

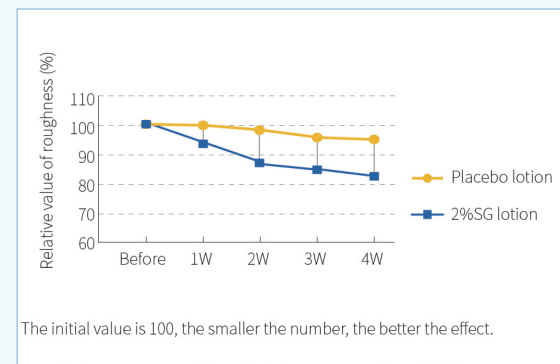
### Skin texture analysis



Test position: the fixed area of forearm (4×4cm<sup>2</sup>). Photos through Dermoscopy PC35.

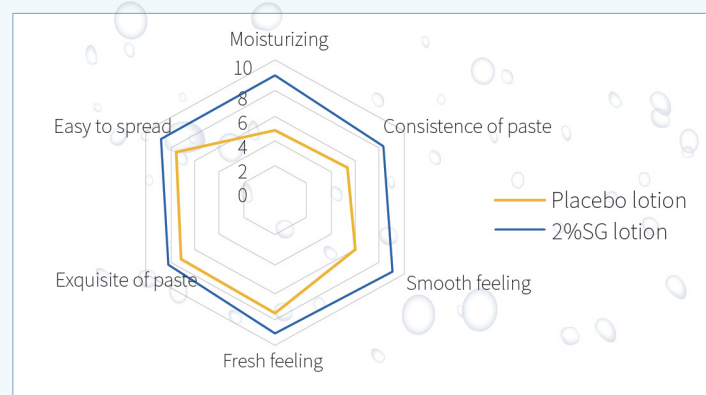
Results of the images show a marked improvement of facial textures and structures. The dry, unordered textures become hydrated, plumped, inerratic and ordered. This indicates that Hyafactor-SG can effectively improve the roughness of the skin.

### Long-term smoothness analysis



Results show that, Hyafactor-SG can improve skin dryness and roughness and smooth the skin. The relative value of roughness is reduced by 12.9% after 2 weeks application and by 17.7% after 4 weeks application.

## 4 Sensorial evaluation



The sensorial evaluation was carried out by double-blind method. The left and right face of 30 healthy subjects were respectively treated with a placebo lotion and 2% SG lotion. Then the moisturizing, feeling of paste results were evaluated.

Results show that Hyafactor-SG provides excellent moisturizing and nourishing properties; can increase the consistence of paste, easily spread, and provide a smooth, soft and fresh feeling.

