FIVE CORE TECHNOLOGIES OF 8+9

8+9 SOD INC

CONCENTS

1. R&D and production of high temperature resistant, acid and alkali resistant SOD biotechnology from archaea
2. Development and production of high SOD probiotics (SOD food, SOD feed addition)
3. Research and development and production of SOD-rich yeast (food, skin care products, health care products addition)
4. Expression of silkworm pupa protein and extraction and separation technology of silkworm pupa protein hydrolyzed small molecule peptide
5. Preparation and extraction technology of SOD-NAMPT double-linked protease

01

Archaea Source

Research and development and production of SOD biotechnology for high temperature resistance, acid and alkali resistance medicine

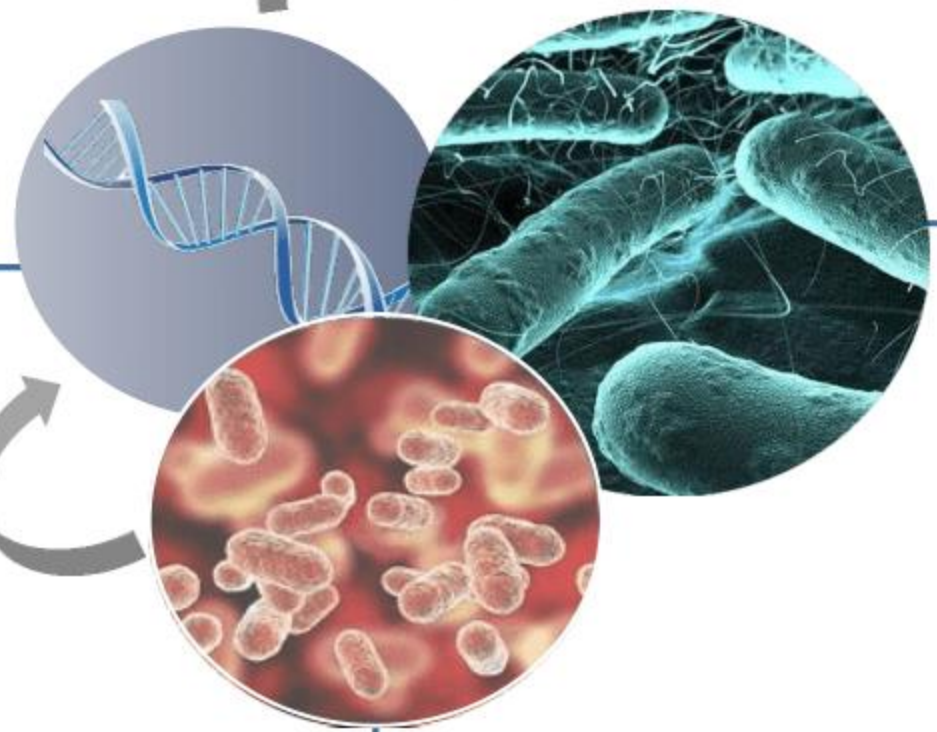
worldwide

most active volcano

Kamchatka Peninsula is one of regions with the most active volcanic eruptions on the planet. In the Kronotsky National Park of Kamchatka Peninsula, the archaeal bacterium Acidilobus aceticus was found in the extremely acidic hot springs of Uzon Crater. Because the temperature of the acidic water in the hot spring is very high, reaching 92℃, the bacteria can survive in such a high temperature environment, and the enzymes in its cells will be very resistant to high temperature, acid and alkali.

gene transfer

Acidilobus aceticus



High temperature resistant acid and alkali resistant SOD production engineering bacteria

gene cloning

Acidilobus aceticus

High-density fermentation technology for large-scale production of high temperature-resistant and acid/alkali-resistant SOD

