

Press Release

Shiseido Develops a New Active Ingredient to “Rejuvenate Skin”
-Confirmed significant improving of skin texture
and protecting degradation of basement membrane-

Shiseido Company, Limited (“Shiseido”) has discovered for the first time ever that laminin-511, a key component of the epidermal basement membrane existing between the epidermis and dermis, plays an important role in maintaining epidermal stem cells, which are a vital factor for skin rejuvenation (Figure 1). At the same time, in understanding that laminin-511 degrades with UV exposure, Shiseido has after 12 years of ongoing research developed Stemlan-173, a new active ingredient effectively protecting the degradation of laminin-511, and confirmed that by inhibiting the degradation of laminin-511 through treatment with Stemlan-173, the epidermal basement membrane maintains good condition in research subjects aged zero to their 60s , suggesting that Stemlan-173 has a significant skin texture improving effect. Furthermore, Shiseido also discovered that algae extract acts as an active ingredient to promote the production of laminin-511, which decreases with aging.

Going forward, Shiseido will apply these new findings to the development of skincare products as an effective technology that helps all sorts of consumers to rejuvenate their skin.

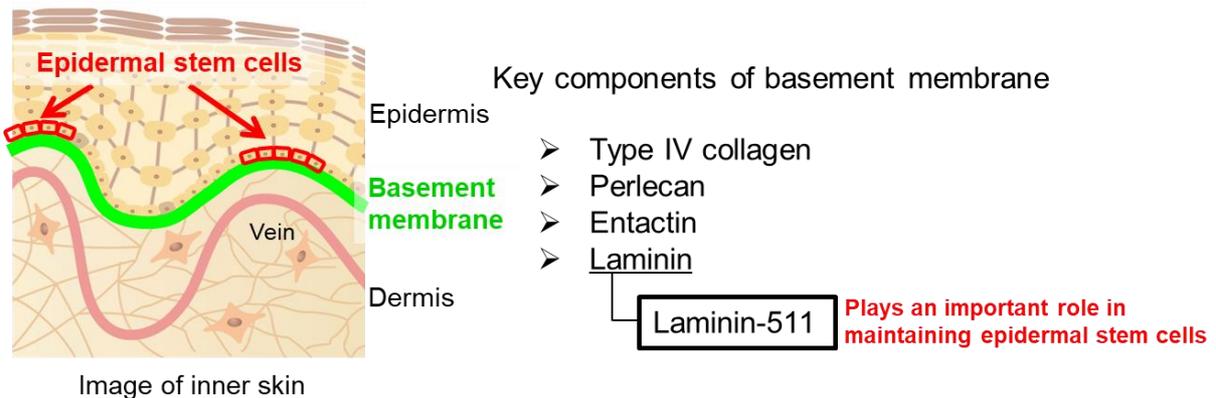


Fig. 1. Laminin-511, a key component of the basement membrane

Relationship between laminin-511 and epidermal basement membrane

Shiseido has conducted research with a focus on the basement membrane for 30 years, and identified that UV damage to the basement membrane induces the formation of wrinkles and dark spots. Through further research, it was also discovered that epidermal stem cells*1 decrease due to damage to the basement membrane. This time, in searching for a basement membrane component involving the decrease of epidermal stem cells, the research team discovered for the first time ever that laminin-511 prevents the decrease of and maintains epidermal stem cells (Figure 2).

*1 Epidermal stem cells: in this research, “epidermal stem cells” means cells with a positive expression of MCSP (Melanoma-associated Chondroitin Sulfate Proteoglycan).

