

BARNET



RESURFACID CR



- AHA's Normalization of Increased Skin's pH
- Time Release Technology
- Ultra Mild Exfoliation

The information contained in this technical bulletin is, to the best of our knowledge, true and accurate. No warranty, expressed or implied is made or intended. The use should be based upon the customer's own investigations and appraisal. No recommendation should be construed as an inducement to use a material in infringement of patents or applicable government regulations.

February 2016

CONCEPT

Alpha Hydroxy Acids in skin care are back. AHAs were one of the earlier and broadly embraced approaches for a visible clinical effect. In the 1990's though, "irritation potential" was a concern. The use level of AHAs was a numbers game: 5% to 15% or even more. The cosmetic industry moved toward "exfoliation at the skin's pH" with a glucosamine-based complex.

Now in 2015, a new concept: normalization (or close to) of the skin's pH. As we age the skin's pH increases. Epidermal barrier integrity decreases and pathogenic bacteria becomes more of an issue. Resurfacid CR is positioned to normalize the skin's pH.

Resurfacid CR is designed to diffuse AHAs in a progressive and controlled way. Exfoliation performance equals conventional AHAs within 2 weeks without any stinging sensation.

A new tool for gently resurfacing the stratum corneum, Resurfacid CR is a lamellar gel acting as a cutaneous reservoir of AHA.

EFFECT OF 2% RESURFACID CR ON ACNE SCARS

4 weeks, 24 people



DAY 0



DAY 14



DAY 28

25% less visible scars,
80% less blackheads

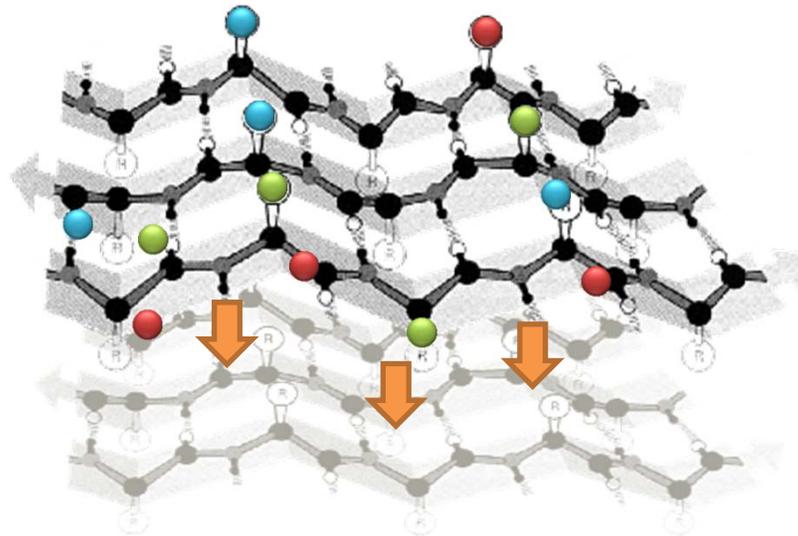


STRATUM CORNEUM OF AHAS FOR NEW SKIN



Lamellar gel with sodium magnesium silicate

AHAs between the layers = reservoir of AHA.



● Glycolic acid (15%)

● Lactic acid (7%)

● Citric acid (6%)

Total AHA = 28%

Resurfacid CR (Lamellar Water Gel) was designed to diffuse AHAs in a progressive and controlled way into the skin and to be easy to incorporate into formulations with a non-acid pH.

