

ACTIVE BEAUTY

PrimalHyal™ Hydra[+]

Redefining gold standard for hydration



Water splash / Moisturising (film-forming)

Givaudan
Human by nature



Focus on the product

Hyaluronic acid is the hydration champion for skincare, but could it be even better?!

In the past few years, a large majority (>70%) of the launches in the face care market claimed **moisturising** benefits¹. This is strongly driven by consumers' desires, as « hydrate & nourish » is **the most desired benefit** women are looking for in a skincare product². But consumers also want benefits to last, as « **long-lasting hydration** » is sought by 73% of French women³, and « **long-lasting** » is the first benefit consumers want in a body care product⁴.

In the meantime, another signature of Beauty consumers is their never-ending confidence in « **hero ingredients** », such as vitamins, collagen, or obviously hyaluronic acid (HA). 87% of consumers are indeed interested in HA for face care, and this is true for any generation or gender⁵. Interestingly, **hydrating is the main claim associated to HA**⁶, making it an ideal candidate to claim about skin moisturisation and to appeal to the public!

However even champions have their limits! HA truly is what the skincare industry can offer best when it comes to hydration in leave-on products, but **it simply does not work in rinsed formulas**, and the long-lastingness of its benefits could be improved.

So how about changing this paradigm? What if there was a way to bring all those claims together, coming up with the perfect solution to use **the power of hyaluronic acid to deliver long-lasting hydration**, in all formats, delivering its amazing properties in **rinse-off** formulas and supercharging it with **enhanced benefits in leave-on** products?

This is the challenge Active Beauty experts decided to take on!



Switch the charge! A cationic HA for perfect skin adhesion, opening doors to rinse-off formulas

To enhance the biological benefits of HA, improve its adhesion to the skin surface, and even enable rinse-off applications, the idea was to play with its **chemical structure**. The surface of the skin being negatively charged, it attracts and retains very efficiently the positively charged molecules. That is why Active Beauty scientists worked on a **new grafted HA** (3rd HA generation), based on its **cationisation**, switching its native negative charge to a positive one.

In order to do so, they had to screen various possibilities, by adjusting the HA molecular weight and the cationisation degree, as both parameters are intimately linked together. After years of research, they were able to craft a unique ingredient: **PrimalHyal™ Hydra[+]**, a novel generation of hyaluronic acid, with a low molecular weight and a high cationisation degree, multiplying its skin adhesion properties to deliver never seen before benefits to the skin.

PrimalHyal™ Hydra[+], the champion of skin hydration!

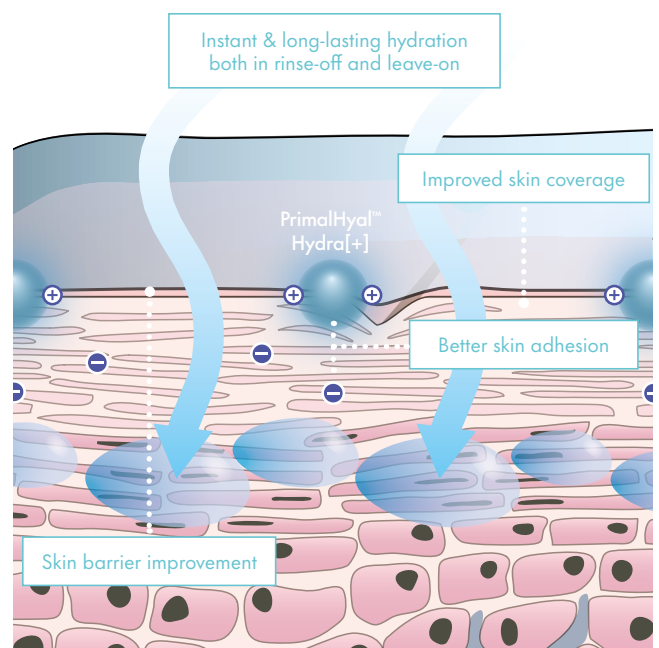
Thanks to its new chemistry, PrimalHyal™ Hydra[+] strongly binds to the skin, to deliver biological benefits in terms of barrier function improvement and **intense moisturisation in rinse-off applications**.