High temperature-resistant and acid/alkali-resistant SOD producing engineering bacteria

inoculation

Fermentation process optimization

Production

High temperature-resistant and acid/alkali-resistant SOD


02
Development and production of high SOD probiotics (SOD food, SOD feed addition)

Morphological identification

Physiological and biochemical sequence analysis

SOD enzyme activity assay

enrichment culture screening

High SOD probiotics or yeast

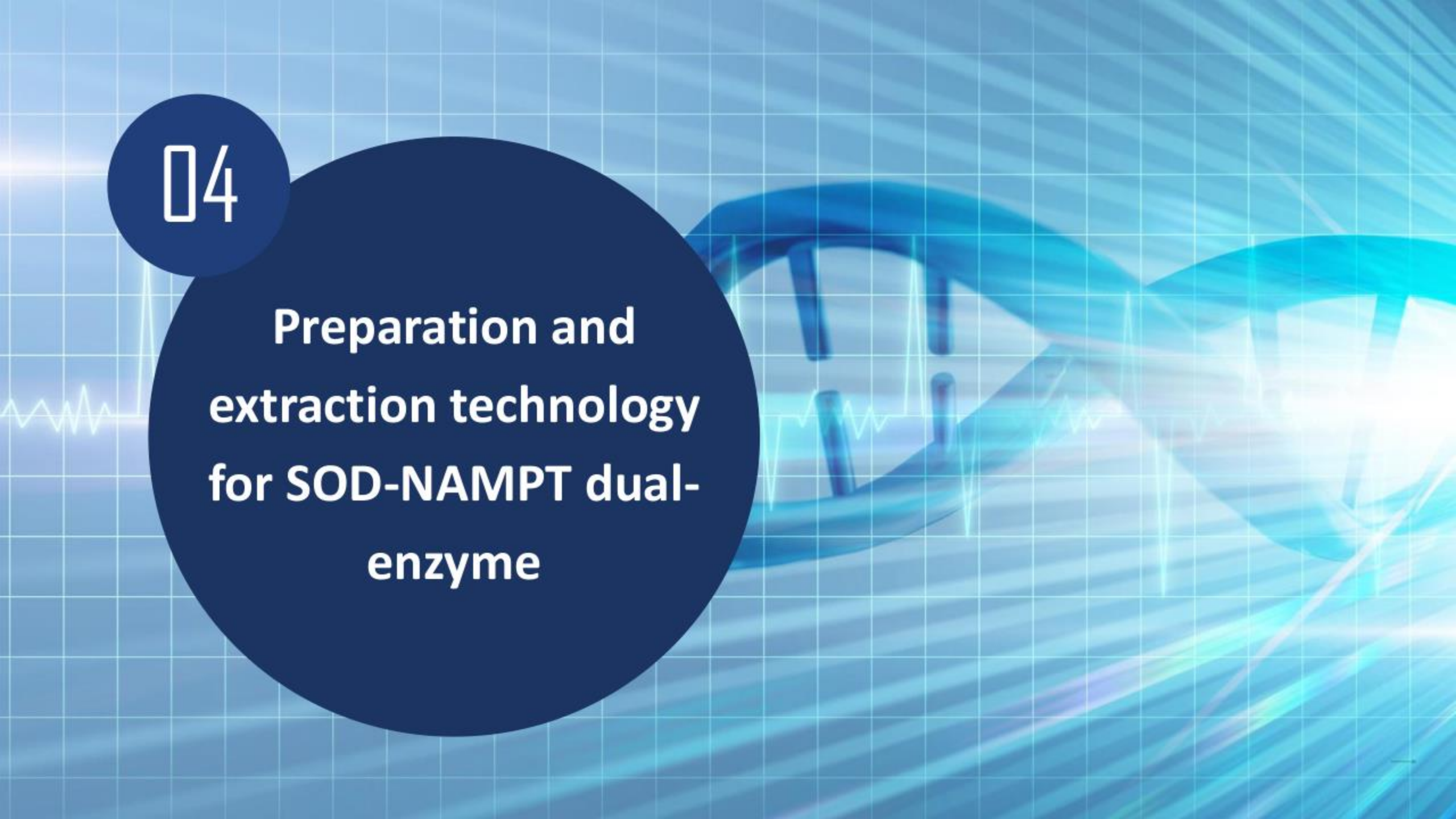

03
Research and development and production of SOD-rich yeast (food, skin care products, health care products addition)

S O D Yeast

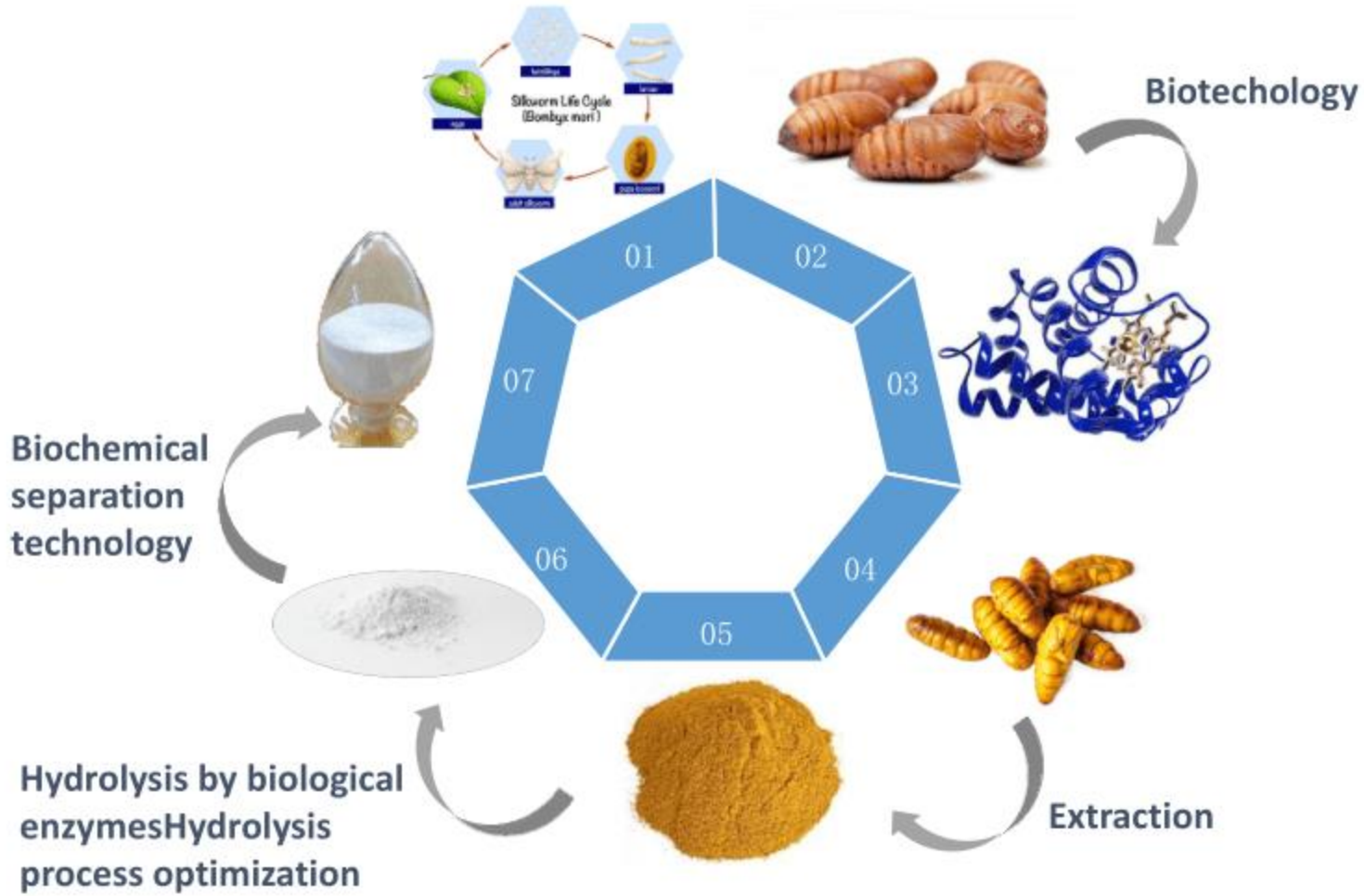
The expression system for food application was constructed to efficiently express high temperature-resistant SOD enzymes in probiotics such as lactic acid bacteria, Bacillus subtilis and yeast, which has great development value and broad application prospects.