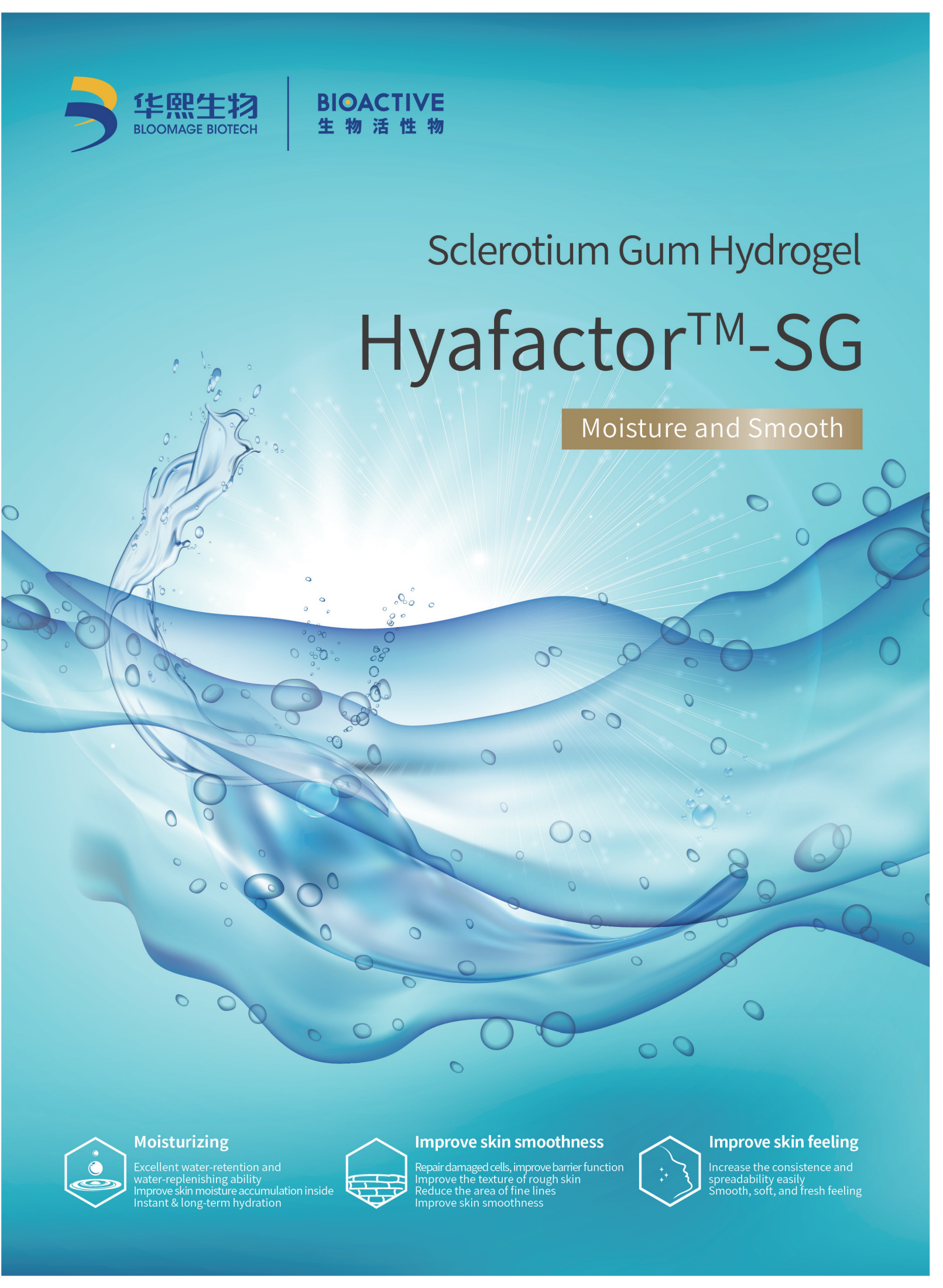
### Product instruction

[INCI name] Sclerotium Gum, 1,2-Hexanediol, Ethylhexylglycerin, Aqua

[Recommend dosage] 0.5%-8%

[Application] Dissolving in water, can be directly added in water phase.

[Usage] Skin care products, such as essence, mask, toner, lotion, cream, facial cleaner, etc. Makeup products, such as air cushion cream, foundation, makeup removing products, etc. Hair products, such as hair gel, hair mask, etc.



BIOACTIVE  
生物活性物

# Sclerotium Gum Hydrogel Hyafactor™-SG

Moisture and Smooth



#### Moisturizing

Excellent water-retention and water-replenishing ability  
Improve skin moisture accumulation inside  
Instant & long-term hydration



#### Improve skin smoothness

Repair damaged cells, improve barrier function  
Improve the texture of rough skin  
Reduce the area of fine lines  
Improve skin smoothness



#### Improve skin feeling

Increase the consistence and spreadability easily  
Smooth, soft, and fresh feeling



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The science of health and beauty



# Sclerotium Gum Hydrogel

Sclerotium Gum, also known as Scleroglucan (Scg), is a non-ionic homopolysaccharide secreted by fungi of the genus *Sclerotium*, has a backbone build up by  $\beta$ -1,3-D-glucopyranosyl units with single  $\beta$ -1,6-D-glucopyranosyl side chains linked to every third residue in the main chain (Fig. 1). In aqueous solution, it exhibits a linear, rigid, triple helical structure (Fig.2). The hydroxyl of glucose units in the structure can bind much water molecules by H-bonds and keep water near the backbone.

