Press Release

Research and Development

Shiseido Discovers Dual Effect in Cilantro Fruit Extract: Eliminating Senescent Cells and Increasing Normal Cells in Skin

Drawing on Findings from over 20 Years of Regenerative Medicine Research

Shiseido Company, Limited ("Shiseido"), drawing on findings from hair regenerative medicine research, has discovered that cilantro fruit (Coriandrum sativum) extract delivers a dual effect, eliminating senescent cells (stagnant, aged cells) and increasing normal (non-senescent) cells in skin. Furthermore, Shiseido has confirmed that this increase in normal cells promotes collagen production.

In skin aging, it is observed that not only do the structural cells themselves age, but they also negatively affect surrounding cells, accelerating senescence. This breakthrough was made possible by recognizing the importance of eliminating senescent cells, which is one of the triggers for aging. For over 20 years, Shiseido has conducted extensive basic and clinical research related to skin and hair regenerative medicine from a unique perspective. This has led to the development of methods for cell evaluation and observation. As a result, the research team has found a way to selectively eliminate senescent cells, which was previously difficult to do. Shiseido also found that the extract not only maintains normal fibroblasts but actually increases their number, which effectively regenerates and restores the skin's ability to produce dermal components. This dual action opens the door to a new, fundamental, and effective approach to aging care.

Moving forward, Shiseido will continue to leverage its extensive experience in both regenerative medicine and cosmetics, integrating knowledge from the different fields of medicine and cosmetics to advance research on the prevention and treatment of aging.

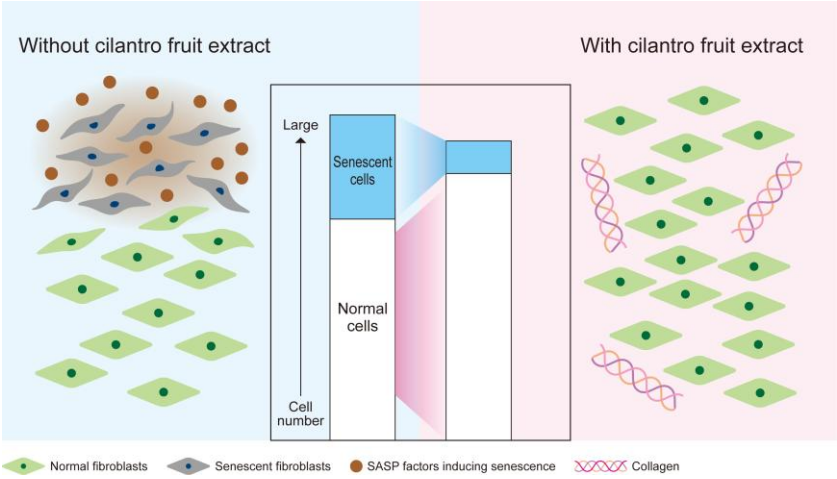


Figure 1 Effect of cilantro fruit extract on skin

Research Background

Regenerative medicine is a medical approach that harnesses the power of cells to regenerate lost functions in the body. When culturing cells necessary for regeneration, it is important to increase the number of healthy cells. However, a certain number of improperly functioning senescent cells are generated, and these cells release harmful SASP factors*1 that further reduce the number of surrounding healthy cells. For this reason, research on senolytics, an approach to eliminate senescent cells, has been actively pursued in regenerative medicine. Shiseido, which has been conducting regenerative

medicine research for many years, considered whether regenerative medicine could be applied to other fields and explored methods to eliminate senescent cells from the skin.

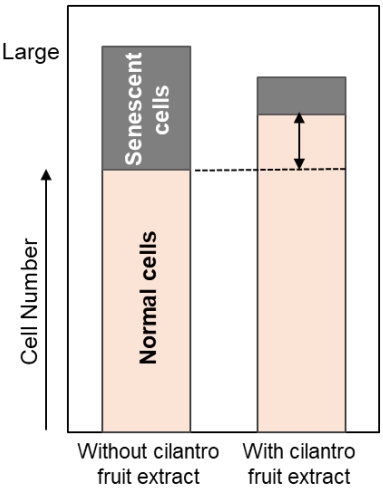
The extract was originally found to increase the number of cells that make up hair follicles during hair regenerative medicine research*2. Shiseido found that special fatty acids in this extract have high physiological activity. After verifying its effects on skin, it became apparent that this extract may also positively affect fibroblasts.

*1 Senescence-associated secretory phenotype. A SASP factor refers to a general term for factors, including cytokines, chemokines, growth factors, and proteases, which are secreted by senescent cells. These factors cause inflammation and adversely affect surrounding cells, thus contributing to the progression of aging and related diseases.

*2 Shiseido developed coriander extract, which promotes the proliferation of hair matrix cells and hair root sheath cells, resulting in thick, resilient hair (1997).

