



Greener Planet, Healthier World

HYGIEIA

*Pioneering Anti-Aging Technology,
Empowering a Health-centric Future*

Anti-Aging Raw Material & Finished-Product Solutions



About Hygieia: **Pioneer in Anti-Aging Technology**

Hygieia is an R&D-driven enterprise specializing in anti-aging raw material supply. Utilizing our proprietary Zymevolver® strain-construction & enzyme-engineering evolution platforms, we adopt biosynthetic technology to replace conventional extraction and chemical synthesis, and develop a new generation of precise, high-potency anti-aging molecules. We have built a product portfolio centered on cellular health, alongside an integrated R&D and manufacturing complex covering a total area of nearly 10,000 square meters.



Hygieia: Climbing New Heights



R&D Innovation & Global Certifications



R&D Patents

15+

Core-Technology Patents

Many

Invention patents undergoing
substantive examination

2

Software Copyrights



Technology
Platform

1500m²

Self-developed Zymevolver® strain-construction &
enzyme-engineering evolution platforms



Global
Certifications

FSSC 22000



FDA



Green Biosynthesis **Manufacturing Platform**



**Gene-Engineering
Platform**



**Strain-Engineering
Platform**



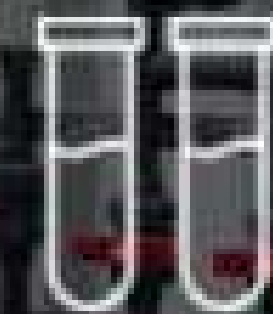
**Enzyme-Engineering
Platform**



**Pilot-Scale Production
Platform**



**Fermentation Research
Platform**



**Separation & Purification
Engineering Platform**

Manufacturing Platform

8000m² ↑

GMP-compliant production workshops enable large-scale and standardized manufacturing, ensuring stable product supply and consistent quality.

1000MT ↑

Phase-one raw-material production capacity at Weifang facility, Shandong Province.



Professional R&D Team

Hygieia Biotech's R&D team consists of PhDs, Masters and senior industry experts. Team members bring extensive experience and profound expertise in biochemistry, medicine and other fields, delivering core support for product innovation.

R&D Staff Ratio

50%+



CTO /
Chief Technology Officer

Dr. Liu

Post-doctorate in Microbiology & Immunology, Indiana University School of Medicine, USA. He possesses a solid academic background in biomedicine with over 20 years of experience in biotechnological R&D & industrialization. He leads the development of the company's core technologies.

Professional Control from Molecular Design to Finished-Product Delivery



Chemistry Laboratory



Fermentation Workshop



Purification Workshop



**Crystallization &
Drying Workshop**



Analytical Laboratory



Membrane Separation System

Hygieia's in-house R&D platform features complete large-scale fermentation and separation-and-purification systems. It covers the full workflow for process development, optimization, pilot-scale-up and product preparation.

Equipped with high-performance liquid chromatography (HPLC) and other quality-control instruments, we support development & validation of raw-material test methods, impurity profiling, stability investigation, stress-factor studies and other quality-control assessments.

