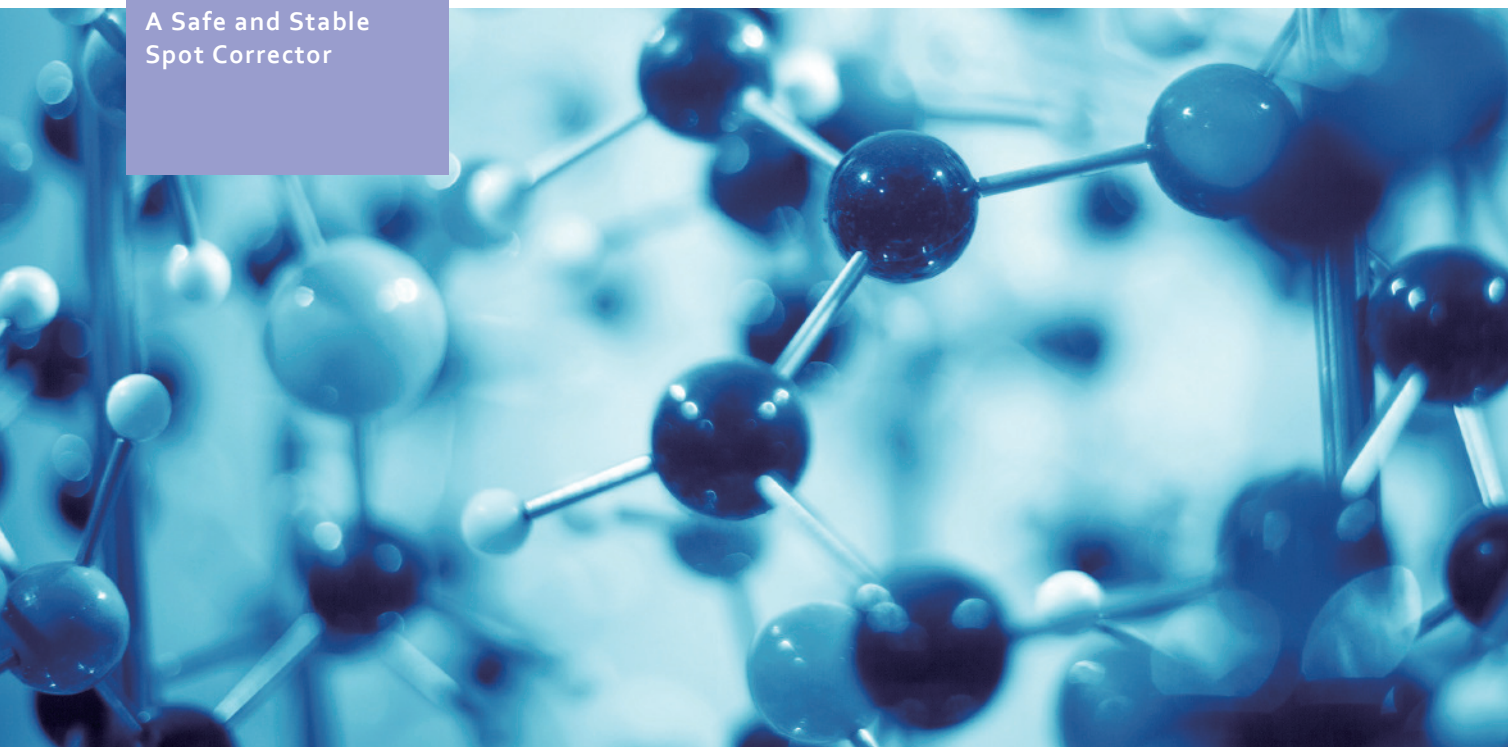


# GenoWhite™

A Safe and Stable  
Spot Corrector

## Advanced Whitening Peptide



## GenoWhite™

### INCI Declaration

Acetyl Glycyl β - Alanine

### Benefits

- Lighten skin
- Reduce dark spots
- Improve skin clarity
- Even out skin tone
- Prevent pigmentation

### Applications

- Skin whitening/ lightening
- Age spot corrector

GenoWhite™ is the advanced patented peptide that possesses fast dermal penetration feature. At low concentration, GenoWhite™ can bring about outstanding performances in melanin reduction and inhibition of melanosome transport and melanin-generating enzymes Tyrosinase, TRP-1 and TRP-2. GenoWhite™ also functions genetically to diminish the melanin-promoting transcription factor MITF. *Ex-vivo* and *in-vivo* tests both indicate its significant effectiveness in spot whitening within only 9 and 14 days, respectively. Proven by a series of extensive studies, GenoWhite™ is an extremely powerful, fast-acting "spot-correcting" agent that is safe, stable and easy to formulate with.