Effects of Cilantro Fruit Extract on Skin

When cilantro fruit extract was added to and cultured with dermal fibroblasts induced to age by oxidative stress, cell death (apoptosis) was induced, which successfully eliminated senescent cells (Figure 2). These effects were not observed in normal cells that had not undergone aging, indicating that the extract specifically acts on senescent cells. Furthermore, when the extract was added to a mixture of approximately equal parts normal and senescent cells, a decrease in senescent cells and an increase in normal cells were observed (Figure 3), along with decreased expression of aging markers (SA-b-Gal, P21). These experiments suggest that the extract produces an ideal effect, eliminating only senescent cells while increasing normal healthy cells.



Figures 2(Left) and 3(Right) Cilantro fruit extract decreases senescent cells and increases normal cells

This increase in normal cells promoted collagen production in dermal fibroblasts (Figure 4). These regenerative medicine-inspired technologies discovered in this study are expected to delay the progression of skin senescence and restore skin function.

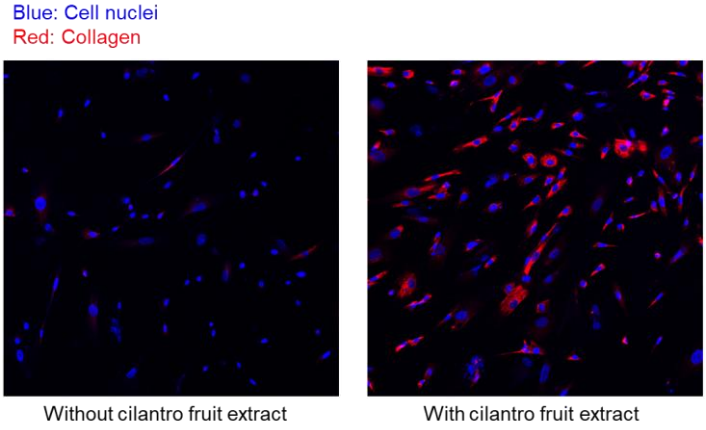


Figure 4 Cilantro fruit extract promotes collagen production by increasing normal cells

Future Prospects

Leveraging its years of expertise in both regenerative medicine and cosmetics, Shiseido will continue to develop advanced solutions that address consumers' aging concerns by integrating knowledge from the different fields of medicine and cosmetics and incorporating cutting-edge insights, such as senolytics.

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R&D Strategy

Shiseido has established three pillars under its R&D philosophy “DYNAMIC HARMONY” to accelerate innovation: “Skin Beauty Innovation: Equity enhancement of brands,” “Sustainability Innovation: Circular value creation,” and “Future Beauty Innovation: Challenges in new areas.” Additionally, Shiseido promotes open innovation and advances new value creation through research alliances with various external organizations. The innovative research outcomes generated from the fusion of Shiseido's advanced science and the knowledge and technology of world-class research institutions are highly regarded academically on a global scale, including at the IFSCC Congress, the world's largest and most prestigious research conference on cosmetic technology.

About R&D Philosophy “DYNAMIC HARMONY”
https://corp.shiseido.com/en/rd/dynamicharmony

Reference

About Shiseido's Regenerative Medicine Research

For over 20 years, Shiseido has conducted extensive basic to clinical research related to skin and hair regenerative medicine. In the field of skin regeneration, it has focused on cellular-level repair mechanisms and the function of growth factors, accumulating data along the way. In the past, Shiseido analyzed mechanisms underlying the effectiveness of W-PRP*3 therapy and applied their findings to cosmetics, enabling the incorporation of physiological activity confirmed in medical settings into daily skin care. In the field of hair care research, Shiseido began clinical research in 2016, and since 2024, it has been collaborating with medical institutions to support the provision of treatment as part of regenerative medicine.

*3 One of PRP treatments that are commonly applied as a regenerative medicine method in medical cosmetics, plastic surgery, dentistry, etc. This treatment promotes tissue regeneration by injecting the patient's own platelets and white blood cell-containing platelet-rich plasma into the patient's skin

Related press releases

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https://corp.shiseido.com/en/newsimg/2441_z1k42_en.pdf

・ Shiseido Succeeds in Developing a "Dermal Senescent Cell Model" to Explain Cause of Propagation of Aging (2022)
https://corp.shiseido.com/jp/newsimg/3453_l3u42_jp.pdf (In Japanese only)

・ Shiseido develops a unique mixture of extracts that prevents thinning of the dermis, a phenomenon caused by aging (2023)
https://corp.shiseido.com/en/newsimg/3618_y8r65_en.pdf

・ New Clinical Research Launched Toward Clinical Use of Hair Regenerative Therapy: Confirmation of Efficacy Across the Entire Hair Loss Area (2020)
https://www.tokyo-med.ac.jp/news/20201210pressrelease.pdf (In Japanese only)

・ Hair Regenerative Therapy Using S-DSC Begins: Aiming to Contribute to Improving Quality of Life for Hair Loss Patients (2024)
https://www.toho-u.ac.jp/press/2024_index/20240628-1381.html (In Japanese only)