Commercially-Ready Enzyme Resources

Empowering Diversified Product Portfolio

Commercial Enzyme Library

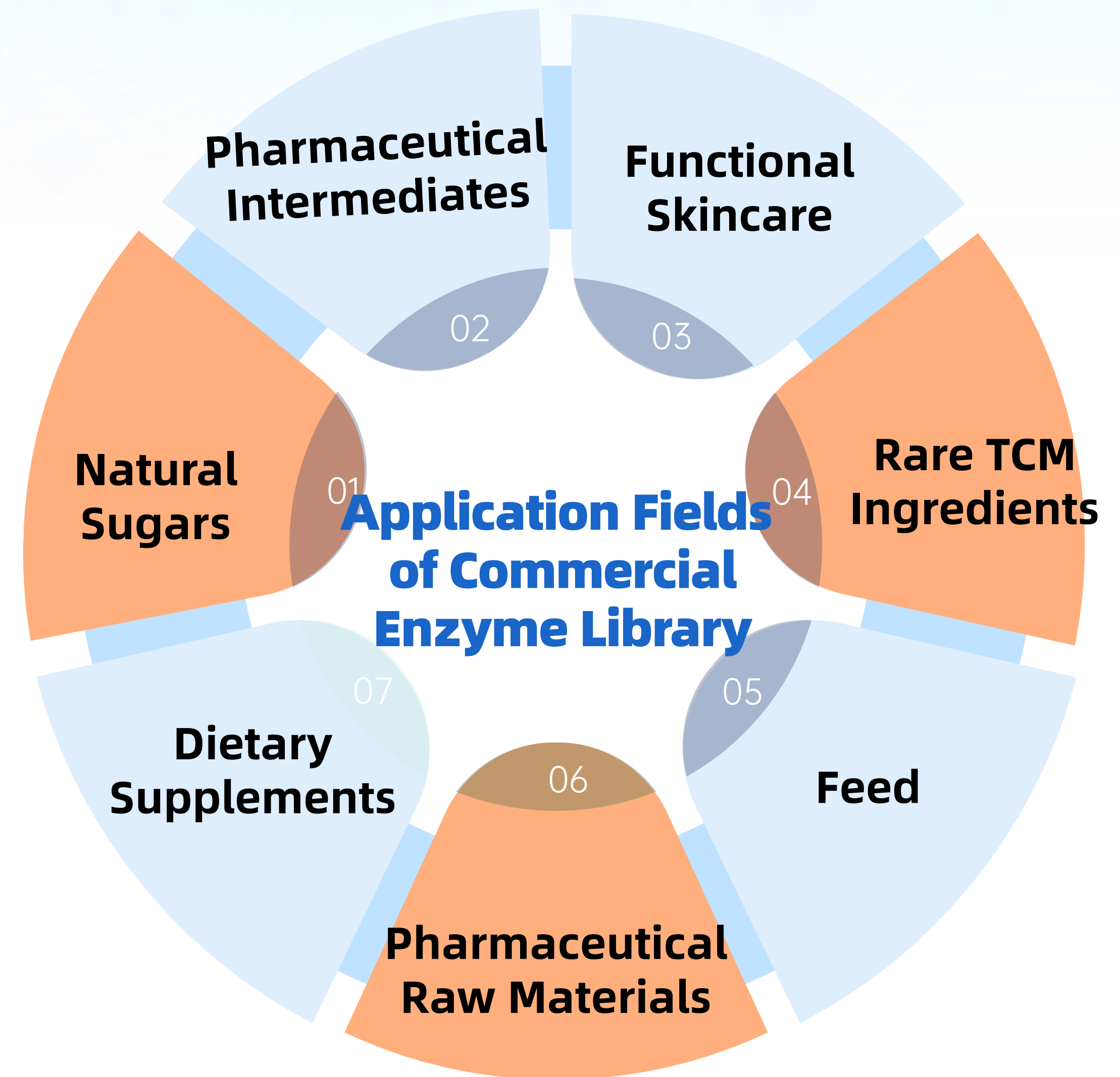
Our repository includes over 500 commercially-viable enzyme preparations including reductases, transaminases, hydrolases and more, covering diverse catalytic types.

Synthetic-Biology Toolkit

More than 50 high-efficiency synthetic-biology tools, including CRISPR gene-editing systems and multi-component libraries.

Diversified Host Strains

Over 20 mature industrial-grade microbial chassis covering prokaryotic and eukaryotic systems to satisfy diverse product-expression requirements.

