Seeing is believing:

Visible evidence of the benefits of Lycoderm™ for skin

Lycored

The rise of beauty-from-within

As we age, our skin becomes more susceptible to the effects of environmental stress, resulting in wrinkling, dryness, loss of elasticity and other negative impacts on parameters associated with beauty. In recent decades, awareness of the relationship between dietary supplementation and skin appearance has increased significantly, among consumers as well as the scientific community.

Carotenoids like lycopene, for example, can be a valuable element of a healthy skincare routine. By building up a natural reservoir of these free radical-fighting phytonutrients, we can improve our skin's resilience to environmental challenges.

The concept of ingestible skincare is now firmly in the mainstream. Ultimately, however, consumers will make decisions based on visible results. They want to feel good but also to see a return on the investment of their time, energy and money.

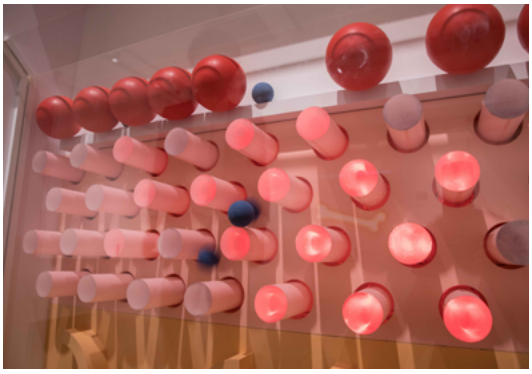
In this paper, we detail the significant results of a new clinical study carried out on Lycoderm™ – Lycored's proprietary blend of tomato phytonutrients and rosemary leaf.

Lycoderm™: A story that deserves to be told

Lycoderm™, Lycored's star nutrient complex for skincare supplements, is the result of 25 years of hard work and innovation. The main driver for its story is research: from cell-culture studies to human clinical trials, we've built up a substantial body of evidence for its benefits, and for the role of carotenoids in skincare generally.

Along the way, we've changed the conversation around beauty-from-within, challenging consumer and industry preconceptions, and helping grow the ingestible skincare category.

We believe it's a story that deserves to be told.



1995

The story begins

Lycoderm is born of the belief that healthy skin starts on the inside. However, it was the outside of our hero fruit that helped clarify our mission. In 1995, inspired by the sight of smooth-skinned tomatoes growing and ripening in our fields, we began the process of creating our first ingestible skincare product.

After years of trial and error, we finally identified the ideal combination of carotenoids and other nutrients for skin health. We refined and refined again, conducting trial after trial to achieve the optimal concentrations of lycopene, phytoene and phytofluene, as well as vitamins A and E and carnosic acid.

Of course there were challenges. For example, phytoene and phytofluene absorb UV radiation and are very difficult to see. We painstakingly created innovative detection methods that helped reveal, extract, and standardize these carotenoids to ensure the highest quality standards.

But that was only the beginning. In recent years, we've focused heavily on testing and researching Lycoderm.

2017

Evidence of UV protection

In 2016 we commissioned new research from the Leibniz Research Institute for Environmental Medicine. The double-blind, placebo-controlled cross-over study included 65 subjects. It found that our lycopene-rich tomato nutrient complex could help protect the skin from UV-induced radiation and upregulation of molecular markers associated with oxidative stress, inflammation and aging.[1]

The research was published in the British Journal of Dermatology in 2017 and won the NutraIngredients award for best university research in the same year.[2]

2018

Healthy blood flow

It is well known that healthy circulation is important for proper nutrient delivery and maintaining vital-looking skin. In 2018, another placebo-controlled study showed that our standardized tomato extract decreased anti-inflammatory markers and supported healthy blood flow.[3]

2019

Decrease in redness following UV exposure

In 2019, we set out to test the effectiveness of Lycoderm through our largest double-blind clinical study to date. Its aim was to examine the bioavailability, safety and efficacy of Lycoderm and to explore its potential to help balance the skin's response to UV challenge.[4]

One hundred and forty-five healthy men and women supplemented for 12 weeks with softgels containing either Lycoderm or a placebo. They were exposed to controlled local UV radiation at baseline, and again at the end of supplementation. A statistically significant decrease in erythema (skin redness) was observed in the group taking Lycoderm compared to the placebo group.