Hyafactor-SG exerts high water-retention and water-replenishing ability, can increase skin barrier function and nourish dry and rough skin, providing a smooth, soft, fresh feeling to cosmetic formulations.

Fig.1 The structure of Sclerotium Gum

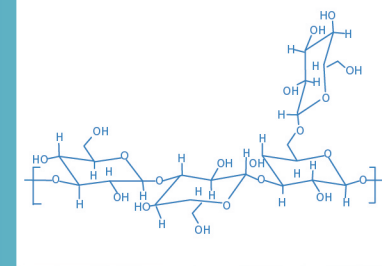
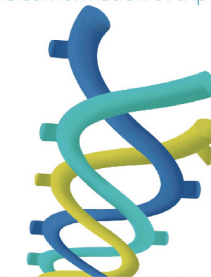


Fig.2 The conformation of triple helix



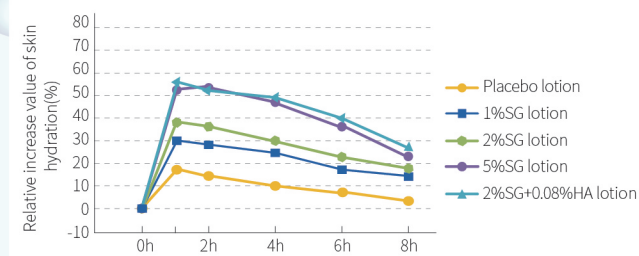
In addition, due to its special triple helical structure, Hyafactor-SG guarantees high safety and compatibility, showing high tolerance to temperature, pH, electrolytes, shear force, etc.

## Efficacy evaluation



### Moisturizing Evaluation

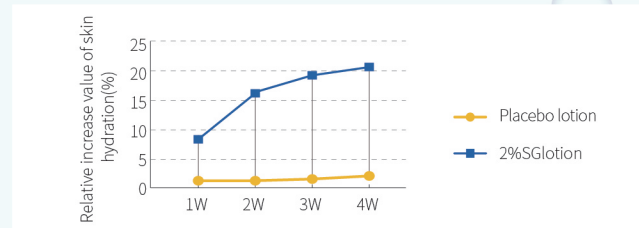
#### 8h moisturizing



Instrument: Corneometer CM825

Because of the film-forming and high water-binding properties, Hyafactor-SG can quickly increase the skin hydration in a short time; the higher the concentration of Hyafactor-SG, the better its hydrating ability. When Hyafactor-SG and Sodium Hyaluronate (HA) are applied together in a formulation, a synergistic and excellent moisturizing effect is observed.

#### Long-term moisturizing



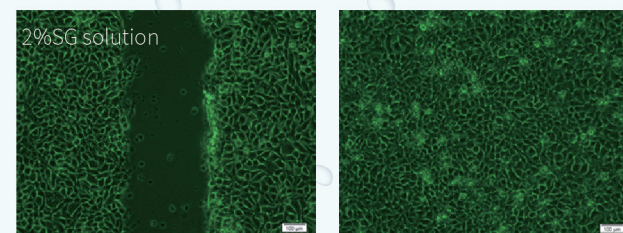
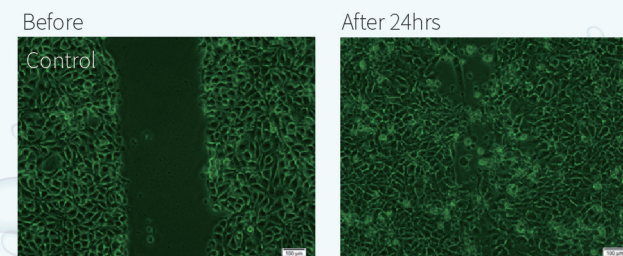
Results show that, Hyafactor-SG can significantly improve the skin moisture accumulation, provide long-term moisturization and reduce skin dryness. The skin hydration increased by 15.4% after 2 weeks application and increased by 20.2% after 4 weeks application.