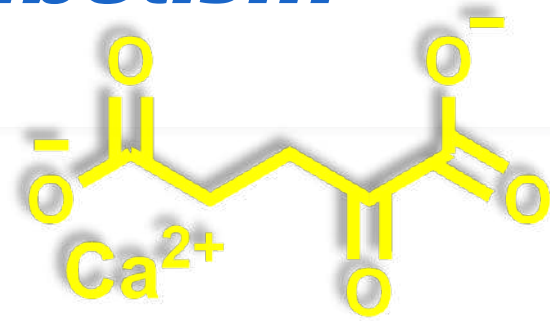


Core Products



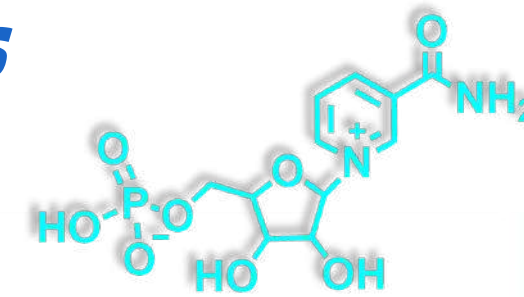
Energy Metabolism

Ca-AKG



NAD+ Activators

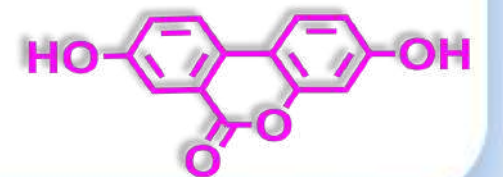
**NMN、NR、NMNH
NADH、NAD+、Deazaflavin**



Autophagy Inducers

Spermidine Trihydrochloride

Urolithin A

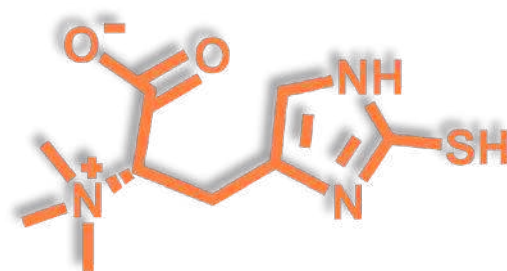


Antioxidants

SAC

PQQ

L-Ergothioneine

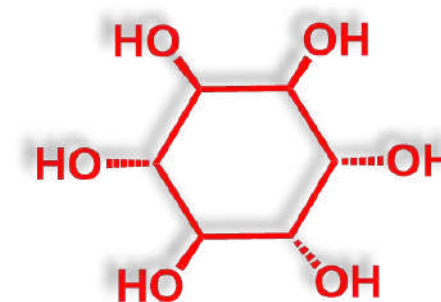


Women's Health

S-Equol

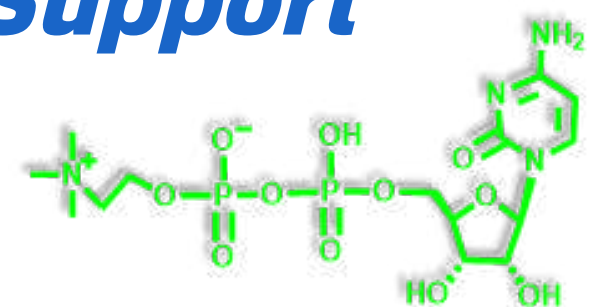