But thanks to its optimal coverage of the skin, it also **outperforms the benefits of "standard" grades of HA in leave-on formats**.

During its clinical evaluation, it demonstrated the following benefits:

- **instant gratification** in just 1 shower (more than +11% vs placebo),
- **flash hydration** in a lotion (×2.6 vs placebo), improving over time,
- improvement of the **barrier function** in a mask format, with impressive **moisturisation boost** (up to +100% in just 1 application vs T0),
- a demonstrated long-lastingness for **up to 4 days** after stopping the treatment!

For all those reasons, **PrimalHyal™ Hydra[+]** pushes the limits, and redefines what hydration is really all about in skincare!

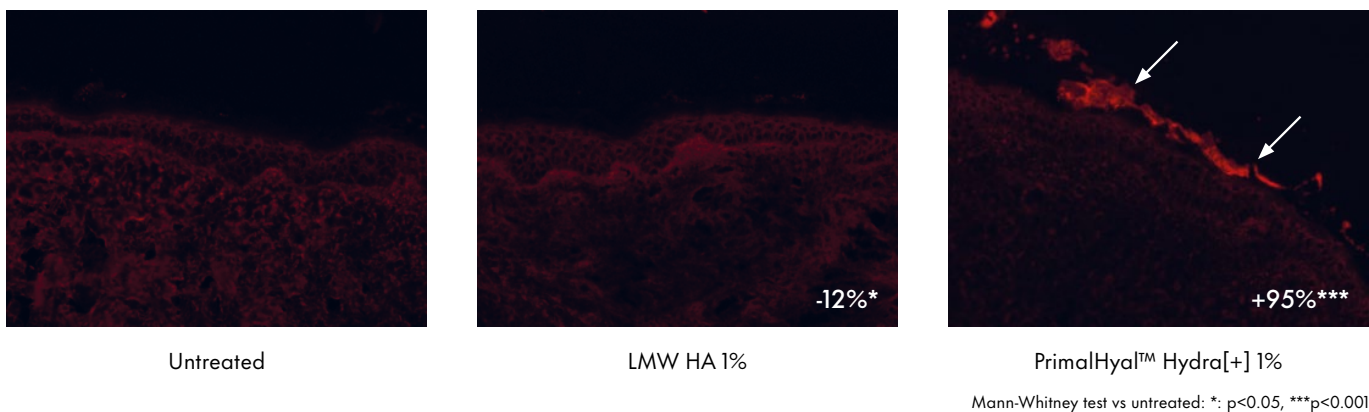


¹ Mintel data ; ^{2,3,4,5,6} Internal Consumers Study (Dream Beauty, Beauty Snapshot, HA Focus, Gen Z, Body Care), available on request.

Biological activity in rinse-off conditions

Perfect skin adhesion properties (ex vivo)

Skin explants (donors of 46 years old in average) were either left untreated or topically treated at 1% (minimum detection threshold, 10 times the clinical dosage, not the actual recommended dosage) with PrimalHyal™ Hydra[+] or a HA of an equivalent molecular weight (20-50 kDa). They were then incubated for 1 hour at 37°C, before being rinsed x2 times with sterile water. The quantity of hyaluronic acid at the skin surface after rinsing was then evaluated using HABP detection.



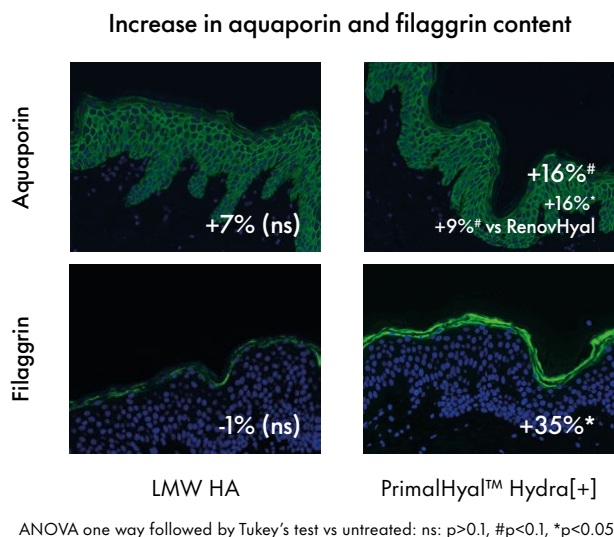
Results: PrimalHyal™ Hydra[+] significantly improves the adhesion of the hyaluronic acid to the skin surface, while a “standard” grade of HA does not resist to rinsing.