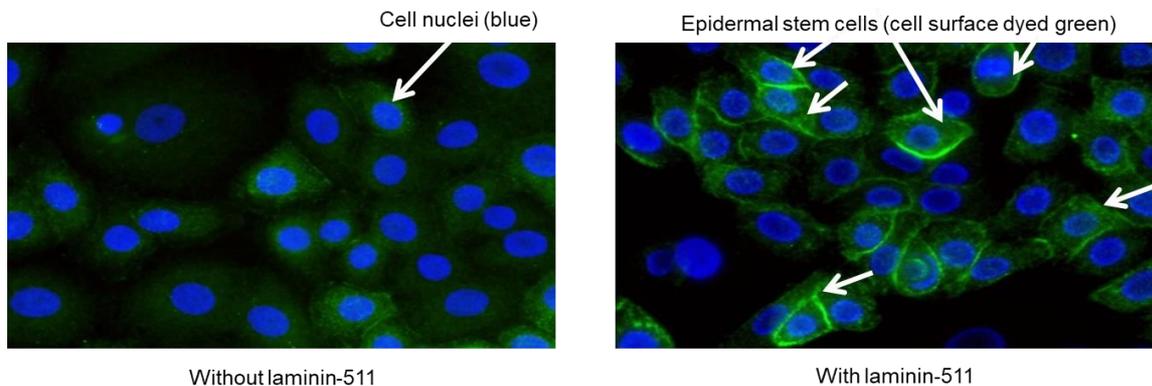


Fig. 2. Epidermal stem cells (dyed green) are maintained with laminin-511 (in vitro culture)

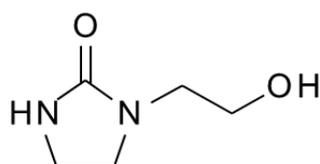
Development of an ingredient protecting the degradation and promoting the production of laminin-511

After pursuing further research on laminin-511, which plays an important role in maintaining epidermal stem cells, Shiseido confirmed the following two factors causing skin aging:

1. Laminin-511 degrades with UV exposure
2. Laminin-511 decreases with aging

Therefore, Shiseido searched for an ingredient that protects the degradation of laminin-511 among approx. 20,000 candidate ingredients expected to have a beneficial effect on skin, and after 12 years of ongoing research, succeeded in developing Stemlan-173, a new active ingredient that significantly protects the degradation of laminin-511 and maintains epidermal stem cells (Figure 3, 4). Moreover, the team also searched for an ingredient promoting the production of laminin-511 among approx. 180 naturally-derived extracts and determined the effectiveness of algae extract*² (Figure 5, 6).

*² Algae extract: extract consisting of green algae, red algae and brown algae extracts.



Stemlan-173
 Chemical name:
 Hydroxyethyl-imidazolidinone

Fig. 3. Structure of Stemlan-173

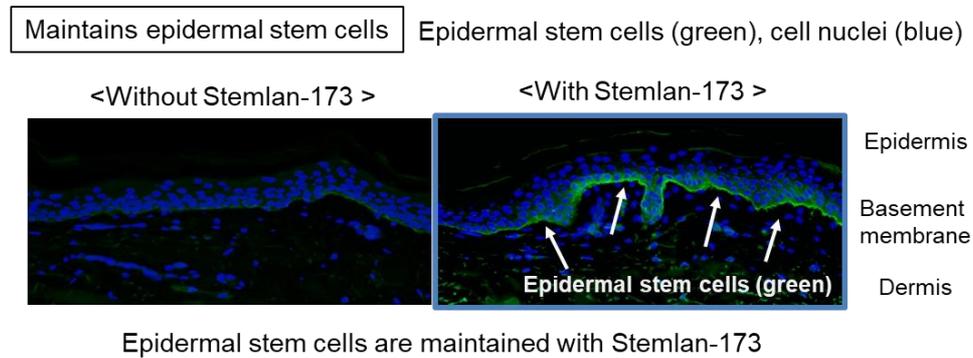
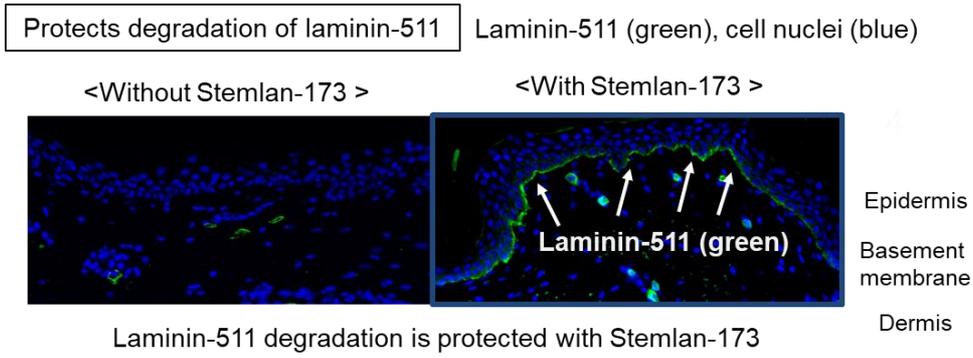


Fig. 4. Stemlan-173 protects laminin-511 degradation and maintains epidermal stem cells (ex vivo culture model of human skin).