The results also provided specific evidence for the mechanism of action of Lycoderm, demonstrating a significant effect on pro-inflammatory cytokines induced by UV exposure.

While carotenoids cannot be compared with sunscreen, the study provided further evidence that they can help protect the skin by increasing its natural defense against UV damage. The case was clear for a causal relationship between supplementation with Lycoderm and benefits for the skin.

The “Seeing is Believing” study

In 2020, we reached the most exciting chapter of our story yet: a double-blind, randomized placebo-controlled study evaluating Lycoderm’s impact on skin parameters.[5] As the first study to focus on its effect on visible measures of beauty, this was a major step forward.

Methodology

A panel of **60** healthy women between the ages of **35 and 55** took part. They were divided into two groups and provided with either Lycoderm capsules or placebo for **16 weeks**.

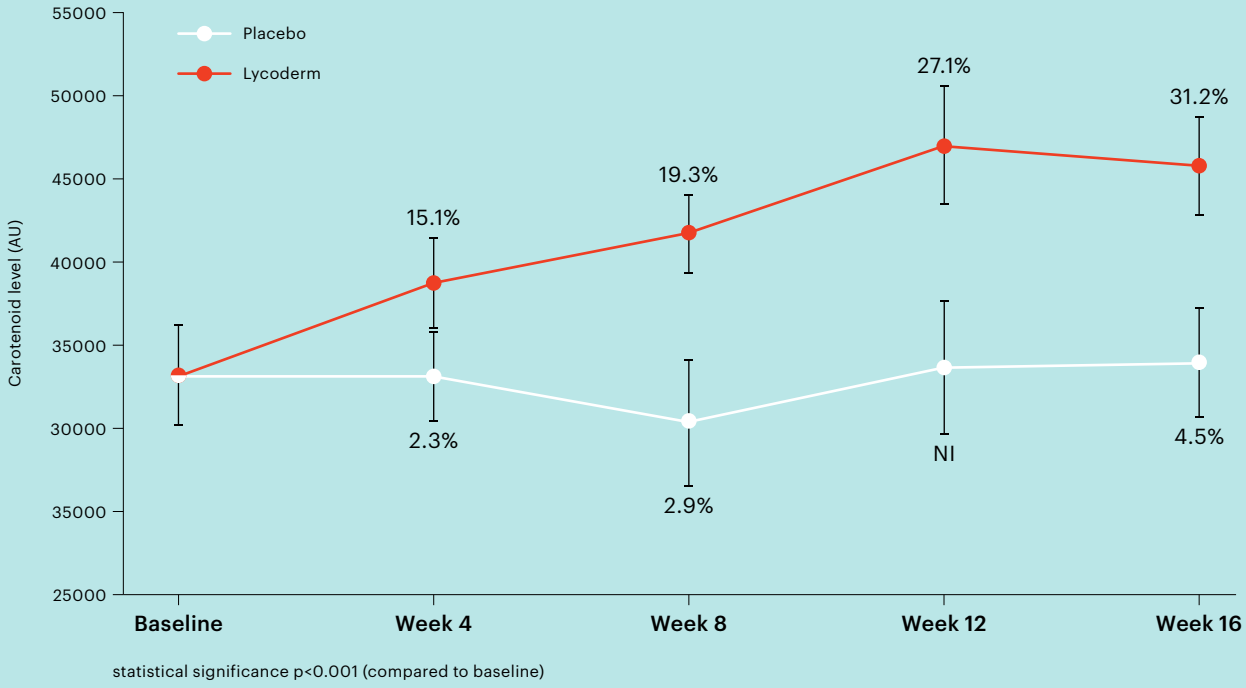
Skin carotenoid level, photo image analysis, questionnaires for assessment of skin condition and expert visual grading of wrinkles were carried out at four-week intervals.

Increased carotenoid levels

Results indicated a statistically significant increase in mean skin carotenoid levels in the Lycoderm group, but no remarkable change in the placebo group.

As shown in Figure 1, skin carotenoid levels increased steadily and significantly in the group treated with Lycoderm, while the placebo group did not exhibit any significant change over the course of the study.

Fig.1 – Skin carotenoid level



statistical significance p<0.001 (compared to baseline)

Fewer fine lines

There was a clear change in facial fine lines and wrinkles in the Lycoderm group. Fig.2 provides photographic evidence of obvious improvement after supplementing with Lycoderm for 16 weeks.