Reinforcement of barrier function & skin hydration (ex vivo)

Skin explants (from a 22 years old donor) were either left untreated or topically treated at 0.1% with PrimalHyal™ Hydra[+] or a HA of an equivalent molecular weight (20-50 kDa) for 5 minutes before to be rinsed (5 times). This protocol is applied at D0, D1 and D2.

After the third application (and rinsing), an immunostaining method was used to evaluate the quantity of aquaporin and filaggrin in the skin.

Results: PrimalHyal™ Hydra[+], under rinse-off conditions, significantly increases the production of key proteins involved in skin hydration and barrier function, aquaporin and filaggrin, compared to a “standard” grade of HA.

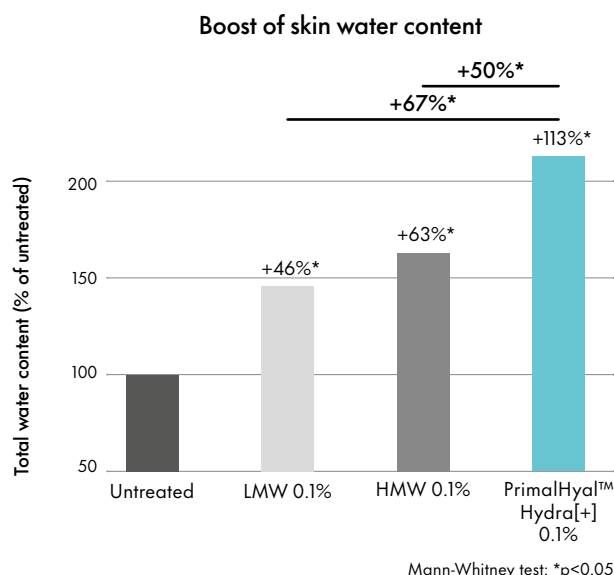


Improvement of skin hydration (ex vivo)

Skin explants (from a 41 years old donor) were either left untreated or topically treated at 0.1% with PrimalHyal™ Hydra[+], a HA of an equivalent molecular weight (20-50 kDa), or a high molecular weight HA (1.0-1.4 MDa) for 30 seconds before to be rinsed (5 times). This protocol is applied at D0, D1 and D2.

After the third application (and rinsing), total water content in the skin was evaluated thanks to RAMAN spectroscopy.

Results: PrimalHyal™ Hydra[+] significantly boosts the skin water content in rinse-off conditions, by up to +50% or +67% versus other grades of HA.



Clinical efficacy in rinse-off applications

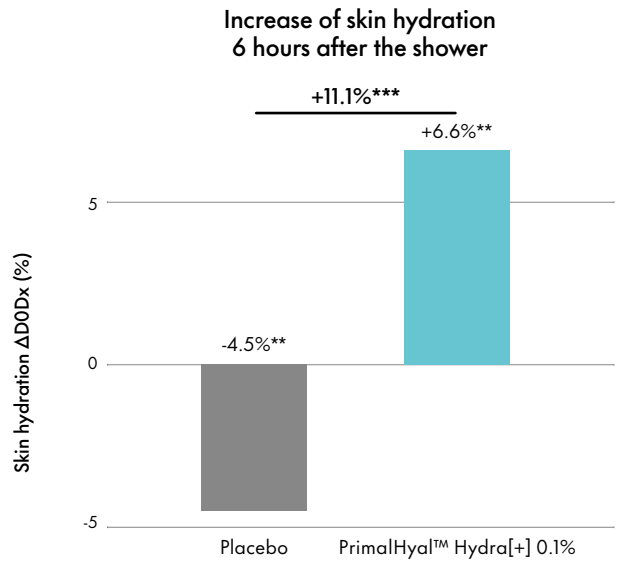
Significant improvement of hydration in just one shower gel application! (clinical study #1)

A double blind clinical evaluation versus placebo was carried out on 29 volunteers (women above 18 years old, with dry skin: hydration level between 10 and 40 AU on the calves).