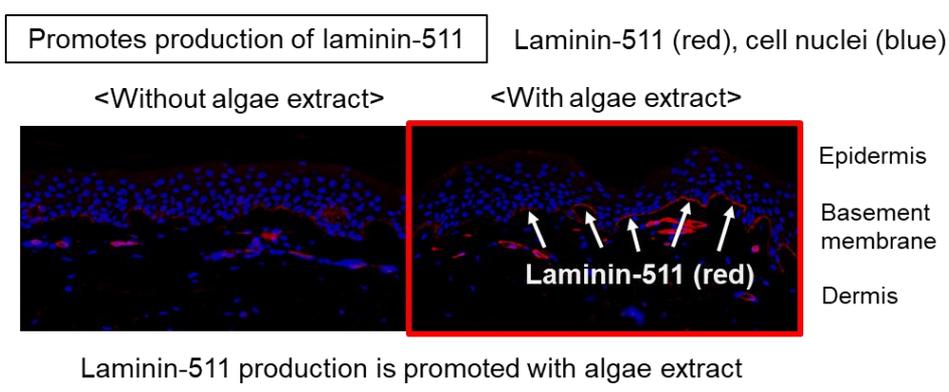


Fig. 5. Algae extract promotes laminin-511 production (ex vivo culture model of human skin).

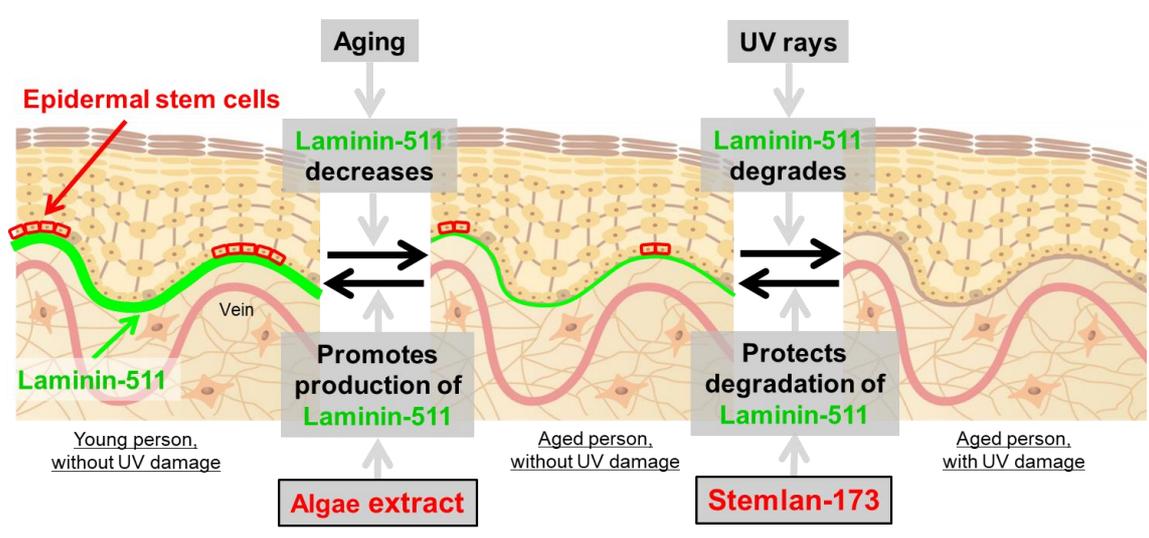
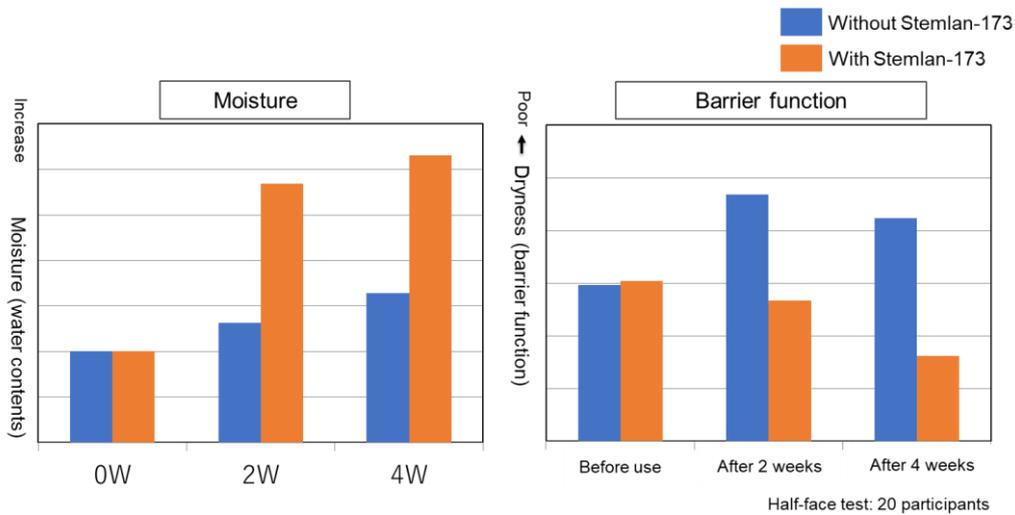