CONTROLLED DIFFUSION OF AHA

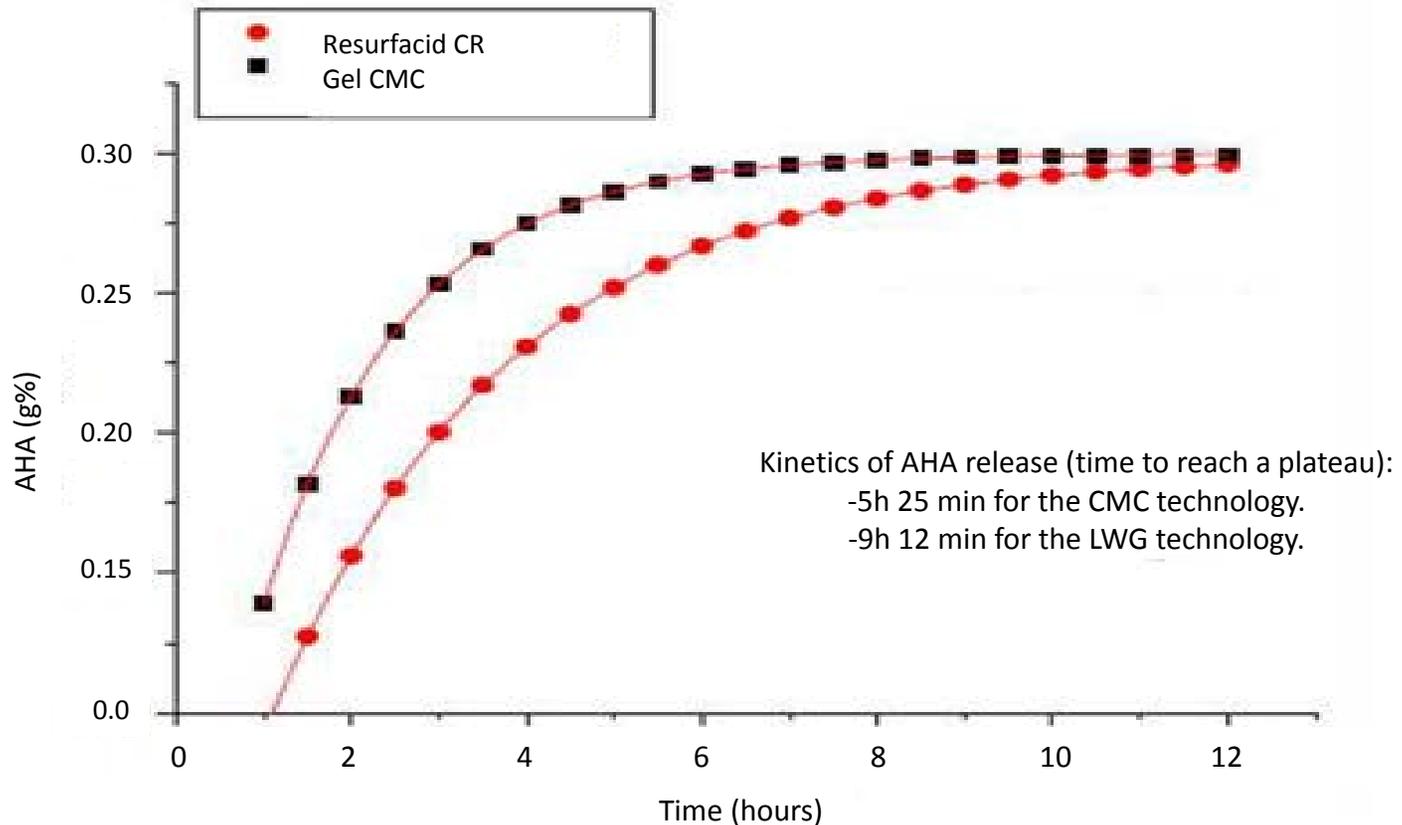


To demonstrate the benefits of Lamellar Water Gel (LWG) technology, we compared its diffusion properties with a conventional Carboxy Methyl Cellulose (CMC) gel.

CMC does not have any special reservoir properties, similar to a formulation containing free AHAs.

The two LWG and CMC structures both contain 28% of the same AHAs (same ratios of lactic, glycolic and citric). They were applied to the surface of an agarose gel in which AHA diffusion is measured with infrared spectroscopy. This approach enables the measure of AHA diffusion kinetics.

RESURFACID CR: CONTROLLED DIFFUSION OF AHA



The AHAs of Resurfacid CR are released in a more progressive and continuous manner.

We can therefore expect 2 types of benefits:

- Extended contact time giving high performance exfoliation of the skin.
- A more progressive supply of AHA which is therefore less aggressive for the skin.

PERFORMANCE INDEX (PI)

DEFINITION AND CALCULATION METHOD

AHAs are evaluated with two major parameters: exfoliation and inflammation.

The PI of an AHA or combination of AHAs is the ratio of its exfoliating performance to the inflammation it generates (1).

A PI greater than 1 is characteristic of a good exfoliation with a minimum of inflammation.

It is important to maintain a balance between both effects. A cocktail of AHAs cannot be used for powerful exfoliation if it is going to generate severe irritation or even burns.

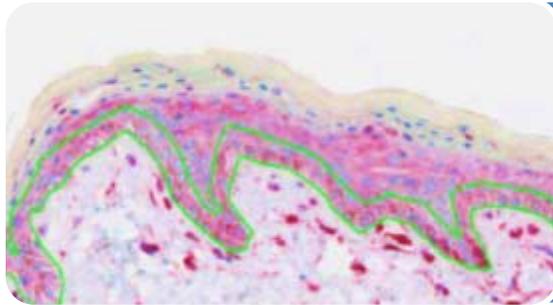
(1) Smith WP; Hydroxy acids and skin aging. Cosmetics & Toiletries 109 (9) 41-44, 46-48 (1994)

Creams	pH	% Exfoliation
Resurfacid CR 2% (=0.56 AHA)	3.68	+ 50%
AHA 8%	1.90	+ 59%
AHA 15%	1.62	+ 75%

Protocol

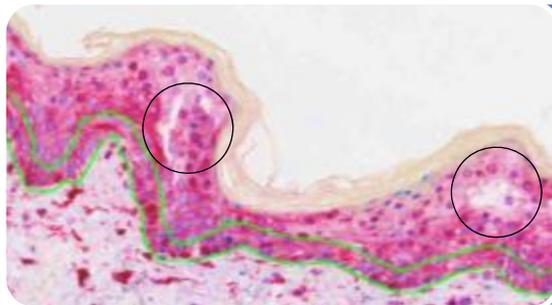
Human skin explants (39 year old donor). Application of creams at Day 0, Day 1 and Day 2. Analysis of desquaming effectiveness at Day 5 by stripping and counting of scales obtained on the strip.