Volunteers used a shower gel either containing PrimalHyal™ Hydra[+] (0.1%) on one of their calves or the exact same formula without the active as a placebo on the other calf, in a single application.

Just before their shower (T0), and 6 hours later (T6h), the hydration level of their calves' skin was evaluated thanks to a Corneometer® measurement.

Results: PrimalHyal™ Hydra[+] significantly **increases the skin hydration on the volunteers' calves**, in just one shower application, with more than +11% skin hydration versus placebo.



Wilcoxon test vs T0: **p<0.01, Mann Whitney test vs placebo: ***p<0.001

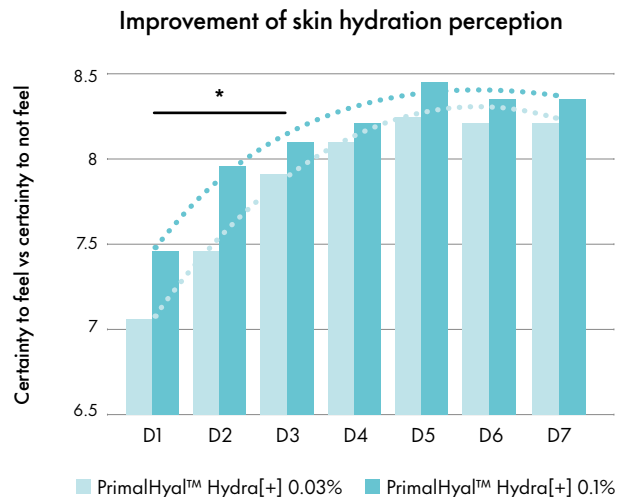
Benefits perceived by Beauty consumers (Home Usage Test)

To evaluate the perception of PrimalHyal™ Hydra[+] benefits by Beauty consumers, a home usage test was organised with 120 volunteers (73% women, 27% men - from 18 to 50), and with a majority self-declaring dry skin. Those volunteers were divided into 2 groups, testing for one week (one daily application) a shower gel containing either 0.1% or 0.03% of PrimalHyal™ Hydra[+].

After each shower, volunteers were asked to assess their shower gel and the resulting skin benefits, thanks to an innovative neuroscience method based on implicit behavior and motion tracking analysis.

Results: PrimalHyal™ Hydra[+] is able to trigger **real benefits, perceived by the consumers at the clinical dosage, but also when used at 0.03%** (three times lower).

If the dosage of 0.1% enables faster benefits, after one week, results are very close for each dosage, demonstrating the **efficacy of the active even at a very low concentration**.



ANOVA one way followed by Tukey's test vs D1: *p<0.05

Moisturising #1



82.1%
of the panel identified moisturising as a benefit (at 0.1% - 75.9% at 0.03%)