Fig.2 – Fewer fine lines

Image analysis of photographs, expressed as average number of pixels, is displayed in Figure 3. Average wrinkle depth severity reduced by **5.61%** after treatment with Lycoderm, while the placebo group showed no significant difference (Fig.3A). Nearly eight in ten (**78.9%**) of participants in the Lycoderm group exhibited an improvement after 16 weeks.

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Fig.3A – Image analysis of Deep Wrinkle Severity

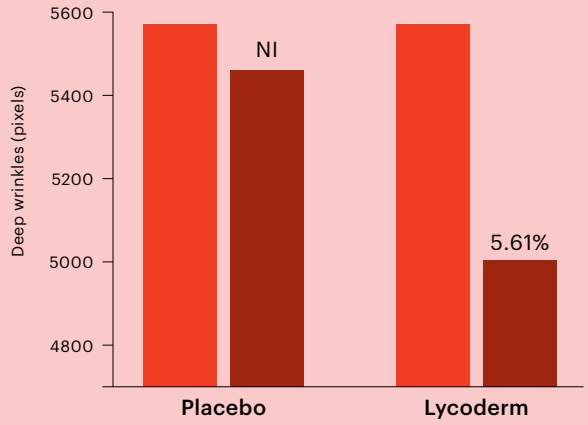
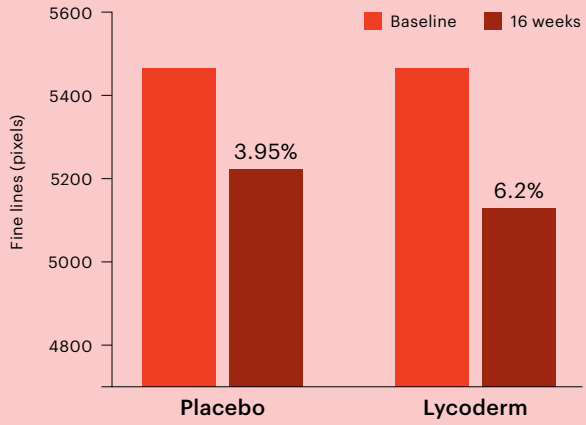


Fig.3B – Image analysis of Fine Line Severity



Fine wrinkle severity in the Lycoderm group also reduced significantly (by **6.2%**). The placebo group showed some reduction in the severity of fine lines (possibly due to the hydration effect of topical moisturizer) but this difference was not statistically significant. (Fig.3B) Figure 3C provides visible evidence of the change in lines after treatment with Lycoderm for 16 weeks.

Fig 3C – Visual change in lines and skin texture after treatment with Lycoderm for 16 weeks.

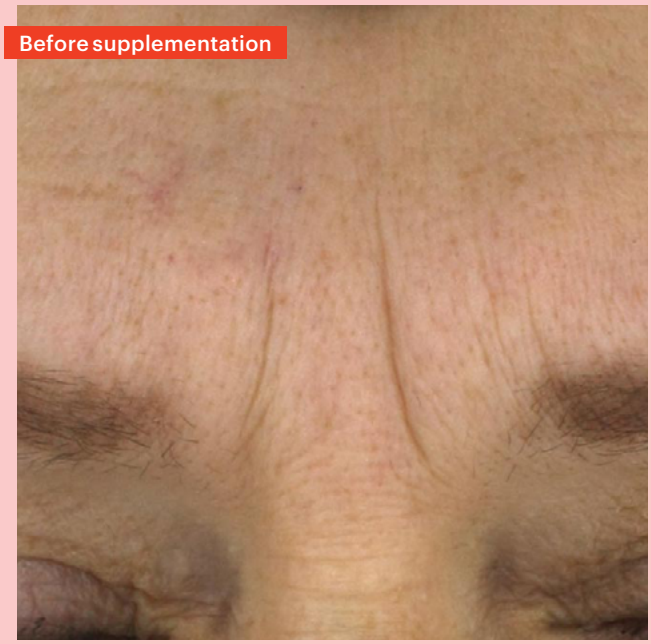


Figure 4A shows the results of subjects' self assessment. They were asked: "Has the product reduced the appearance of fine lines and wrinkles?" After 16 weeks, **61.3%** of the Lycoderm users said they had noticed a reduction. Less than **42%** of subjects in the placebo group noticed an improvement.

