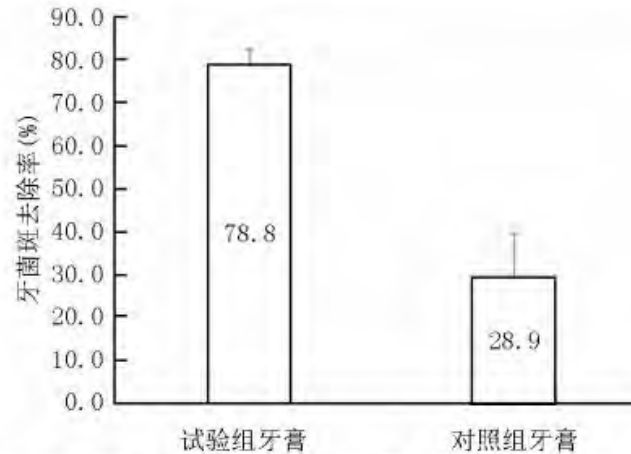


图2 含葡聚糖酶牙膏与不含葡聚糖酶牙膏的牙菌斑去除率对比

RESULTS 实验结果

The results showed that the plaque removal effect of the test group toothpaste(78.8%) was stronger than that of the control group toothpaste(28.9%), and there was a significant difference between the two groups (P < 0.05).

结果显示, 与对照组牙膏 (78.8%) 相比, 试验组牙膏 (28.9%) 去除牙菌斑效果更强, 且二者存在显著性差异(P < 0.05)。

CONCLUSION 结论

The toothpaste containing glucanase has a strong plaque removal effect by cutting off the α -1,6 glycoside chain of glucan in dental plaque. The test results show that the toothpaste in the test group can effectively prevent dental caries.

含有葡聚糖酶的牙膏通过切断牙菌斑中葡聚糖的 α -1,6 糖苷链而具有较强牙菌斑去除作用, 试验结果表明, 试验组牙膏可以有效地预防龋齿。

Data Source: Oral Care Industry News - 《Yoshiko Aoki, et al: Study on the decomposition and removal of dental plaque model by toothpaste containing glucanase,》 2018, issue 3

数据来源: 口腔护理用品工业报-《青木优子等: 含葡聚糖酶牙膏对牙菌斑模型的分解和去除研究》2018年第3期



MARKET APPLICATION 市场应用



MOUTHWASH SERIES 漱口水系列

牙膏系列



DARLIE
黑人牙膏



Recommended Dosage
建议添加量

Gargle Water: 10ml or 15ml of each intake, about 500-1000 enzyme activities, with a minimum limit of 300 enzyme activities

Toothpaste: 7%

漱口水类：每次摄入量10ml或15ml，约500酶活~1000酶活，极限最小300酶活

牙膏类：7%

03

COMPANY SUMMARY

公司总结



COMPANY SUMMARY 公司总结



HIGH-END INGREDIENT

高端原料

- APIs 原料药
- Pharmaceutical Excipient 药用辅料
- Cosmetics & Food Bioactives 化妆品和食品生物活性物

EXPERT BIOACTIVES INNOVATOR

生物活性物创新专家



HIGH-END PREPARATION

高端制剂

- R&D 研发
- Manufacturing 生产
- CMO/CDMO 代工

COMPLETE INDUSTRIAL CHAIN

完整产业链



GROWTH POTENTIAL

增长潜力

- 300+ Personnel 研产创新人员300+
- 3 Production Bases 3大生产基地
- Rich Collaboration 丰富的合作

HUGE DEVELOPMENT ROOM

巨大发展空间

Thank you

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