Innovative Anti-Aging Solutions
From Bloomage Freda Biopharm

By Giuseppe Calloni, Dr.
Vice President
Bloomage Freda Biopharm USA

Bloomage Freda Biopharm Co., Ltd.
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• We are a professional manufacturer with over 25 years (1990-2016) of experience in Sodium Hyaluronate (HA) industry

• Also, the largest HA researcher and manufacturer in the world
Annual Capacity: over 200MT
Anti-Aging - The eternal theme of skincare products

The aging of the global population is increasing consumption level and the demands for anti-aging products.

Skin aging is a gradual physiological process which directly affects the outside view and function of the skin.

Wrinkles are the most obvious symbol of skin aging, and they are referred to as “the annual rings of life”.

Facts
Products

- Gabacare
- miniHA
- Hyacross
- Hyacolor
Gabacare™ BL98T Aminobutyric acid

Natural anti-aging factor

- Naturally present in human body
- Significant anti-wrinkle effects
- Repair the damaged skin
- Promote the synthesis of HA and collagen
Gabacare™BL98T also known as aminobutyric acid (GABA), a non-protein amino acid, is widely distributed in plants and animals, and plays an irreplaceable role for the regulation of the organisms’ life activities.

<table>
<thead>
<tr>
<th>Material</th>
<th>GABA (mg/100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germ</td>
<td>25.40</td>
</tr>
<tr>
<td>Mulberry leaf</td>
<td>226</td>
</tr>
<tr>
<td>Oolong tea</td>
<td>245.9</td>
</tr>
<tr>
<td>Rice bran</td>
<td>10.90</td>
</tr>
<tr>
<td>Green tea</td>
<td>1.74-17.4</td>
</tr>
</tbody>
</table>

Aminobutyric acid
Based on professional fermentation technology

Fermented by Lactobacillus

More than 20 years of fermentation technology

GabacareBL98T
High purity >98%
High safety
Ecocert certification
1. Stretch wrinkles

There are $\text{GABA}_A$ receptors on the skin surface. The inhibitory or excitability of $\text{GABA}_A$ receptor controls the relaxation and tension of the expression muscles. GABA can quickly penetrate into the skin and activate the $\text{GABA}_A$ receptors, then the tense expression muscles are relaxed, the expression lines are stretched.
2. Repair the damaged skin

In the epidermis layer, GABA can repair cuticle barriers, reduce skin roughness, and also can fight against ultraviolet ray, reduce the skin fine lines, roughness caused by external factors such as drying, radiation and pollution.

- GABA could promote the proliferation of epidermal cells
- GABA could promote the keratinization of epidermal cells
3. Promote the synthesis of HA and collagen

In the dermis GABA can promote the synthesis of HA and collagen to protect the fibroblasts, keep the skin moist and elastic, and make the skin smooth.

More than 2-fold increase of HA secretion from dermal fibroblasts was observed in the presence of 1μg/mL of GABA as compared to the control.
1. Anti-Wrinkle Effects (Eye Mask)

**Instrument:** Optical 3D skin measuring device (PRIMOS, Germany)

**Sample:** The only difference between control and test samples is the formula of test samples containing Gabacare™BL98T.

- **0.3% and higher Gabacare™BL98T can effectively reduce the number and depth of wrinkles, the greater concentration, the longer you use, the more obvious effect.**
The anti-wrinkle effect was obviously. After continuously use the 0.3% GABA eye cream for 8 weeks, the average depth of wrinkles was reduced significantly. After 8 weeks, the average depth of wrinkles can be reduced by 12%. After 12 weeks, average depth of wrinkles can be reduced by 17%.

**Instrument:** Optical 3D skin measuring device (PRIMOS, Germany)

**Sample** The only difference between control and test samples is the formula of test samples containing Gabacare™BL98T.
3. Anti-wrinkle effects evaluation using 0.1%GABA facial mask

Continuous use the facial mask containing 0.1% GABA for a week, and evaluate the average wrinkle depth every two days. The result shows that anti-wrinkle effect is very significant and also the facial skin become more smooth and elastic.