Figure 4B shows the proportion of participants who answered yes to the question: "Has the product reduced the appearance of deep lines and wrinkles?" Initially very few were in agreement. However, by the 16 week point, **48.4%** of the Lycoderm group answered positively, compared to 27.6% of the placebo group.

Fig.4A – Self assessment of fine lines and wrinkles

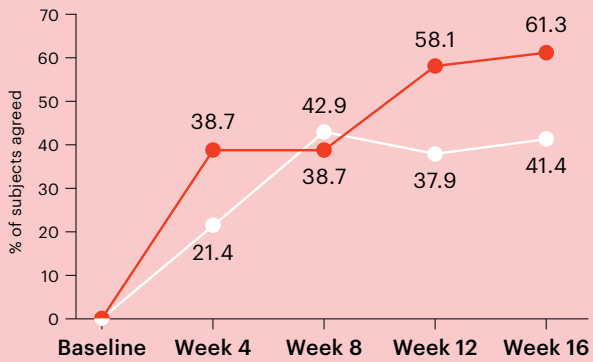
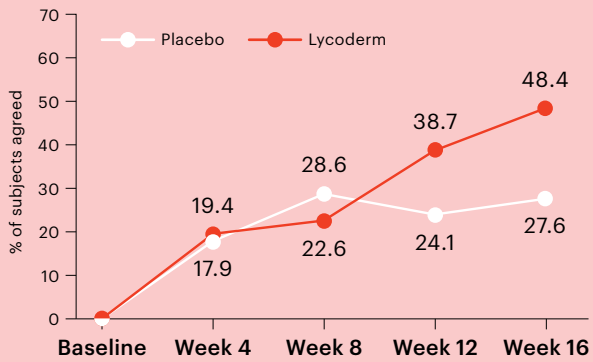


Fig.4B – Self assessment of deep lines and wrinkles



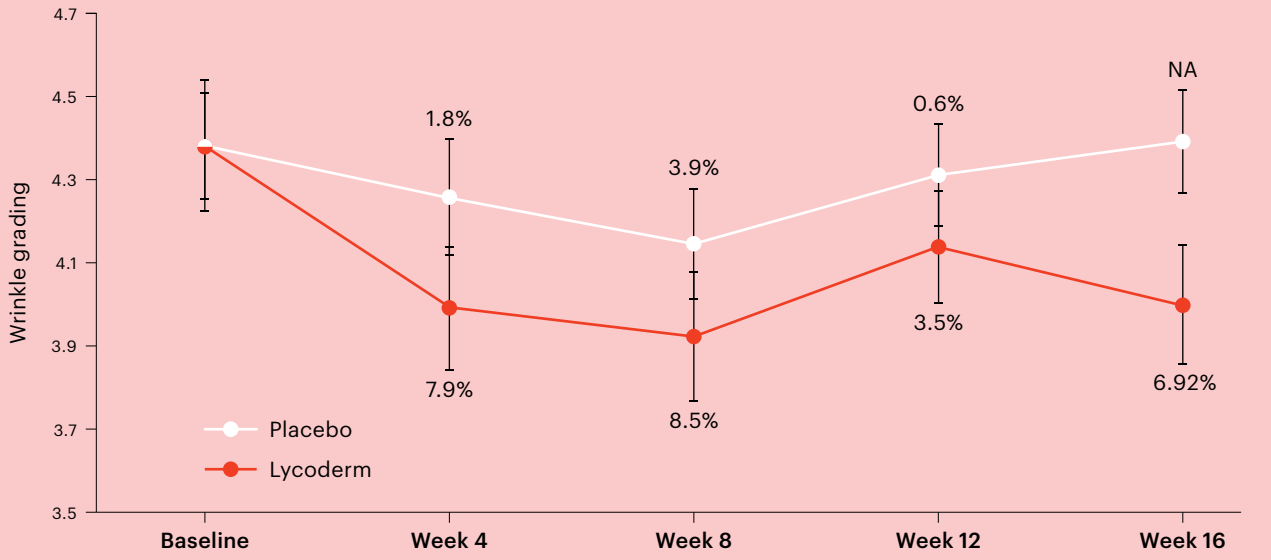
noticed a reduction in the appearance of lines and wrinkles

said the appearance of deep lines and wrinkles had reduced

Figure 5 shows the results of visual grading of facial wrinkles by a trained technician. While the difference in wrinkle grades between the Lycoderm and placebo groups was not statistically significant, the subjects treated with Lycoderm did show signs of reduction in visually perceivable wrinkles.