Better than their routine



75.4%
of the panel preferred this new shower gel over their current product

Huge satisfaction



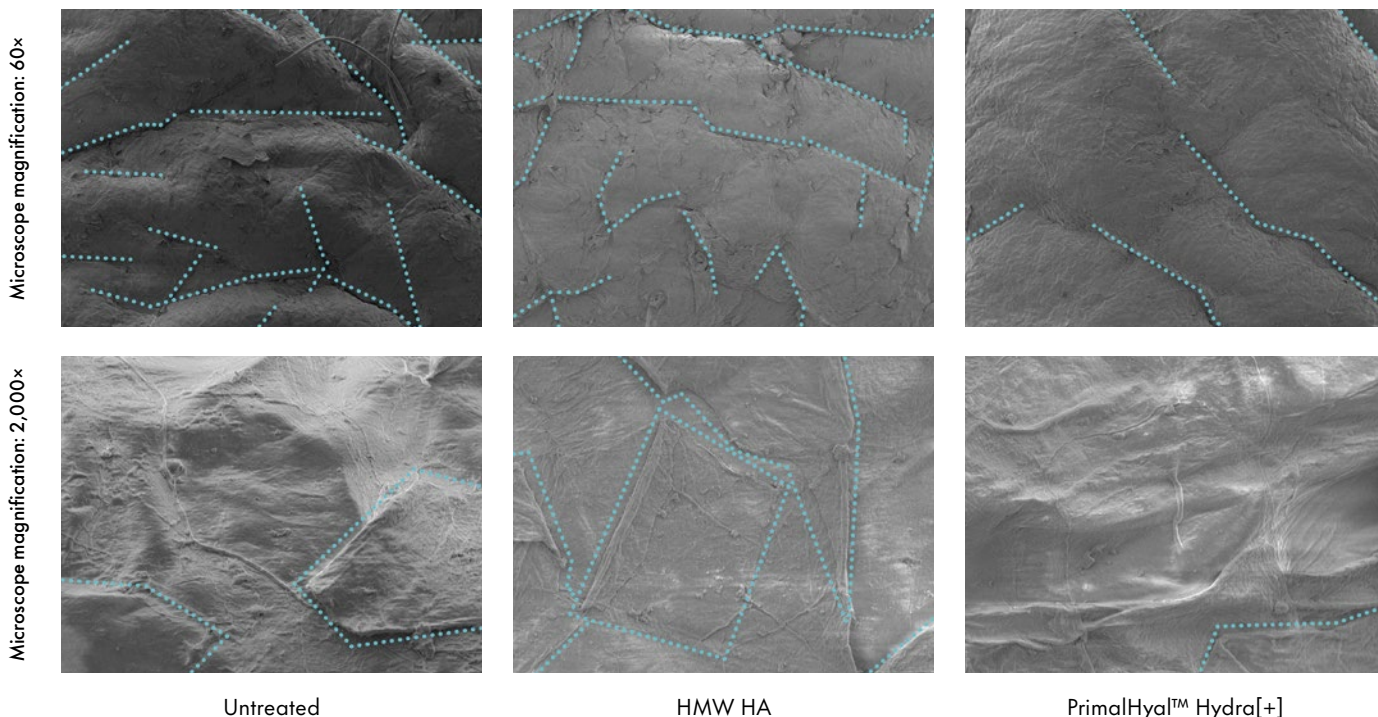
59%
of the panel gave a satisfaction score of 8 to 10/10 (only 7.5% gave 4/10 or less)

Biological activity in leave-on conditions

Improvement of skin coverage by hyaluronic acid (ex vivo)

Skin explants (from a 53 years old donor) were either left untreated or topically treated at 1% (minimum detection threshold, 10 times the clinical dosage, not the actual recommended dosage) with PrimalHyal™ Hydra[+] or with a HA of a high molecular weight HA (1.0-1.4 MDa), which is usually considered as the reference for skin hydration and film-forming properties.

Scanning electron microscopy (SEM) pictures were then taken at two different magnifications levels (×60 and ×2,000) to study the skin surface condition, and determine the quality of skin coverage by the different HA grades.



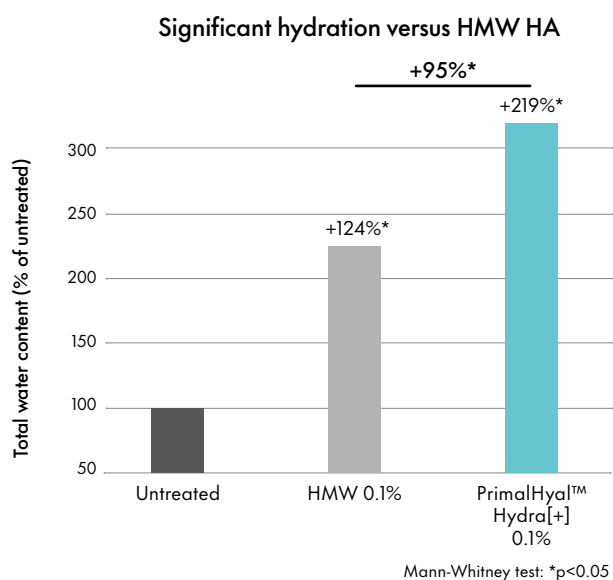
Results: Thanks to the positive charge at the surface of its molecule compared to a “standard” grade of HA, PrimalHyal™ Hydra[+] is able to significantly **better cover the surface of the skin**. In particular, it is possible to observe at the smaller magnification level (×60) that the edges of the corneocytes are less visible and smoother, and at the higher magnification level (×2,000) that the homogeneity of the HA film is way better compared to regular HA.