### The Mechanism of Pigmentation

Melanogenesis is a complex process controlled by various factors, which are mainly determined by the activation of MITF. It is the key regulator responsible for the synthesis of three melanin-generating enzymes: TRP-1, TRP-2 and Tyrosinase. Skin pigmentation includes three major processes : melanosome formation, melanin synthesis, and melanosome transport. Visible skin pigmentation depends dominantly on the synthesis of melanin. Melanosomes are organelles of pigment cells, in which melanins are synthesized and stored. When melanosome matures, the ultimate step is to be transported from perinuclear region of melanocytes to its dendritic tip via intracellular cytoskeleton system. The synthesized melanin in fully mature melanosomes will be subsequently distributed to neighboring keratinocytes toward the upper skin layer, resulting in dull and pigmented skin.

Several anchoring proteins have been identified as crucial molecules involved in the melanosome transport process. Rab27a, Myosin Va and melanophilin are three factors constituting a tripartite complex to mediate proper transfer of melanosomes. Aside from melanin transport, the cellular and molecular interactions between melanocytes and keratinocytes also play a very important role. Epidermal melanin unit, a proposed anatomical model, is a functional and structural complex in epidermis consisting of both cell types; there are 36 keratinocytes surrounding each melanocyte to form a specialized cell group. The cross-talk of the epidermal melanin unit is critically connected and controlled through paracrine released in between the cell groups.

# GenoWhite™

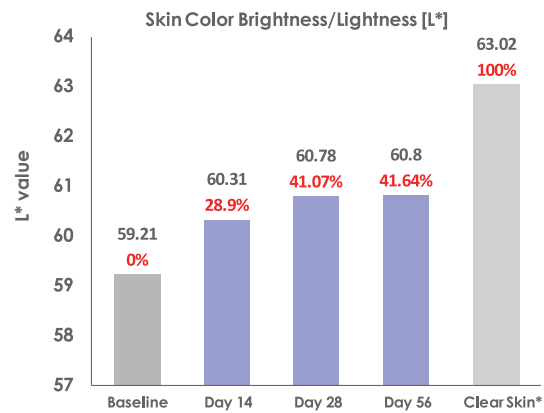
## Efficacy Study

4

### In-Vivo Age Spot Reducing Test - 1 :

Improvement on Skin Lightening:

A study conducted by AMA laboratories, USA, in accordance to the chromometry principle was carried out to evaluate the effectiveness of GenoWhite™ on reducing hyperpigmentation on human face. Results demonstrate that GenoWhite™ can achieve profound increase in L\* value which is associated with skin lightening. The mean results were considered statistically significant at each evaluation time point with 28.9%, 41.07% and 41.64% of L\* value improvement observed after 14, 28 and 56 days of application, respectively.



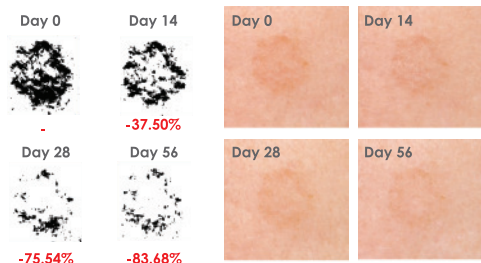
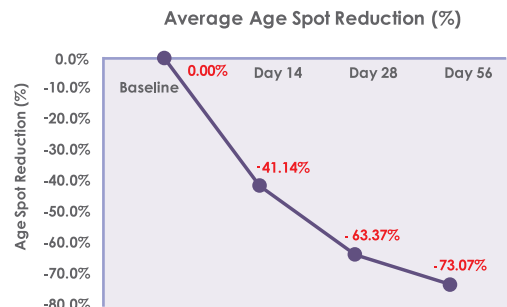
\*Defined as the most natural, untanned skin tone of each individual.