After 16 weeks, over six in ten (**61.3%**) exhibited an improvement, compared to **48.3%** of those on placebo.

Fig.5 – Visual grading of facial wrinkles



Statistical significance * p<0.05 (compared to baseline)

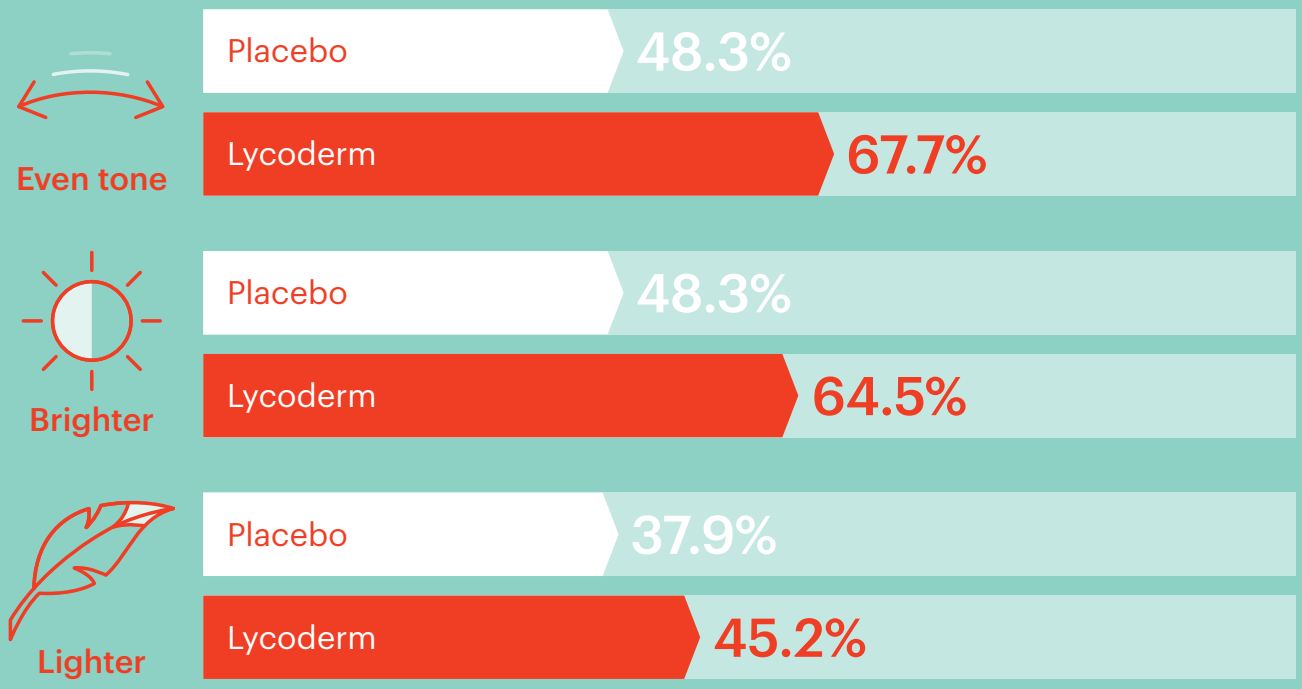
61.3%
of subjects treated with Lycoderm exhibited a reduction in visually perceivable wrinkles after sixteen weeks

Radiance

Another area where Lycoderm delivered noticeable results was radiance. Figure 6 shows the results of subjects' self-assessment of the radiance of their skin. Nearly two thirds (**64.5%**) of subjects in the Lycoderm group noticed an improvement in skin brightness after 16 weeks, compared to **48.3%** of those in the placebo group.

Even more (**67.3%**) of the Lycoderm users reported an improvement in their skin tone after 16 weeks, compared to 48.3% in the placebo group.