04

Preparation and extraction technology for SOD-NAMPT dual-enzyme

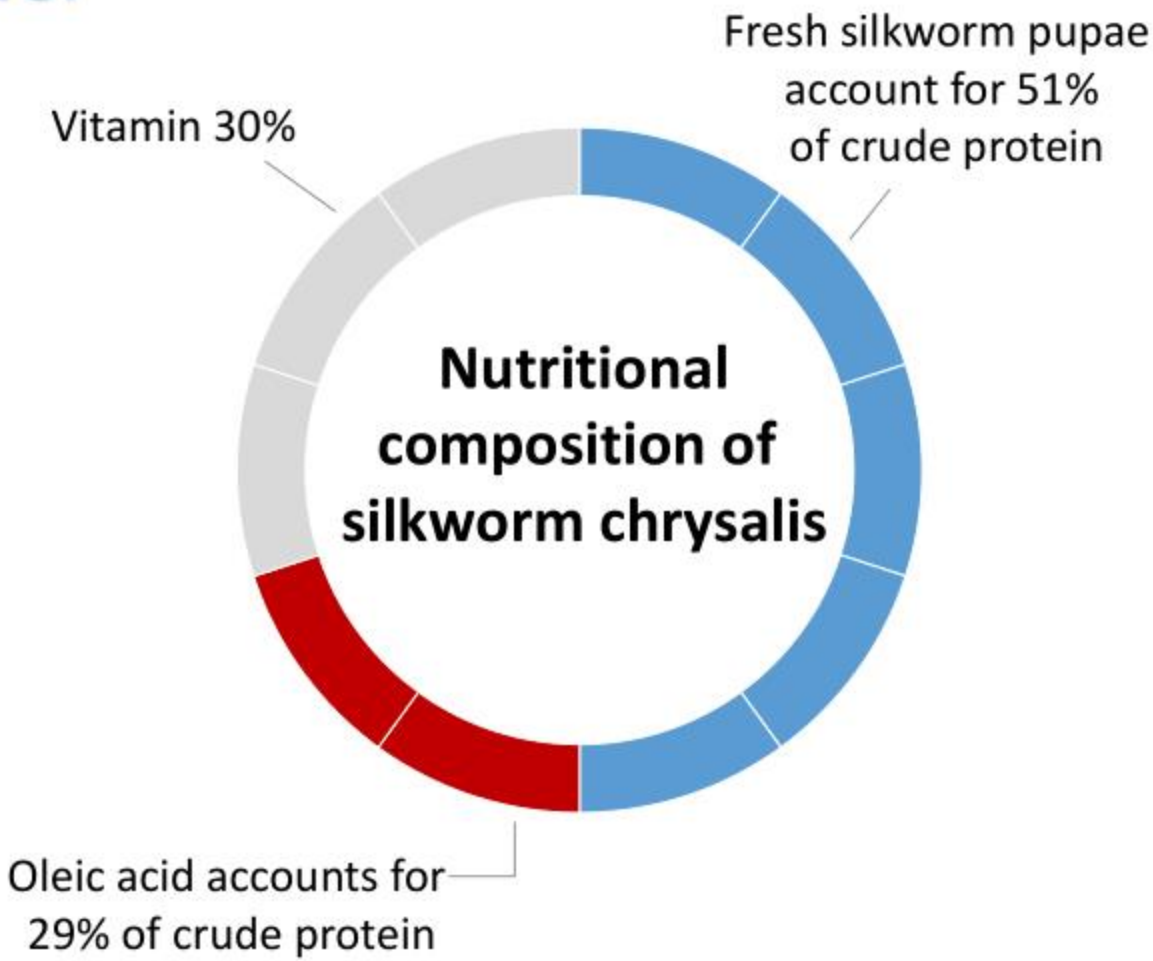


1. Life cycle of silkworm
2. Pupa can be used as medicine and food
3. Bioreactor for production of functional protein
4. Organic pupa
5. Protein powder : rich in proteins, oleic acid, vitamins and ergosterol, etc.
6. Proteolytic peptides
7. Small peptides with specific function



Application of compound silkworm chrysalis protein powder

Silkworm chrysalis has very high nutritional content. Fresh silkworm chrysalis contains 51% crude protein, oleic acid (29% crude protein), and vitamins (including vitamin D, vitamin B22, vitamin D and ergosterol, etc.). The protein content of silkworm chrysalis is more than 50%, which is far higher than that of ordinary food, and the essential amino acids in the protein are complete.