**Instrument:** Optical 3D skin measuring device (PRIMOS, Germany)

**Sample:** The only difference between control and test samples is the formula of test samples containing Gabacare™BL98T.
4. Perfect sensory experience

Volunteers’ experiences:
- Skin becomes smoother
- The wrinkles were significantly reduced
- Fine lines even disappeared
- Make skin brighten
- Keep skin elastic

Use the eye cream containing GABA for 30 days

<table>
<thead>
<tr>
<th>Evaluation score</th>
<th>Placebo</th>
<th>GabacareBL98T</th>
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<tbody>
<tr>
<td>Anti-wrinkle</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Smoothness</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Luminance</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Elasticity</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>INCI name</strong></td>
<td>Aminobutyric acid</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>CAS NO.</strong></td>
<td>56-12-2</td>
<td></td>
</tr>
<tr>
<td><strong>EINECS NO.</strong></td>
<td>200-258-6</td>
<td></td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>white or almost white crystals</td>
<td></td>
</tr>
<tr>
<td><strong>Recommended dosage</strong></td>
<td>0.1-0.5</td>
<td></td>
</tr>
<tr>
<td><strong>Usage</strong></td>
<td>soluble in water, added directly to the aqueous phase</td>
<td></td>
</tr>
<tr>
<td><strong>Applications</strong></td>
<td>Anti-aging products for face and body care</td>
<td></td>
</tr>
</tbody>
</table>
| **Functions**          | • Reduce fine lines and wrinkles  
                          | • Regenerate damaged skin cells  
                          | • Promote the synthesis of HA and collagen  
                          | • Smooth and brighten skin       |
Extra low Mw HA

miniHA™

Easily build water-like shining skin!
What is mesotherapy?

With the advance of age hyaluronic acid content decreases gradually, especially in dermis level which leads to a change of the skin. The skin needs artificial intervention in order to go back to a preferred state.

Mesotherapy is the treatment of HA injected into dermis layer in order to supplement the lacking HA and stimulate the skin to produce new collagen, effectively delay the aging symptoms.
Effects of mesotherapy

Skin surface dry, rough, fine lines and coarse pores

Plant HA in the middle of dermis

Cell water content was obviously increased, significant improvement in the fine static wrinkles.

Before

1 week after planting

- Supplement moisture deeply, make skin moist, tender and shiny
- Increase skin elasticity, tighten the skin and shrink pores
- Improvement to fine wrinkles (fine wrinkles, nasolabial folds, smile line, etc)
- Skin color brightening and whitening
- Improvement to black eye, freckles and chloasma

Lock water deeply, stimulate collagen regenerating
Smear-Type needleless mesotherapy

- Global Initiative patented enzymolysis technology, it is safer
- Highly active extra low Mw HA (Mw < 10KDa)
- China personal care products and cosmetics technology innovation award
- Rapid penetration through skin to dermis layer
- Lock water deeply, stimulate cell proliferation and collagen regenerating to build water-like shining skin
miniHA™ — Muscle Fiber rejuvenating

Transdermal absorption

Authoritative third-party testing agencies, Italy.

- The miniHA™ could rapidly infiltrate directly into dermis level.
- It has the function of supplementing endogenous HA, locking water deeply, moisture, and well maintenance of muscle fiber.
Transdermal absorption ➔ Muscle Fiber maintenance ➔ Lock water deeply

The miniHA™ could rapidly infiltrate directly into dermis level. It could lock water deeply, moisturize and increase the water content of the skin rapidly. In turn the skin will shine brightly from inside out.
The miniHA could promote the proliferation of fibroblasts, stimulate the newborn of collagen, increase skin elasticity, reduce wrinkles.
The miniHA could promote the proliferation and differentiation of fibroblast, reduce or avoid scarring, accelerate skin wound healing, and promote skin regeneration.

Quote from: The application of sodium hyaluronate and collagen in skin care after laser surgery, Fudan University
Remarks: The stronger the free radical scavenging ability, the lower the average fluorescence intensity.

**Lock water deeply**

- Boost cell proliferation

**Scavenge free radicals**

- The miniHA can effectively scavenge Reactive Oxygen Free Radicals (ROS) induced by ultraviolet irradiation, enhance the antioxidant ability of cells, repair the skin, resist light aging, get rid of oxidation dark spots.