EVALUATION OF INFLAMMATION LEVEL



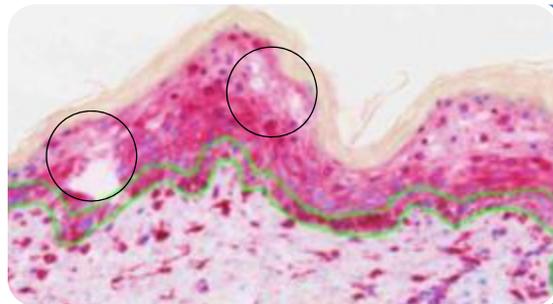
CREAM Resurfacid CR 2%
(0.56% AHA)
Good epidermal cohesion.
15% inflammation

The quantification of the enzyme COX2 (green band), responsible for the production of Prostaglandin mediators, is first performed in the epidermis.



CREAM AHA-8
(8% AHA)
Damaged cohesion
68%***inflammation

An additional analysis showed that the 8% and 15% AHA formulations also caused significant inflammation of the dermis, characteristic of an aggressive effect.



CREAM AHA-15
(15% AHA)
Damaged cohesion
82%***inflammation

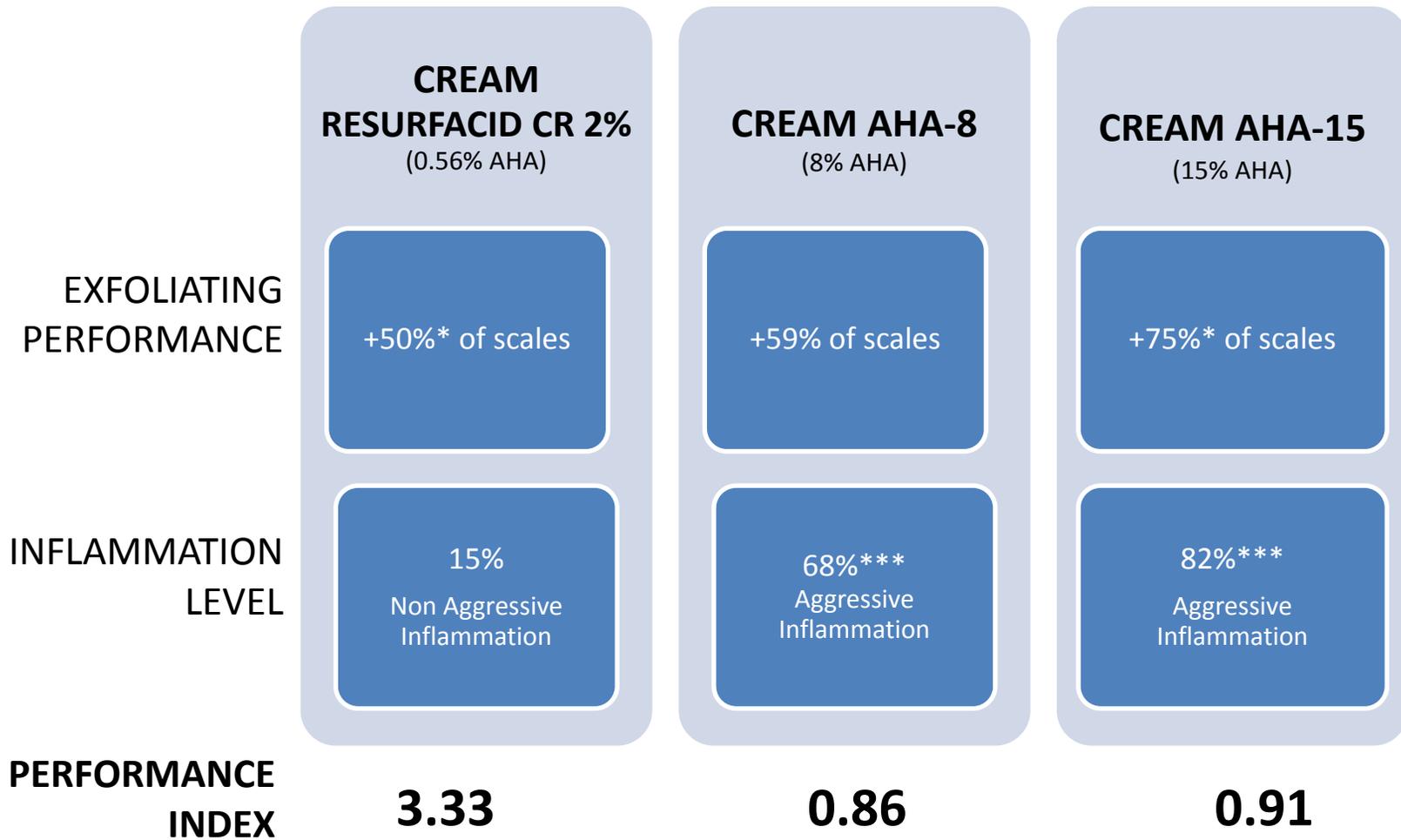
While Resurfacid CR did not generate any significant inflammation, the AHA 8 and 15 formulations activate a significant inflammatory response of more than 60%.