Application of compound silkworm chrysalis protein powder

Silkworm chrysalis protein is composed of 18 kinds of carbohydrates, among which 8 kinds of carbohydrates that are essential for the body are high. The 8 essential carbohydrates in silkworm chrysalis are about 2 times that of raw pork, 4 times that of raw eggs, and 10 times that of milk. They are a kind of high-quality animal protein with a moderate nutritional mix and proportion.

=

× 2倍

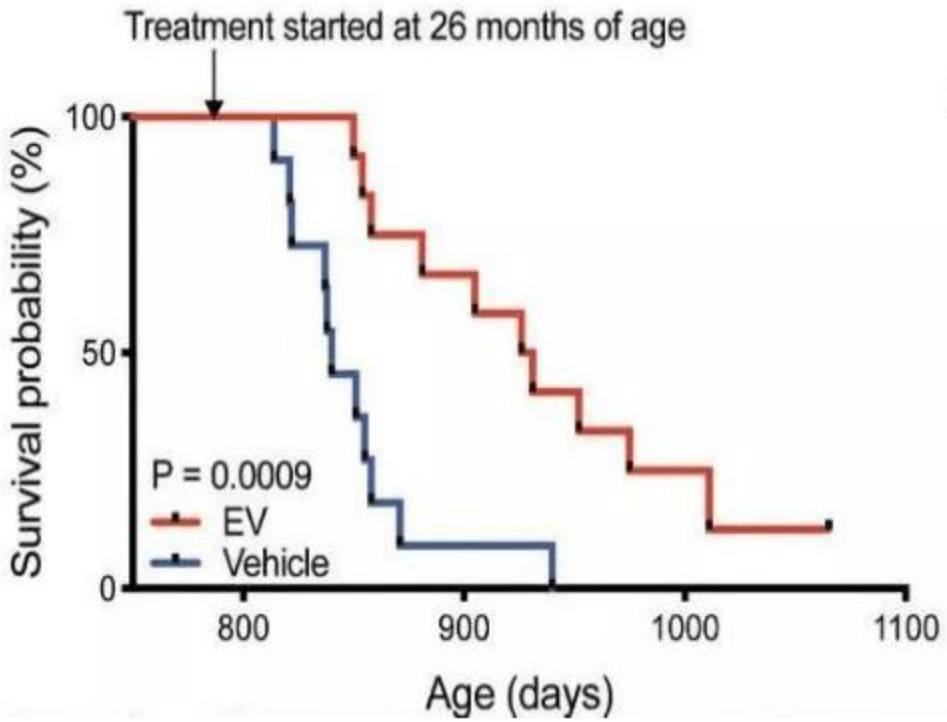
× 4倍

× 10倍

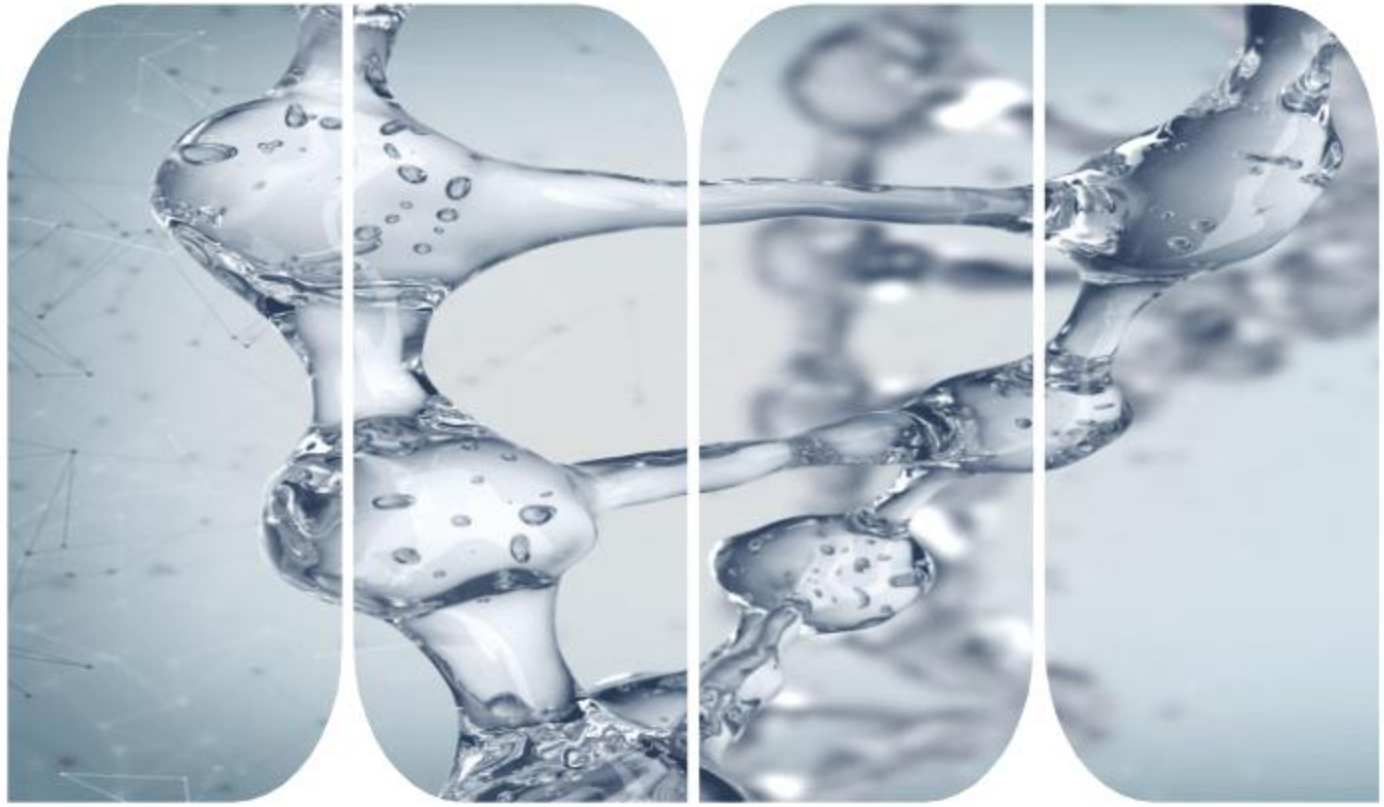
05

Preparation and extraction technology of SOD-NAMPT double-linked protease

NAMPT, nicotinamide phosphoribosyl transferase, is widely present in multiple tissues and participates in the regulation of various physiological processes in the body. In mammals, NAMPT is the rate-limiting enzyme in the main synthesis pathway of NAD+ and can catalyze the synthesis of NMN. Additionally, it is also involved in regulating the NAD+ level of cardiomyocytes. NAMPT is an important enzyme for the NAD+ synthesis by cardiomyocytes and can protect the heart from autophagy, prevent atherosclerosis, and inhibit angiotensin-induced cardiac hypertrophy. In 2019, Research on NAMPT has achieved significant results. Professor Imai's group from the University of Washington published a article in <<Cell Metabolism>> titled “Extracellular Vesicle-Contained eNAMPT Delays