*Remarks: The stronger the free radical scavenging ability, the lower the average fluorescence intensity.*
Transdermal absorption $\Rightarrow$ Muscle Fiber maintenance $\Rightarrow$ Skin rejuvenating

Water supplement

- The miniHA could increase skin moisture, provide skin with a water-like glow.
Long term use of miniHA could increase skin elasticity, make skin firm and elastic.
Long term use of miniHA could increase the thickness of the skin, enhance skin barrier function.
The skin wrinkle depth decreased by 16.0%, 20.3% and 25.6% after applying miniHA cream 15 days, 30 days and 60 days respectively.
By dermatologist’s assessment, after 30 days of application of a cream containing miniHA. **40% of the volunteers** had obvious improvement of the wrinkle conditions. After 60 days, **60% of volunteers** recorded obvious reduction of wrinkles depth with moist, shiny and elastic skin.
miniHA™— build water-like shining skin

MOIST
Rapidly improve the skin moisture content, moist and soft from inside out

NOURISH
Regenerate skin cells, enhance skin barrier

ELASTIC
Increase skin elasticity, reduce wrinkles, tighten skin

GLOSSY
Resistant oxidation dark spots, show water-like shining skin
Extra high Mw HA

**Hyacross®**

Hyaluronic Acid Elastomer

Excellent protective film with long lasting moisturizing effect on the skin
Hyacross

- Improving skin barrier
- “breathable” protective layer

SEM photo (×300)

SEM photo (×10000)
**Hyacross**

- Excellent water binding capacity
- Good resistance to Hyaluronidase

![Graph showing viscosity over time for Hyacross and HA.](image-url)

![Graph comparing viscosity of Hyacross and HA at different concentrations.](image-url)
Fresh skin feeling

Hyacross has higher viscosity and better thickening capacity than common HA and it feels smooth but not sticky when dissolved in water media. Most volunteers reported that the 2% solution has the best feeling.

Hyacross solutions were distributed to 20 females. A questionnaire was used to evaluate skin feelings.
Hyacross can keep cuticle moisturized because of the excellent water binding capacity and decrease the evaporation of the deeper skin moisture by forming a dense film on the skin surface.
Function 3: Increase skin elasticity

Function 4: Smooth skin
Function 5: Resistance to UV

Function 6: Resistance to foreign contaminate

The 3D reticular structure of Hyacross gives it good film-forming properties. It could form biological protective film on the skin surface, reduce the UV damage to the epidermal cell, and effectively isolate foreign contaminate.
Hyacross

- Long-lasting moisturizing
- Protective film
- Natural Moisture Factor
- Increase skin elasticity
- 3D structure
- Hyacross
- Water binding
- Stability
- Fill wrinkles
- Smooth skin

Natural Moisture Factor
- Water binding
- Stability
- Fill wrinkles
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Hyacross

Long-lasting moisturizing

Protective film

Natural Moisture Factor

Increase skin elasticity

3D structure

Stability

Fill wrinkles

Smooth skin
High content of HA
Small molecule HA microspheres forming technology
Moisturizing, repairing, lip-plumping effects
Hyacolor has good skin affinity because of its lipophilic outer layer and it can easily release the inside HA molecule when applied onto the skin. The small molecule of HA will penetrate into the skin quickly and nourish the skin from inside out.
Efficacy evaluation

✓ Moisturizing Effect

Before
Corneometer value (%)

28 days

Control
Hyacolor

37.6  36.3
43  45.4

+26.1%

Lip-plumping Effect
-Instrumental Evaluation

Control
Hyacolor

Before
1h
28 days

Lip volume (cm³)

Before
1h
28 days

Control
Hyacolor

+8.5%

+10.3%
Results show that 40% of the enrolled subjects have obvious lip-plumping effect after 1 hour application. 50% of the enrolled subjects record significant lip-plumping effect after 28 days application.
Results show that 50% of the enrolled subjects record significant repairing effect after 28 days of application. The dry or chapped conditions of lips have improved sensibly and the lips are feeling smooth and soft.

- **Repairing Effect - Instrumental Evaluation**

<table>
<thead>
<tr>
<th>SESm value</th>
<th>Control</th>
<th>Hyacolor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>28 days</td>
<td>60</td>
<td>65 (+14.9%)</td>
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</tbody>
</table>

- **Repairing Effect - Clinical Evaluation**

<table>
<thead>
<tr>
<th>% of subjects</th>
<th>Control</th>
<th>Hyacolor</th>
</tr>
</thead>
<tbody>
<tr>
<td>showed an effect</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>did not show an effect</td>
<td>90%</td>
<td>50%</td>
</tr>
</tbody>
</table>

- **Instrument:** VISIOSCAN VC 98 video camera
- **The parameter SESm indicates the skin smoothness. If SESm increases, it means that the smoothness of the skin increase and the dry or roughness gets improved.**
You are welcome to visit our Booth L90

Thank you for your attention