*** $p < 0.001$ Student t Test

Protocol

Human skin explants (39 year old donor). Application of creams at D0, D1 and D2 after stripping. Analysis of inflammation-inducing effect by quantification of COX2 (purple-pink) by immunohistochemistry.

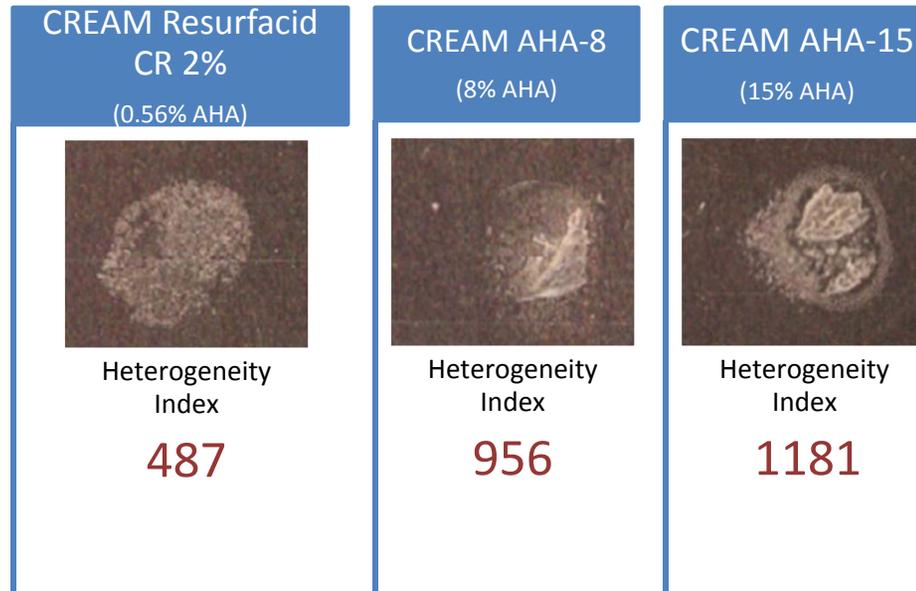
EXFOLIATION BENEFIT / INFLAMMATION



The Pi index of Resurfacid is 3 or 4 times higher than the Pi of AHA formulas.

***p<0.05; ***p<0.001 Student t Test*

QUALITY OF THE EXFOLIATION



**p<0.05 Student t Test*

The heterogeneity index of the scales

An aggressive treatment causes deep desquamation and eliminates a clump of epidermal cells. This phenomenon is visible on the strips with the AHA 8 and 15 creams. The exfoliation then damages the cohesion of the skin below the stratum corneum and may be accompanied by burns.

Only Resurfacid CR provides uniform exfoliation which means its action is more targeted and optimized than the AHA 8 and AHA 15 formulations.

A higher number is a sign of aggressive and anarchic exfoliation.

Protocol

Human skin explants (39 year old donor). Application of preparations at D0, D1 and D2. Analysis of desquamating effectiveness at D5 by stripping and counting of scales obtained on the strip.

IN VIVO TEST

PROTOCOL

EPIDERMAL EXFOLIATION

Cream containing Resurfacid CR at 2%
Twice daily applications on the forearm for 14 days
17 volunteers aged 21 to 50.

Analytical Method: On Day 0, skin is colored with DHA. Skin pigmentation is then measured using chromametry. Skin depigmentation is directly linked to the rate of cellular exfoliation.