Superior skin hydration (ex vivo)

Skin explants (from a 40 years old donor) were either left untreated or topically treated at 0.1% with PrimalHyal™ Hydra[+] or with a HA of a high molecular weight HA (1.0-1.4 MDa), for 8 hours.

Total water content in the skin was then evaluated thanks to RAMAN spectroscopy.

Results: PrimalHyal™ Hydra[+] significantly **boosts the skin water content in leave-on conditions**, by up to +95% versus a high molecular weight HA, usually considered as the the reference for hydration properties when it comes to hyaluronic acid.



Clinical efficacy in leave-on applications

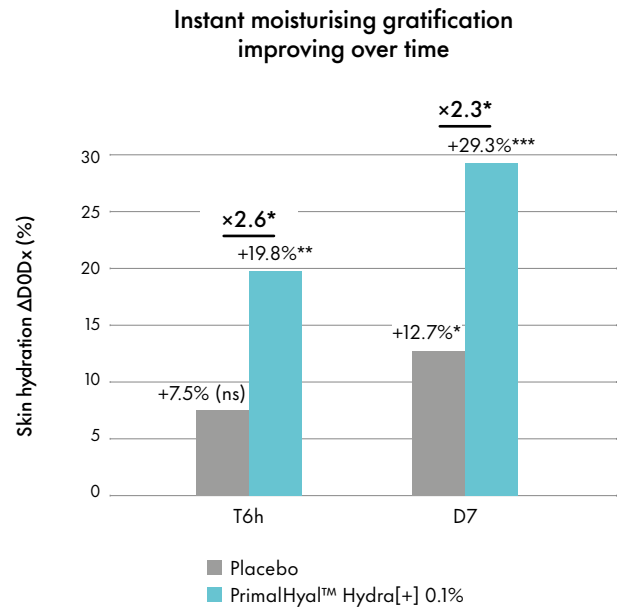
Instant and long-term moisturising benefits in a leave-on application (clinical study #2)

A double blind clinical evaluation versus placebo was carried out on 40 volunteers (women above 18 years old, with dry skin: hydration level lower than 50 AU on the cheeks), divided into 2 groups.

Volunteers used a lotion either containing PrimalHyal™ Hydra[+] (0.1%) or the exact same formula without the active as a placebo, twice a day for one week.