5

### In-Vivo Age Spot Reducing Test - 2 :

Reduction of Age Spots

Particularly detailed, high resolution digital photographs were taken at baseline and again after 14, 28 and 56 days of GenoWhite™ application and comprehensively evaluated using Reverse Photo Engineering. Both visual and computerized records of GenoWhite™ efficacy were evaluated on five subjects' faces, age ranged from 38-49 with noticeable age spots. Image analysis software demonstrated a significant improvement in spot lightening in only 14 days, using 2% GenoWhite™



# GenoWhite™

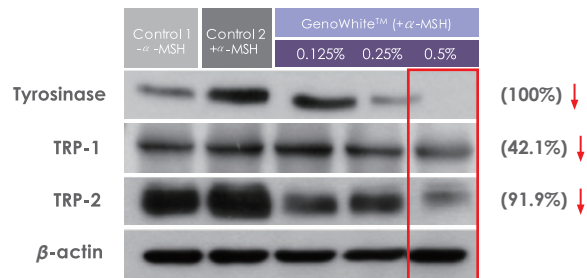
## Efficacy Study

1

### Inhibition of Melanin-Generating Enzymes :

Inhibition of Tyrosinase, TRP-1 and TRP-2

Genowhite™ was applied to the cells together with  $\alpha$ -MSH at various concentrations (0.125%, 0.25% and 0.5%). Western blot results show a significant induction of melanin-generating enzymes by  $\alpha$ -MSH. However, Genowhite™ can effectively inhibit the protein levels of tyrosinase, TRP-1 and TRP-2, indicating its excellent ability in reducing skin pigmentation.

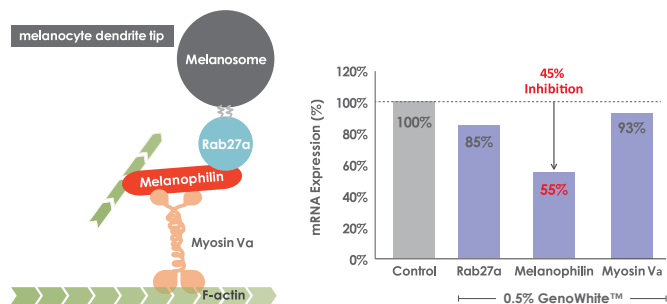


2

### Inhibition of Melanosome Transport :

Down-regulation of Melanophilin

The ultimate step of melanogenesis is to transport the melanosomes to keratinocytes through a tripartite system which involves three proteins, namely Rab27a, Myosin Va and melanophilin. Melanophilin is the key regulator for the transport process that acts as an anchoring protein for melanosome transport. Genowhite™ achieves outstanding performance in inhibiting melanophilin on both mRNA and protein level, which in turn interferes with skin pigmentation.

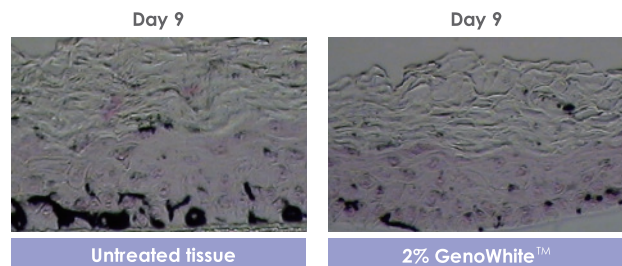


3

### Inhibition of Melanin Production

Melanin Assessment: *in-vitro* Whitening Study

MelanoDerm™ is an *in-vitro* tissue model of human epidermis prepared from co-cultured keratinocytes and melanocytes. This assay is designed to assess the potential of a test material to induce changes in tissue pigmentation. The result shows that 2% GenoWhite™ has excellent ability in reducing skin pigmentation after 9 days of application.



# GenoWhite™

Advanced Whitening Peptide

## Claim Ideas for GenoWhite™

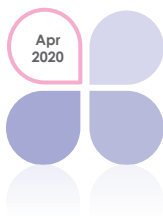
- Skin lightening/ Whitening
- Reduce dark spots
- Improve skin clarity
- Even out skin tone
- Prevent pigmentation

## Applications

- Skin whitening/ lightening
- Spot corrector

## Marketing Benefits

- Advanced whitening peptide
- New and patented
- Non irritant, non-mutagenic and non-toxic
- Suitable for all types of formulation and easy to formulate
- China REACH registered



**CORUM**

6F, No. 360, Ruei Guang Rd., Neihu, Taipei, Taiwan  
Tel: 886-2- 87516060 | Fax: 886-2- 87516363  
sales@corum.com.tw | www.corum.com.tw