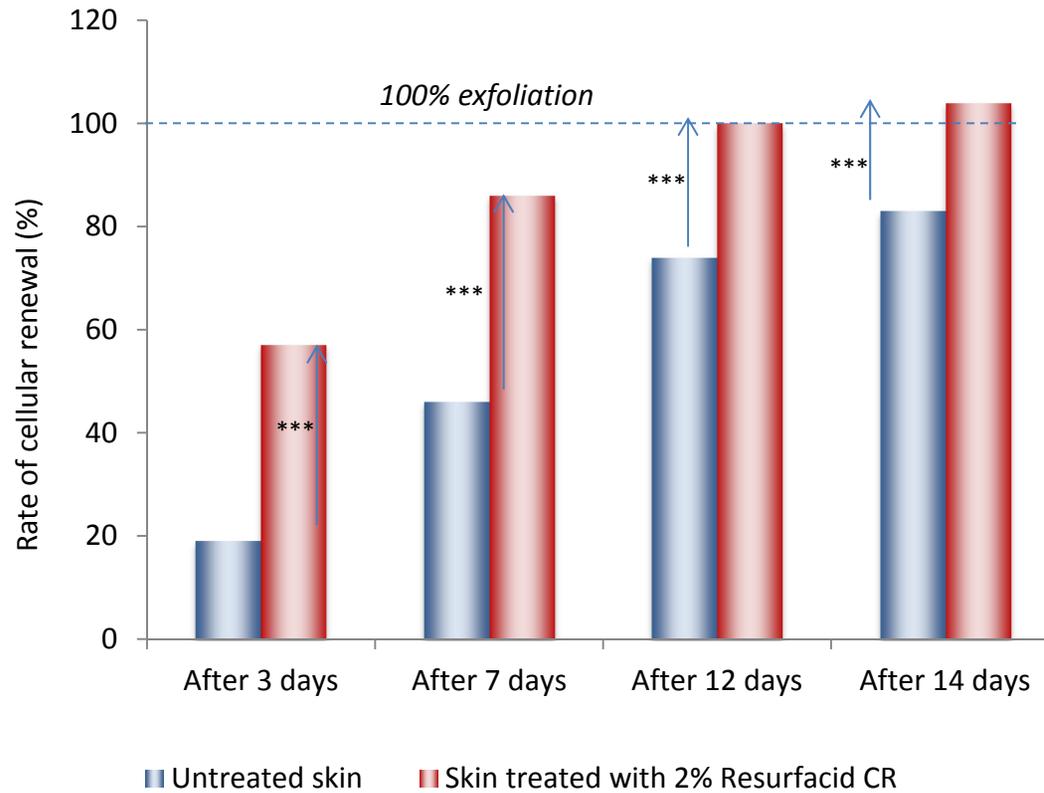
SKIN IMPERFECTIONS

Cream containing Resurfacid CR at 2%
Twice daily applications for 28 days on the whole face
24 volunteers aged 34 to 64

Analytical Method

- Scarring blemishes: clinician scoring on a structured scale of 0 to 10
- Blackheads: counted by a clinician
- Skin bright: sensory evaluation by a 5 person jury on a non-structured scale of 0 to 15
- Irritation: sensory evaluation by the volunteers on a structured scale of 1 to 10

RESURFACID CR BOOSTS SKIN EXFOLIATION

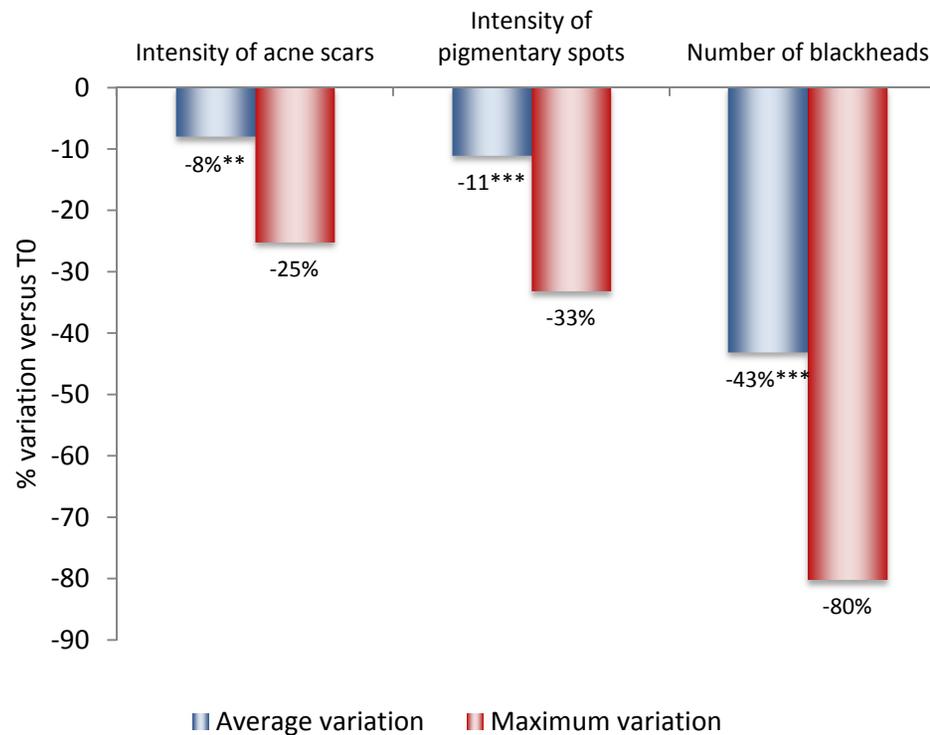


After 3 days use, the exfoliation level obtained with Resurfacid CR is 3 times higher than the exfoliation obtained on untreated skin.

Due to its exfoliating performance Resurfacid CR leads to total cellular exfoliation in less than 2 weeks.