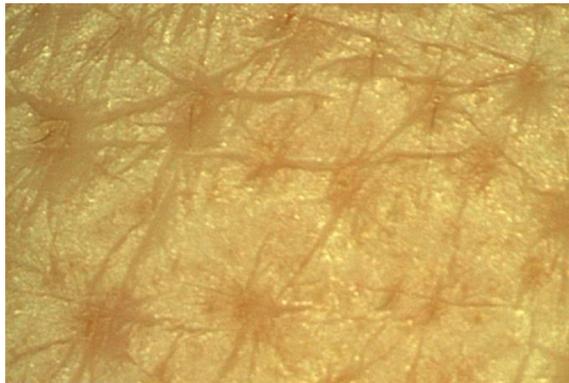
Fig. 6. Image of the effects of Stemlan-173 and algae extract on skin (Algae extract promotes production of laminin-511, which decreases with aging. Stemlan-173 protects laminin-511 degradation after UV exposure)

Stemlan-173's skin improvement effect

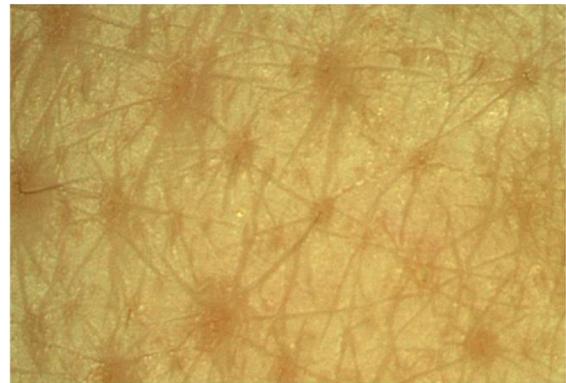
Shiseido confirmed that Stemlan-173 improves skin rejuvenation and overall skin condition by protecting the degradation of laminin-511 and the decrease of epidermal stem cells (Figure 7). It is known that epidermal stem cells decrease from the peak amount at birth with aging, whereas Stemlan-173 protects the decrease of and maintains epidermal stem cells. Looking ahead, Shiseido will apply Stemlan-173 to the production of new skincare products as it helps all sorts of consumers to rejuvenate their skin.



Stemlan-173 improves skin moisture and protects dryness



Before use



After 4 weeks of use

Skin texture: improved after 4 weeks of using Stemlan-173

Fig. 7. Skin texture is improved with use of Stemlan-173

For inquiries on this press release, please contact Shiseido Global Communications Department.

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