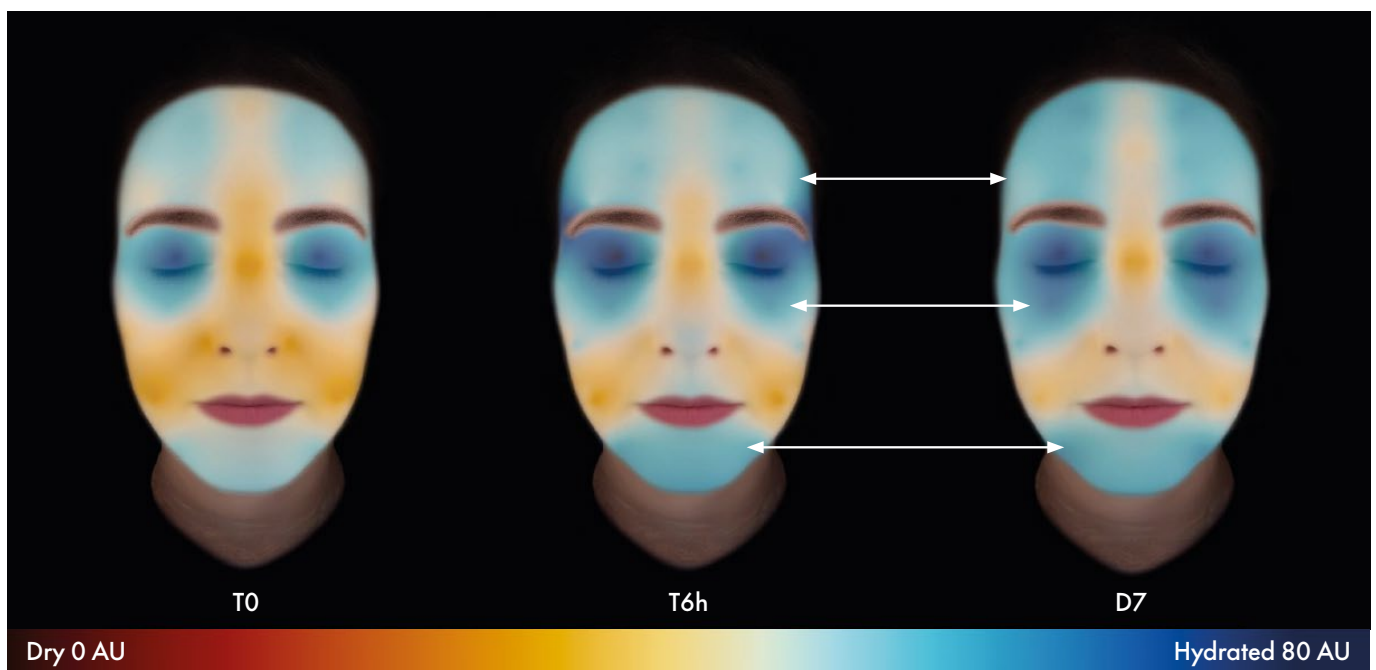
Corneometer® measurements were performed at T0, 6 hours after the first application (T6h) and after one week of treatment (D7), to evaluate their facial skin hydration. To better visualise the results, a method based on artificial intelligence enabled the generation of an avatar face representing the facial hydration level at different times.

Results: PrimalHyal™ Hydra[+] significantly **increases the skin hydration on the volunteers' faces**, already after the first application, up to +19.8% versus T0, 2.6 fold better than the placebo, and **with an increasing efficacy over time**, up to +29.3% versus T0 after one week of use, 2.3 times better than the placebo.



Wilcoxon test vs T0: **p<0.01, ***p<0.001
Mann-Whitney test vs placebo: *p<0.05

AI-generated pictures of an avatar using PrimalHyal™ Hydra[+] at 0.1% Drastic reduction of the skin dryness over time



Clinical efficacy in leave-on applications

Improving skin barrier and moisturising benefits with a sheet mask application (clinical study #3)

A double blind clinical evaluation versus placebo was carried out on 23 volunteers (women between 20 and 60, with dry skin: hydration level lower than 50 AU on the forehead). Volunteers used a sheet mask on their forearms for 5 minutes (then the excess product is massaged into the skin) at D0, D1, and D3. The mask is soaked with either PrimalHyal™ Hydra[+] (0.1%) or the exact same formula without the active as a placebo.

RAMAN spectroscopy measurements were performed at T0 (before the first application), T1h, D1 (just before the 2nd application) and after one week (4 days after the last application), to evaluate the benefits of the product (and their long-lastingness) in terms of *stratum corneum* thickness, lipids and proteins content, and total water content in their skin.

Barrier reinforcement: lipids and proteins

Total lipids and proteins content in the skin was evaluated to observe the biological benefits of PrimalHyal™ Hydra[+].

Results: PrimalHyal™ Hydra[+] significantly **increases both lipids and proteins content in the skin**, 24 hours after the first application, therefore contributing to a reinforcement of the skin barrier function. 4 days after the last application, on D7, the biological effect is still the most significant, with up to +21% content in proteins content versus placebo.