*** $p < 0.001$ Student *t* Test

RESURFACID CR DIMINISHES BLEMISHES IN 28 DAYS



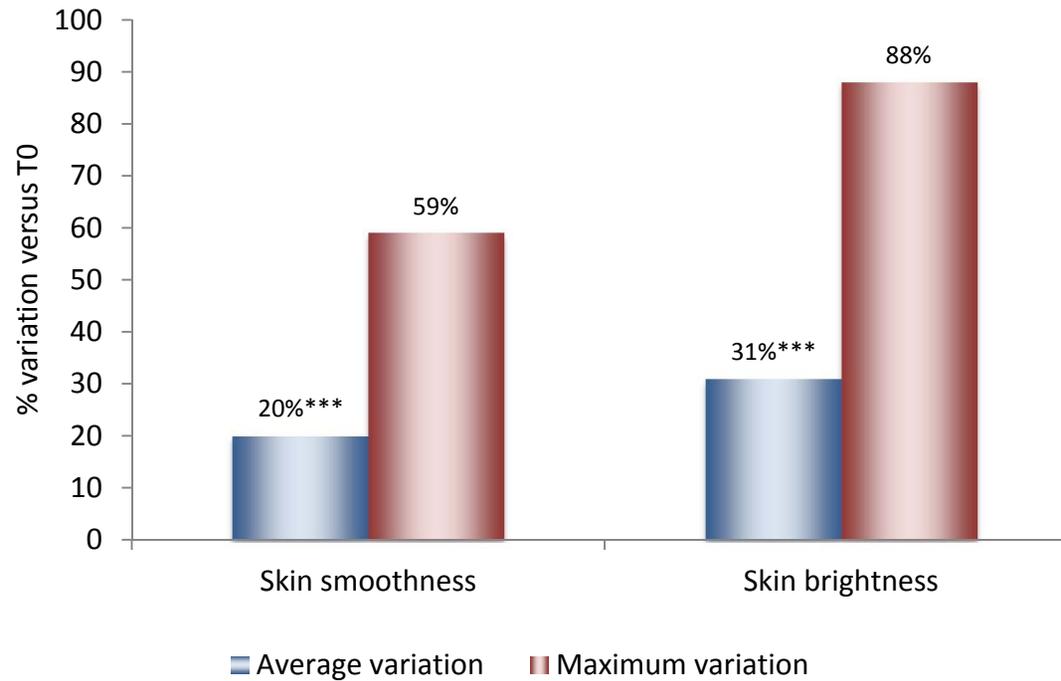
The action of 2% Resurfacid CR on cellular renewal is also accompanied by a significant reduction in cutaneous blemishes after 4 weeks treatment.

- Acne scars: -8%** on average
- Pigmentation spots: -11%** on average
- Number of blackheads: -43*** on average

Resurfacid CR removes cutaneous blemishes and refines skin grain.

** $p < 0.01$ Student t Test *** $p < 0.001$ Student t Test

RESURFACID CR IMPROVES SKIN COMPLEXION IN 14 DAYS



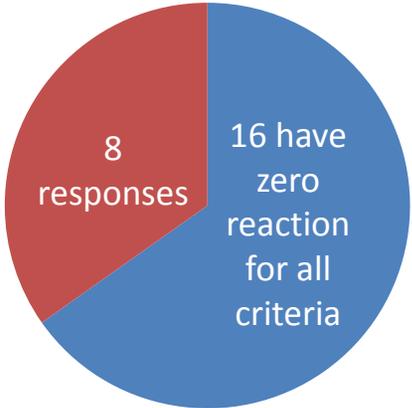
The action of 2% Resurfacid CR on cellular renewal leads to a visible improvement in skin quality.