L-5-MTHF-Ca

D-Chiro-Inositol



Cognitive Support

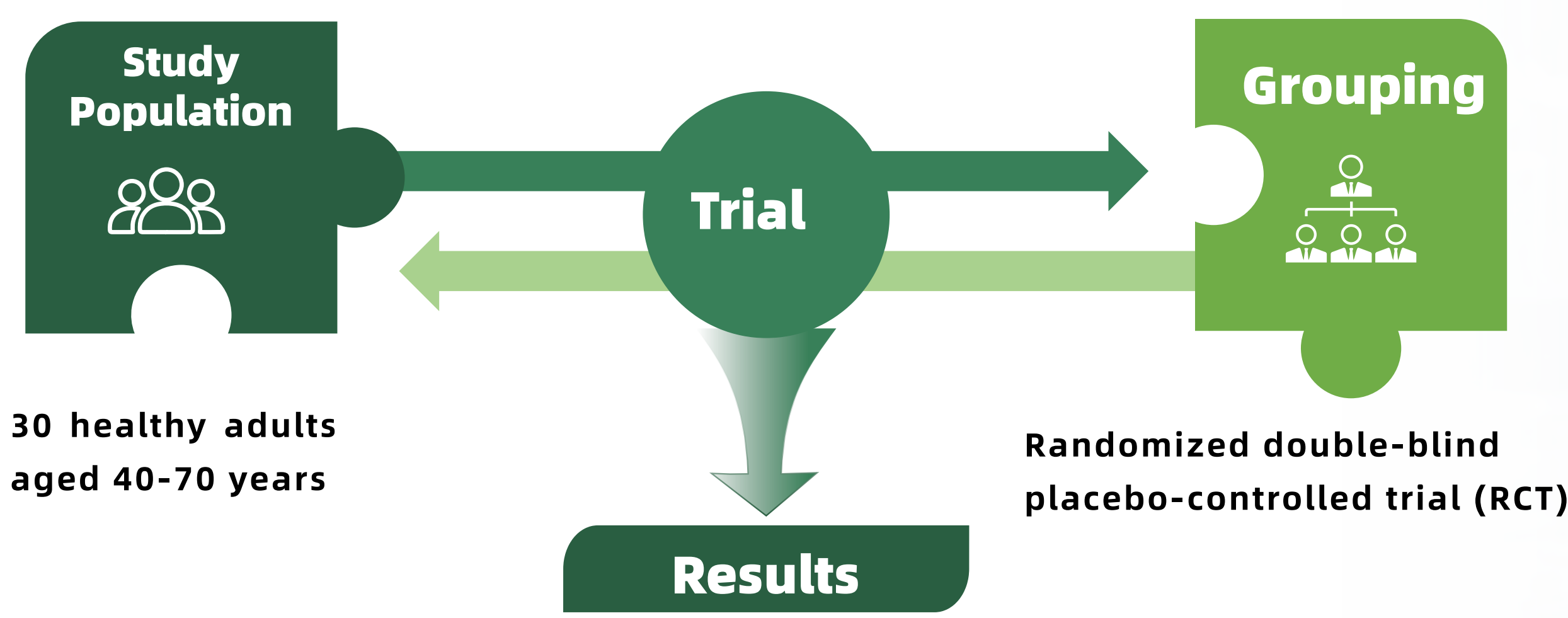
Citicoline



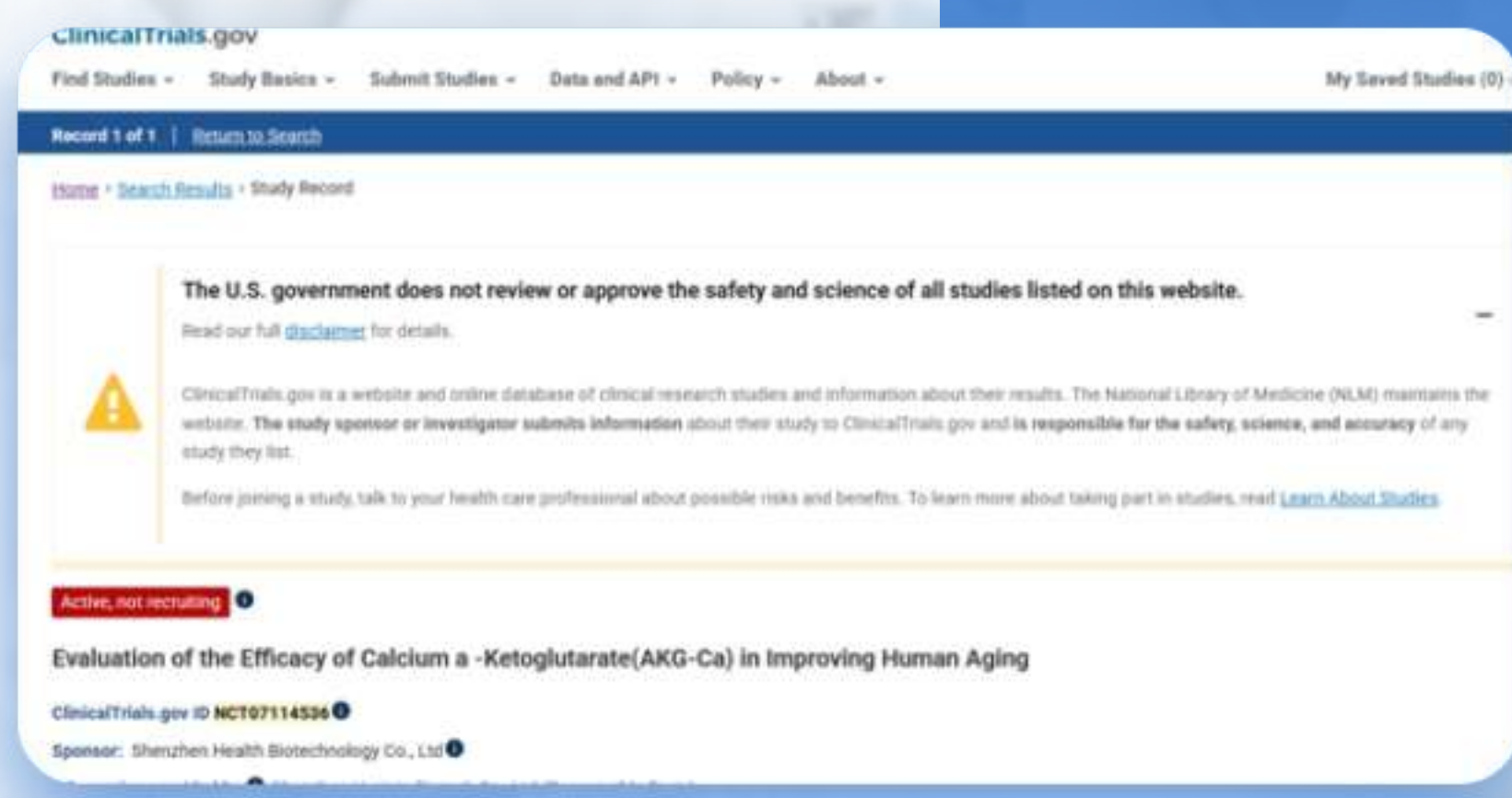
Core Product Introduction — Ca-AKG EnerLive®

The World's First Multi-Target Human Clinical Ca-AKG

RCT clinical Trial Registry ID: NCT07114536



- No adverse events were observed among subjects, demonstrating a favorable safety profile.
- Participants achieved significant improvements in muscle strength and handgrip strength.



Hygieia has verified product safety and efficacy through rigorous RCT studies — the “gold standard” for human efficacy validation.

Core Product Introduction — Ca-AKG EnerLive®

Ca-AKG is a complex formed by calcium ions bound to α -ketoglutarate (AKG), a core substance for human energy metabolism. Widely applied in sports nutrition and dietary supplements, it delivers multiple benefits including anti-aging, bone-health support, muscle-mass promotion and modulation of energy metabolism.