Fig.6 – Self-assessment of radiance



Skin smoothness

As seen in Figure 7, subjects on Lycoderm were much more likely to report improvement in skin smoothness than those in the placebo group. After 16 weeks, **over 80%** said the product had improved their skin texture, compared to **65.5%** in the placebo group. Figure 7B is a photographic example of improvement in skin smoothness.

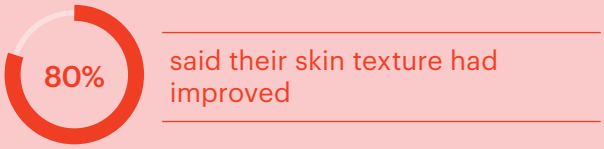


Fig.7 – The test product has improved my skin's texture

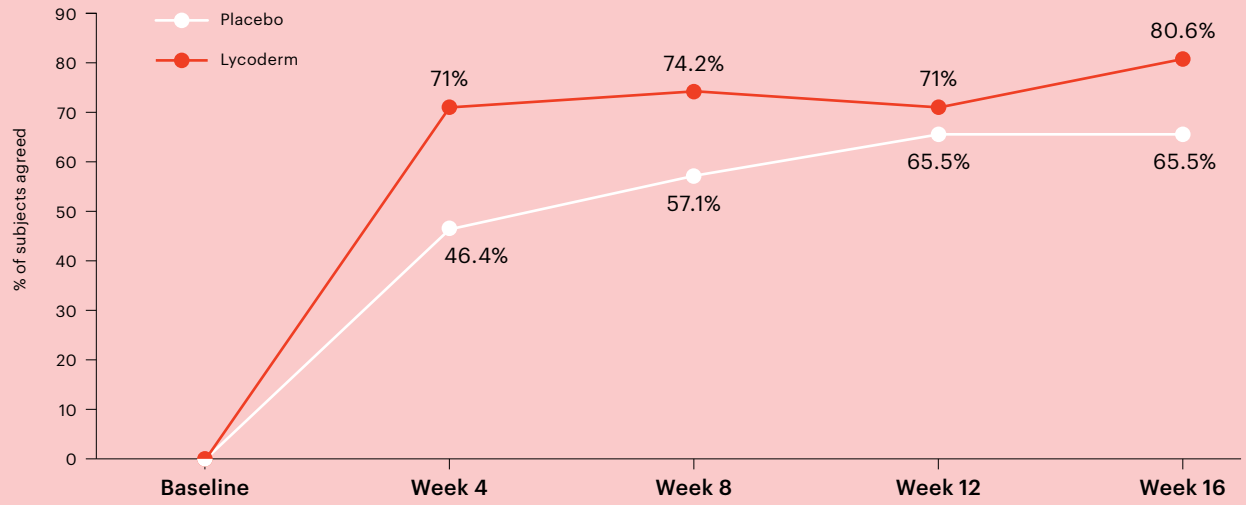


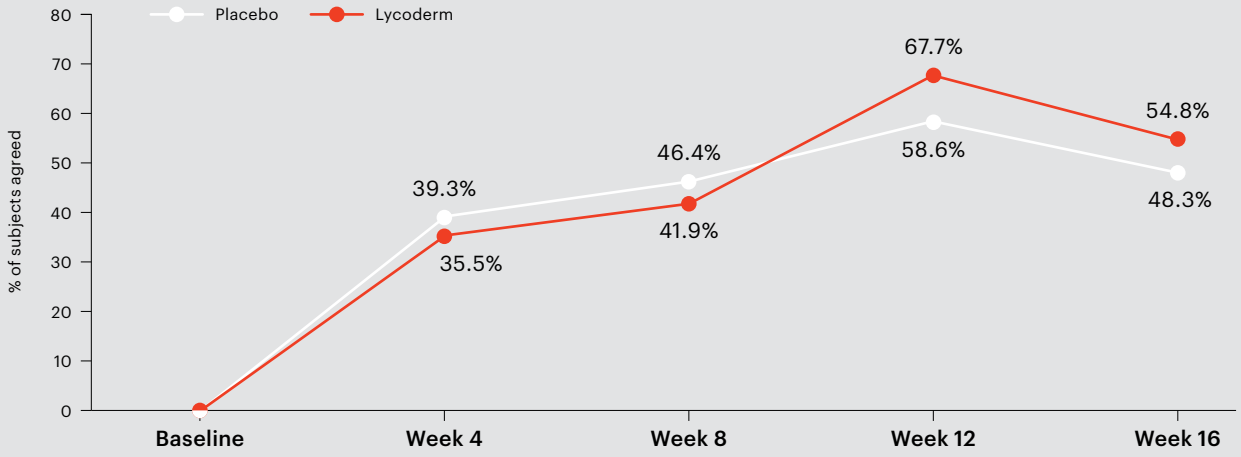
Fig.7B – Improvement in skin smoothness,