- More smooth: +20%*** on average
- More luminous skin tone: +31%*** on average

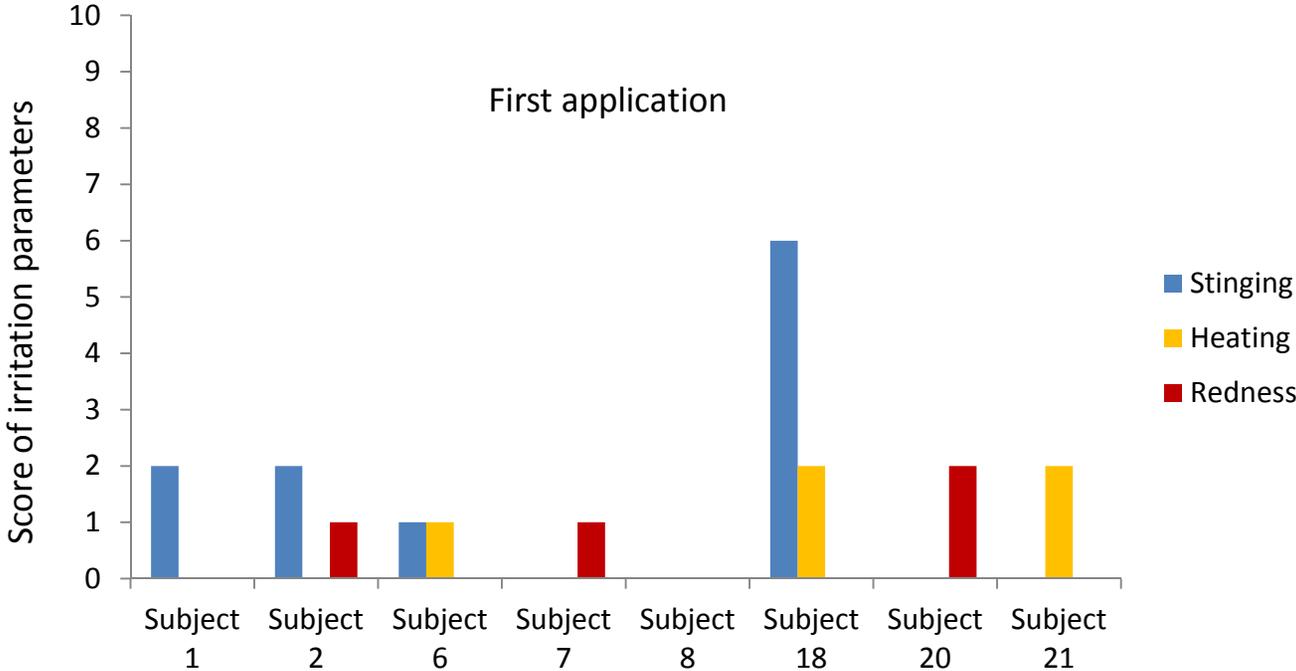
*** $p < 0.001$ Student *t* Test

SENSORY EVALUATION OF IRRITANT EFFECTS

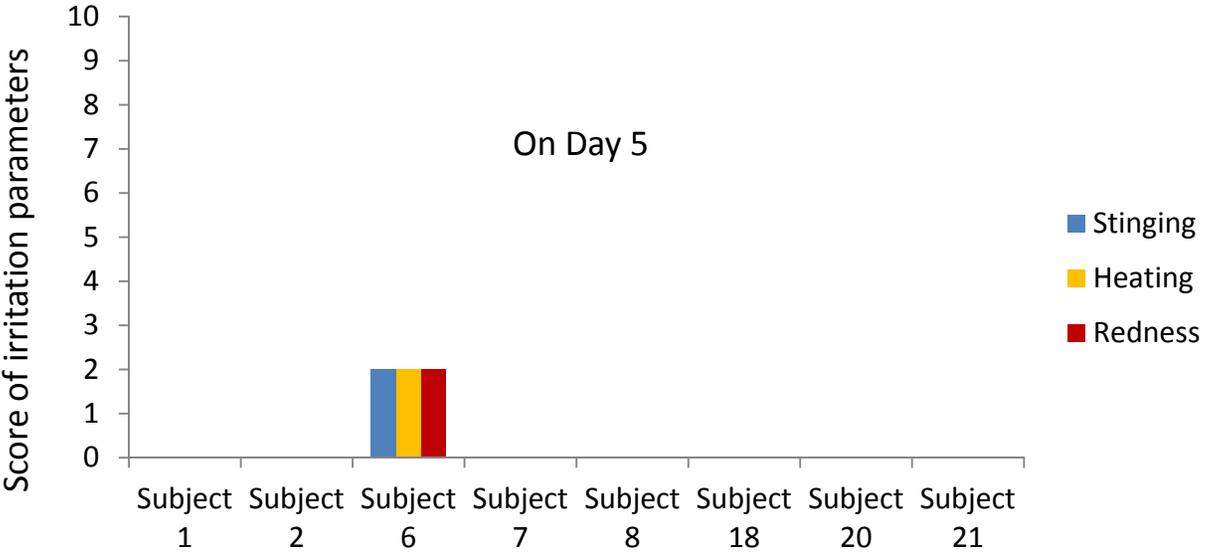
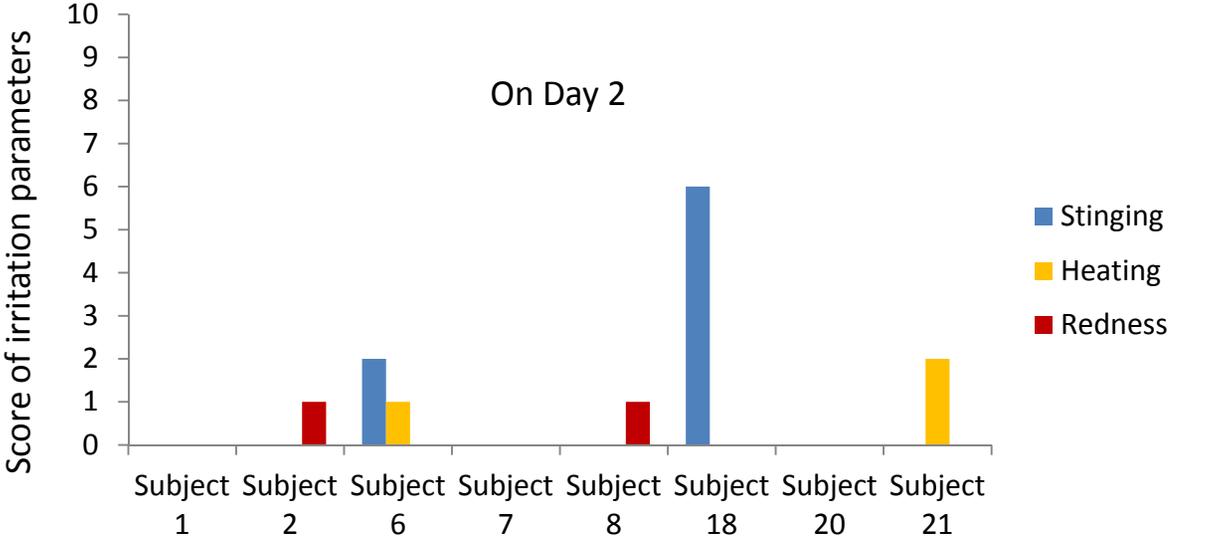
Protocol
Cream containing Resurfacid CR at 2%
Twice daily applications for 28 days on the whole face.
24 volunteers aged 34 to 64.
Sensory evaluation by the volunteers on a structured scale of 1 to 10.