Anti-Aging Supplements



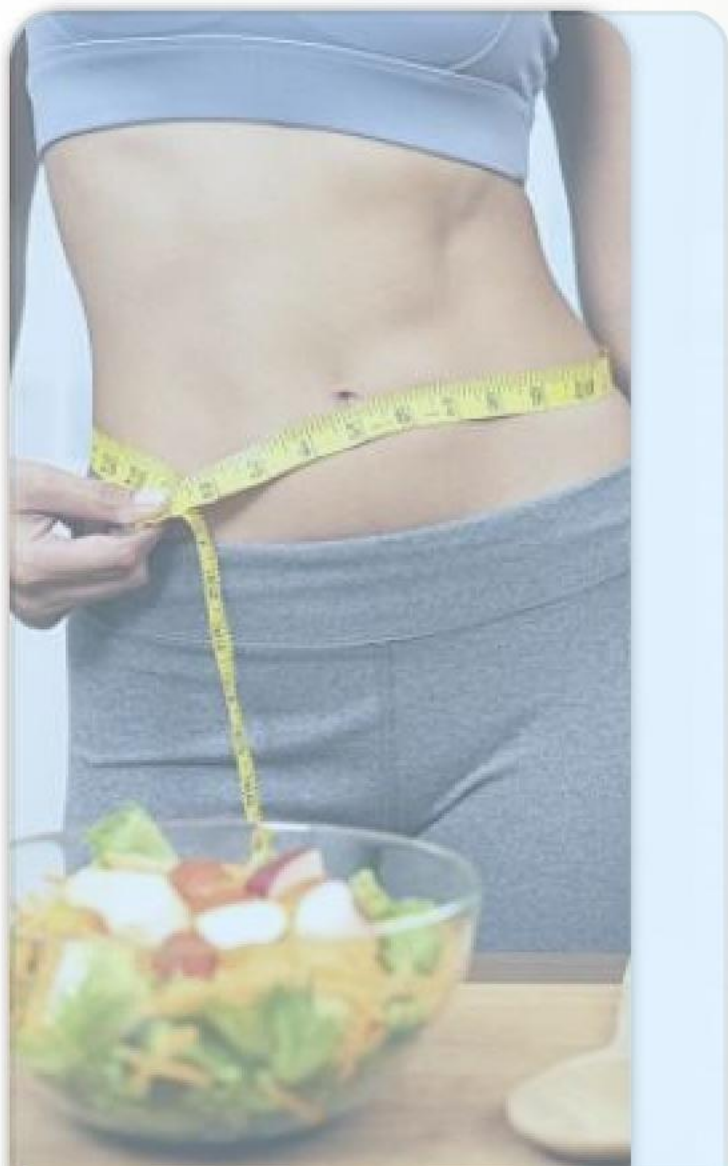
Sports Nutrition



Bone Health



Muscle Maintenance



Metabolism Management

Core Benefits

- Supports healthy lifespan
- Improved muscle strength & endurance
- Osteoporosis prevention
- Support against neurodegenerative disorders

Product Advantages

- Scientific Backing:
Dual validation via human clinical trials & animal studies
- Patents:
Exclusive biocatalytic manufacturing technology
- Qualifications:
       
- Safety:
Toxicological assessment & SGS testing
- Standard-Setting:
Drafting member for the α -ketoglutarate group standard

Popular Formulation Reference

Ca-AKG + Vitamin A + Thiamine + Vitamin B2 + Vitamin B6 + Vitamin B12 + Calcium L-5-Methyltetrahydrofolate

Benefits

Anti-aging, cellular energy support, metabolic regulation

Recommended Daily Dosage: 500 mg-3000 mg / day

Recommended Dosage Forms:



capsules



tablets



gummies



Skincare
Formulations



Sports-Nutrition
Products

Core Product Introduction — NMN



NMN is a direct precursor of NAD+. It effectively elevates intracellular NAD+ levels, activates longevity-related Sirtuin proteins, supports DNA repair and optimizes cellular energy metabolism.

Core Manufacturing Process

Hygieia employs CRISPR-engineered E. coli as the chassis strain. NMN is biosynthesized from raw materials including nicotinamide through fermentation.