Tightness and hydration

Both groups appeared to show some improvement to skin tightness and hydration after treatment (Figure 8). There was little difference until the 12-week point, when **67.7%** of participants in the Lycoderm group said the treatment had improved the tightness of their skin, compared to **58.6%** in the placebo group.

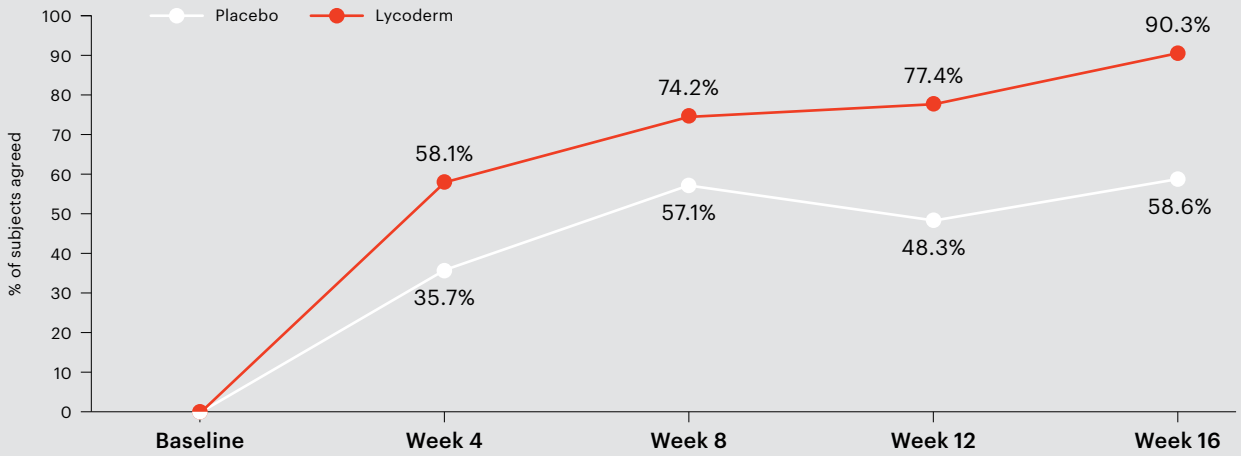
said the treatment had improved the tightness of their skin

Fig.8 – The test product has improved my skin's tone (tightness)



As shown in Figure 9, subjects taking Lycoderm also noticed greater improvements to skin hydration than the placebo group. After 16 weeks, **90.3%** noticed improvements – far higher than the number of those in the placebo group (**58.6%**).

Fig.9 – The test product has improved skin dryness. Skin feels more hydrated



Key Findings

In subjects supplementing with Lycoderm, there was evidence of:

- **A statistically significant increase in skin carotenoid levels**
- **Fewer fine lines**
- **Improvement in skin brightness and tone**
- **Improvement in skin texture and tightness**

Lycoderm™: Real results, real possibilities

Previous studies have shown that supplementation with Lycoderm correlates to significant increase in carotenoid levels, and to the skin's resilience to environmental factors. However, our 2020 "seeing is believing" study was the first to demonstrate real changes to visible beauty parameters.

This is a major proof point for consumers. As one of the study participants put it: "I was a bit skeptical to how much we can identify real changes in something that already occurred like lines and wrinkles and I was very surprised."

And with real evidence comes real possibility. Proven effective for a broad spectrum of skin health and beauty parameters, Lycoderm is generally recognized as safe (GRAS) and non-GMO. From soft-gels to liquid shots, it represents massive opportunity for your next ingestible skincare product.

We hope you'll join us for future chapters in the Lycoderm story.

Let's chat

Don't hesitate to contact Lycored with any questions, or just to say hello: info@lycored.com

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