Aging and Extends Lifespan in Mice”. Supplementing eNAMPT-containing EVs isolated from young mice significantly extends the lifespan of aged mice. The life expectancy of old mice with an average remaining lifespan of only 2 months (equivalent to 6 years for humans) has been extended to 4.6 months (13.8 years for humans), which is 2.3 times longer, and even their appearance is significantly younger. Therefore, NAMPT is a kind of novel potential anti-aging protein.



Supplementing eNAMPT-containing EVs isolated from young mice significantly improves wheel-running activity and extends lifespan in aged mice. The maximum life span was extended by 15.8%, and compared with naturally aging mice, the mice injected with EV had a healthier appearance and higher physiological activity.



Using silkworm pupa as a bioreactor, SOD and NAMPT were expressed doubly, obtaining the combined expressed products with high activity of double enzymes. Among them, SOD enzyme activity is 15000IU/g, and NAMPT enzyme activity is 18 IU/g (healthy human body contains 800-1000 IU).

Process for the preparation of SOD-NAMPT doublelinked protease by expression in silkworm pupa

01. Construction of vector with dual genes

02. inoculation

03. Protein expression

04. Enzyme activity detection

05. Homogenization, centrifugal separation

06. Purification

07.Freeze drying

08. Dosage form development and packaging


THANKS