Barrier reinforcement: stratum corneum thickness

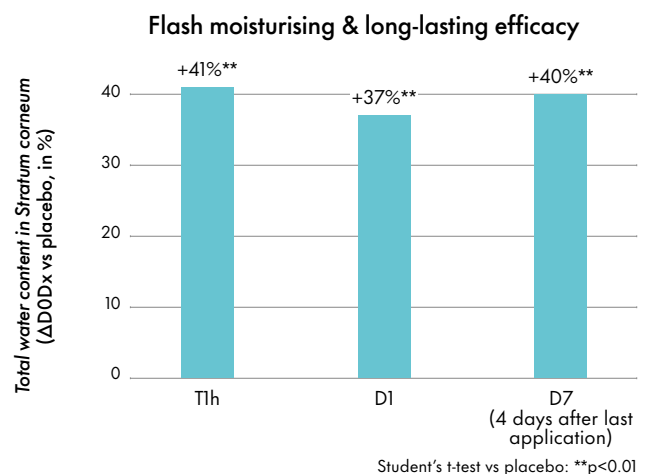
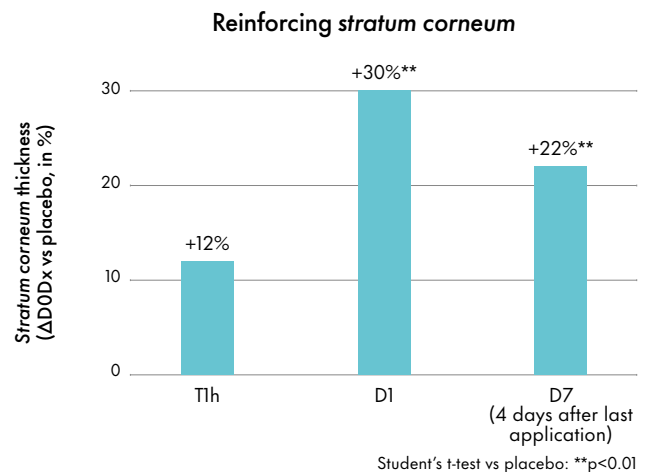
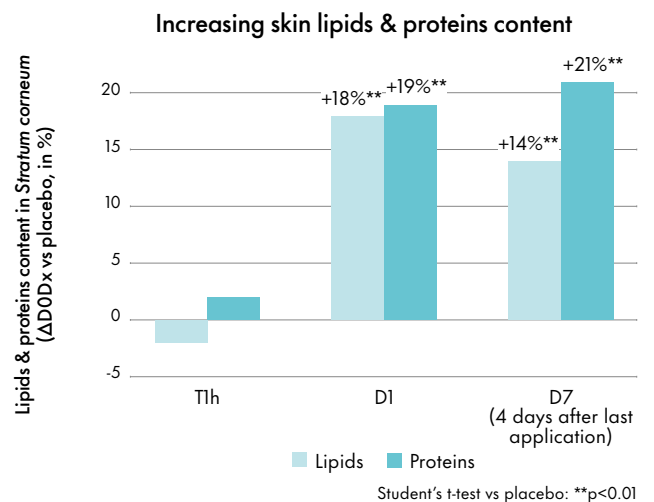
Stratum corneum thickness was quantified to observe the beneficial activity of PrimalHyal™ Hydra[+] on the skin superficial layer.

Results: PrimalHyal™ Hydra[+] significantly **increases the stratum corneum thickness**, already 24 hours after the first application, therefore demonstrating further benefits on the skin barrier function. 4 days after the last application, on D7, the biological effect can still be noticed, with up to +22% thickness versus placebo.

Instant hydration with 4 days long-lastingness

Total water content in the skin was then evaluated to determine the hydration benefits resulting from PrimalHyal™ Hydra[+].

Results: PrimalHyal™ Hydra[+] significantly **increases the total water content in the skin**. Just 1 hour after the first application, a **flash moisturising effect** can be observed, with an uptake of +41% water content in the skin versus placebo (+70% versus T0). 4 days after the last application, the benefit is still there, with +40% water content versus placebo (+101% versus T0).



Summary



Technical information

INCI:	Hydroxypropyltrimonium Hyaluronate
Origin:	White biotechnology
Preservation:	None
Appearance:	White powder
Solubility:	Water soluble
Dosage:	0.1%
Processing:	Add in premix with water at the end of the formula, at a temperature below 40°C and a pH between 2 and 8.

Claims

Claims: New HA generation, improved skin adhesion, flash moisturising efficacy, long-lasting hydration, skin barrier reinforcement, hydration in rinse-off, hydration in leave-on.

Applications: Hydrating cleansing lotion, moisturising body cream, shower gel, shower cream, hydrating rinsed formulas, super moisturising skincare, long-lasting hydrator, rejuvenating mask, fresh-effect cream.

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