### Improve skin barrier function

#### Repair damaged cells

Results show that, the scratched cells are healed completely after 24hrs in contact with Hyafactor-SG, while the healing rate is about 70% for the placebo group. These results indicate that Hyafactor-SG can accelerate cell migration and promote the repairing ability of damaged cells, thus strengthening the barrier function of stratum corneum and reducing the water evaporation from inside.



Cell model: Human keratinocytes (HaCaT)

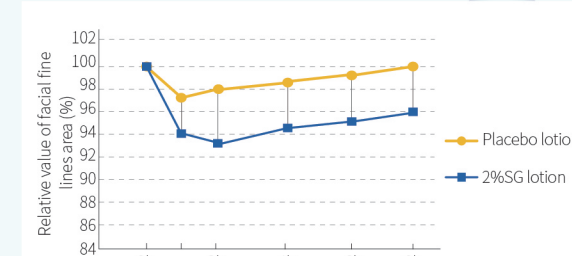
Sample: 2% Hyafactor-SG aqueous solution

Cells were damaged by mechanically scratching, then the migrating and repairing ability of Hyafactor-SG were evaluated.



### Skin roughness evaluation

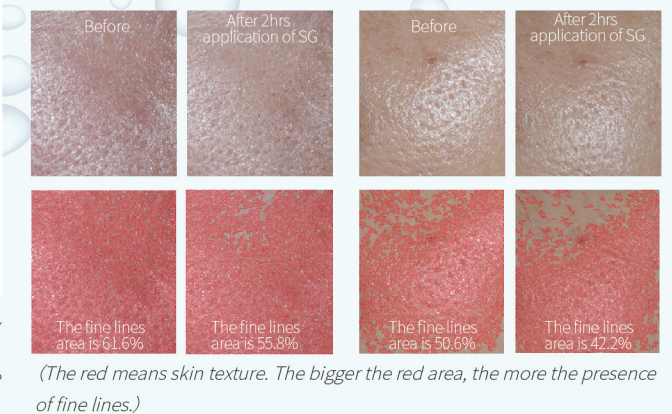
#### Facial fine lines analysis



The initial value is 100, the smaller the number, the better the effect.

The left and right faces of 30 healthy subjects were treated respectively with placebo lotion and 2% SG lotion, then we took high-resolution photos with VISA CR. The area of fine lines and smoothness were evaluated using IPP software.

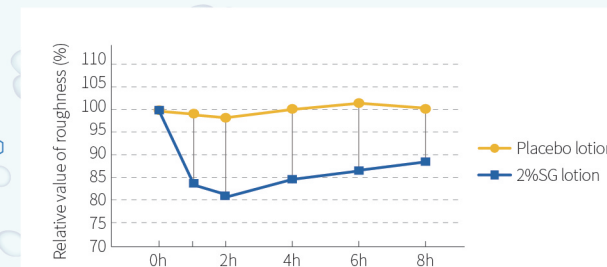
The pictures of facial fine lines in the fixed area



(The red means skin texture. The bigger the red area, the more the presence of fine lines.)

Results of the images and IPP software analysis shown a marked improvement of facial textures and the reduction of fine lines in the test area by the application of Hyafactor-SG. The relative value of fine lines area is reduced by 5.7% on average after 1hr application and by 6.8% on average after 2hrs application.

#### Short-term smoothness analysis



The initial value is 100, the smaller the number, the better the effect.

Results show that, Hyafactor-SG can improve skin roughness. The relative value of roughness is reduced by 11.2% after 1hr application and by 19.7% after 2hrs application.