The cumulative evaluation of 3 irritation parameters reached a maximum score of 0.5 points on a scale of 0 to 10. None of the volunteers could perceive any of the irritation parameters after 5 days.



SENSORY EVALUATION OF IRRITANT EFFECTS



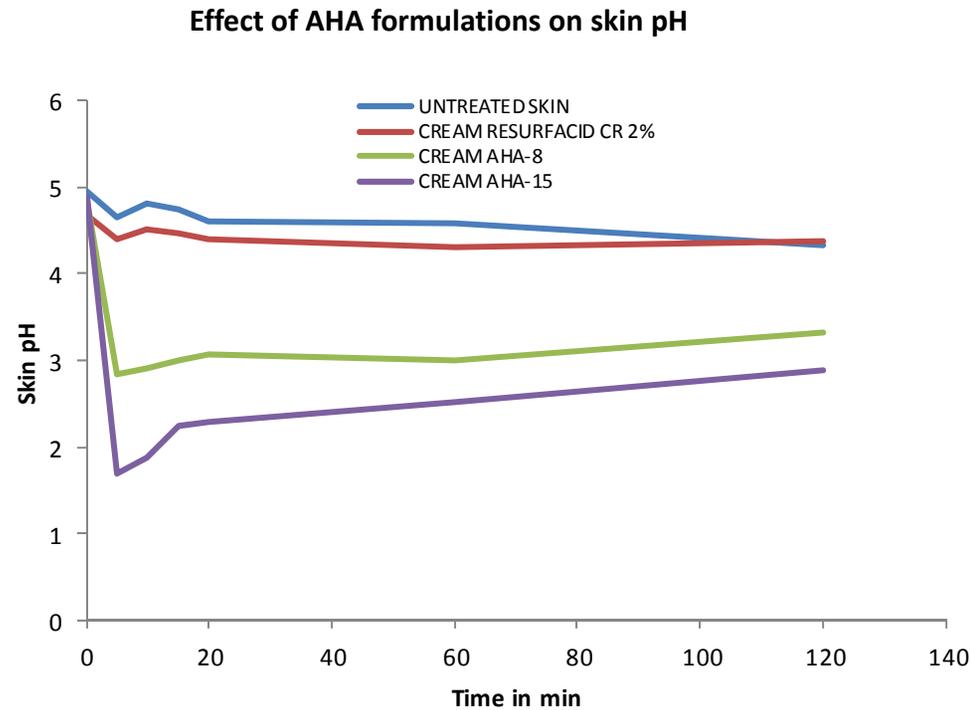
After the 5th day, none of the volunteers observed a reaction.

TEST ON SENSITIVE SKIN

- Ten volunteers with sensitive skin
- A solution of water with 10% Resurfacid is applied under an occlusive patch for 48 hours.
- Skin is observed 30 minutes and 24 hours after removing the patch.
- The Median Irritation Index (MII) is 0.00 out of 4.00.



NORMALIZING EFFECT OF RESURFACID CR ON SKIN PH



Immediately after application, creams formulated with 8 and 15% AHA decreased skin pH. Two hours after a single application pH is still abnormally low.

The pH of the skin increases as we age. Resurfacid CR tested on the group with an average skin pH of 4.6, saw their skin pH drop to 4.4. However, the person with an original skin pH of 5.6 saw her level drop to 4.29 in 5 minutes. Skin pH below 5.0 is characteristic of healthy skin. It is important to normalize the skin's pH.

Protocol

10 volunteers. Single application on the forearm. Measure of skin pH using Skin-pH-Meter PH905.

CONCLUSION

RESURFACID CR

AHA PERFORMANCE WITHOUT IRRITATION, NORMALIZE SKIN PH

LWG technology delivers a progressive and mastered diffusion of AHAs to the skin. It allows the chemist to work with lower % of AHA while maintaining an exfoliating performance similar to classical AHA treatments.

EX-VIVO BENEFITS

- Exfoliating action: +50% versus 59% with treatment AHA 8%
- Weak inflammation: 15% versus 68% with treatment AHA 8%
- Performance Index: 3.33 versus 0.86 with treatment AHA 8%

IN-VIVO BENEFITS

- 100% cellular exfoliation in less than 2 weeks
- Skin smoothness: +20%
- Skin brightness: +31%
- Skin uniformity: +15%
- Acne scars: -8%
- Pigmentation spots: -11%
- Number of blackheads: -43%
- No impact on skin pH
- Irritation score: grade 0.5/10

RESURFACID CR

INCI Name: Water (and) Glycolic Acid (and) Lactic Acid (and) Sodium Magnesium Silicate (and) Citric Acid (and) Xanthan Gum

REACH: All components are pre-registered or exempt.

Canada: Low volume exemption.

China: All components are listed in the Inventory of Existing Cosmetic Ingredients in China (IECIC).

Use Level: 2%

Sunburn Alert: This product contains an alpha hydroxy acid (AHA) that may increase your skin's sensitivity to the sun and particularly the possibility of sunburn. Use a sunscreen, wear protective clothing and limit sun exposure while using this product and for a week afterwards.