Cardiovascular Health



Anti-Aging & Cellular Energy Replenishment



Brain Health & Cognitive Support



Sports Nutrition



Healthy Aging for Seniors



Metabolic Support

Popular Formulation Reference

NMN + Ergothioneine + PQQ + Resveratrol + Glutathione

Benefits

Elevated NAD+ level, anti-glycation & antioxidant support, improved vitality, supports recovery from late-night fatigue, cellular anti-aging

Recommended Daily Dosage: 250-300 mg / day

Core Benefits

- Activates Sirtuin longevity proteins
- Supports DNA damage repair
- Improves metabolic wellness
- Supports nerve function & cognitive enhancement
- Enhances immune cell function

Product Advantages

- Purity: 99.9% ultra-high purity with superior bioavailability
- Standard-Setting: Drafting member for the NMN group standard
- Safety Validation: Acute oral toxicity studies completed
- Authoritative Testing: Verified by SGS, CTI, Intertek, Eurofins and other global laboratories; COA & third-party test reports available per batch
- Multi-step Purification: Enzymatic synthesis + repeated column chromatography + nanofiltration; impurity levels far below specified national standard thresholds

Recommended Dosage Forms:



capsules



tablets



gummies



Skincare Formulations



Sports-Nutrition Products

Product Introduction — Deazaflavin DeazaKing®

Deazaflavin is regarded as a potential successor to NMN. As an NAD analog, it directly activates energy metabolism.



Anti-Aging Dietary Supplements



Functional Skin-Care Products



Sports Nutrition & Weight Management



Middle-Aged & Elderly Health Support



Functional Foods & Beverages

Popular Formula Reference:

Deazaflavin + Betaine

Functional Benefits:

Stimulate mitochondrial biogenesis, relieve fatigue caused by sleep deprivation, fundamental anti-aging support, boost physical stamina.

Why This Formula?

- Eligible for bonded-warehouse import with minimal import restrictions.
- Enhanced potency; anti-aging efficacy is 40-100-fold higher than NMN.

Core Benefits

- Potent activation of sirtuin longevity proteins
- Mitochondrial repair & enhanced energy production
- Restore cellular vitality
- Anti-inflammation & antioxidant effects, blocking the "inflamm-aging" axis
- Metabolic regulation & musculoskeletal health support
- Skin anti-aging: dual-action for oral & topical use

Product Advantages

- Superior potency:
Anti-aging activity is 40-100-fold higher than NMN.
- Favorable regulatory profile:
Few regulatory restrictions in China; easy for filing and mass production.
- Direct mode of action:
Activates SIRT proteins and repairs mitochondria without intermediate conversion.
- Safe & stable:
≥98% purity, toxicologically safe, stable at room temperature, easy to store.

Recommended Daily Dosage: 5 ~ 20 mg / day

Recommended Dosage Forms



Instant-drink granules



capsules



tablets



gummies



oral liquids



solid beverages



skincare formulations

Core Product Introduction — Calcium L-5-Methyltetrahydrofolate



L-5-Methyltetrahydrofolate is the bioactive form of folate. It can be directly absorbed and utilized by the human body without hepatic conversion, avoiding the accumulation of unmetabolized folic acid in the body. It serves as a safer and more effective folate source.



Female Reproductive & Endocrine Health



Comprehensive Nutrition for Seniors



Functional Foods & Dietary Supplements



Mood Wellness & Nerve Regulation

Core Benefits

- Pre-conception & prenatal nutrition support; supports emotional wellness
- Helps lower homocysteine levels
- Supports reproductive health
- Supports nervous system wellness
- Helps improve megaloblastic anemia-related status

Technical Advantages

The world's first manufacturer of bio-produced active folate; conventional production relies on chemical synthesis.

Recommended Daily Dosage: 500 mg-3000 mg / day

Recommended Dosage Forms



Instant-drink granules



capsules



tablets



gummies



oral liquids



solid beverages



skincare formulations

Popular Formulation Reference

S-Adenosylmethionine disulfate p-toluenesulfonate (SAM-e) + Vitamin B6 + Calcium L-5-Methyltetrahydrofolate + Methylcobalamin + Betaine Anhydrous

Benefits

Optimizes methylation, supports healthy homocysteine levels in blood, maintains cardiovascular wellness and promotes brain health.