

BRILLIAN-CSA



(주) 비전씨앤티



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1. SUMMARY

- 1) INCI NAME : Capryloyl Salicylic Acid
- 2) 한글 명칭 : 카프릴로일살리실릭애씨드
- 3) OTHER NAME: 5-Octanoylsalicylic acid; 5-n-Octanoylsalicylic acid
- 4) CHEMICAL NAME : 2-hydroxy-5-(1-oxooctyl)- Benzoic acid
- 5) 성분의 분류 : 하이드록시애씨드 (Hydroxy Acid)
- 6) 성분의 세부분류 : 베타리포하이드록시애씨드 (LHA, β -Lipohydroxy Acid)
- 7) 기능 in 피부 : 항염작용 (Anti-Inflammation)
항균작용 (Anti-Microbial)
면포용해/면포형성억제 (Comedolytic/Anti-Comedogenic)
미백효과 (Whitening)
주름감소 (Anti-Aging)
항진균효과/비듬방지 (Anti-Fungal/Anti-Dandruff)
- 8) 성분의 안정성 : AOC Safety B (= Safe with Qualification) (by CIR Comment)
자극이 없도록, 자외선에 민감해지지 않도록 만든 제품이라면
안전하다. 자외선에 민감해질 우려가 있는 경우, 자외선
차단제를 같이 사용하도록 권장되어야만 한다.
- 9) 권장사용농도 : ~2% (필링 등의 시술에 사용 시 5~10%)

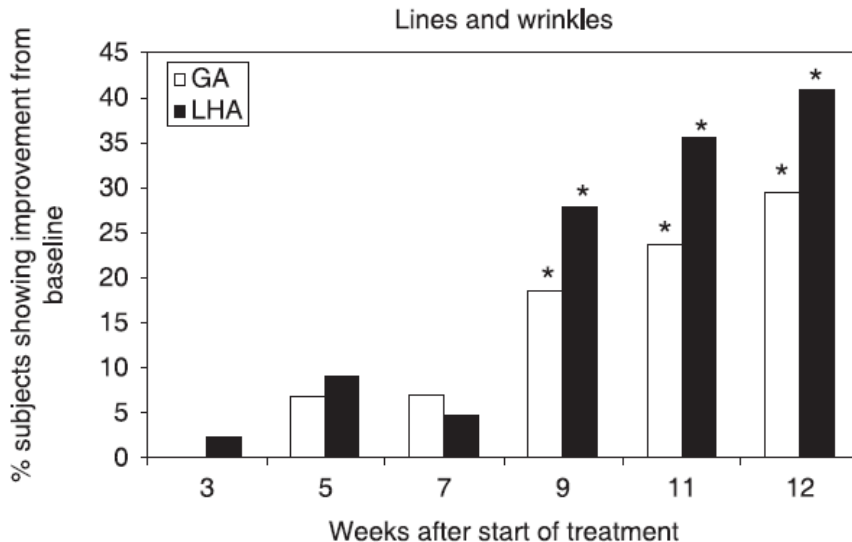
2. WHAT IS THE LHA ?

- LHA (카프릴로일살리실릭애씨드, Capryloyl Salicylic Acid, β -Lipohydroxy Acid)는 1980년대 후반 로레알 (L' ORÉAL)에 의해 개발된 살리실릭애씨드 (SA, Salicylic Acid)의 유도체로 살리실릭애씨드의 벤젠고리 (Benzene ring)에 지방사슬 (acyl fatty chain)을 붙여 SA보다 좀 더 지용성으로 만든 것이다.
- LHA는 정상 피부의 pH인 5.5와 pH가 거의 흡사하여 pH에 의한 자극이 없어 GA와 비교하여 중화시킬 필요가 없다.
- 오일을 좋아하는 지용성의 성질로 인해 서서히 피부에 침투하며, 낮은 농도에서도 좀 더 효율적인 각질제거 효과를 나타낸다.
- SA, GA에 비하여 깊게 침투되지 않으면서, 주로 각질층의 상층부에서만 제한적인 작용을 나타내고 피부에 부드럽게 작용하여 정상적인 각질탈락과 유사한 과정을 통해 각질을 제거하기 때문에 안전하고, 자극이 적은 장점이 있다.
- LHA는 표피의 재생을 유도하며 콜라겐의 형성을 증가시키고, 자외선에 의해 생긴 색소를 감소시켜 광노화 피부를 회복시켜 준다. 특히, 글라이콜릭애씨드 등의 AHA와는 달리 자외선으로 인한 손상을 막아주는 광보호 효과도 있다.
- 오일을 좋아하여 피지로 가득 찬 모공에 선택적으로 작용하며, 항균효과와 항염효과, 면포용해 및 면포억제 효과도 있어 여드름에 매우 유용하다.

3. ARTICLE

3-1. Clinical tolerance and efficacy of capryloyl salicylic acid peel compared to a glycolic acid peel in subjects with fine lines/wrinkles and hyperpigmented skin

3-1-1. Glycolic acid(GA)와 LHA의 비교 (주름실험)



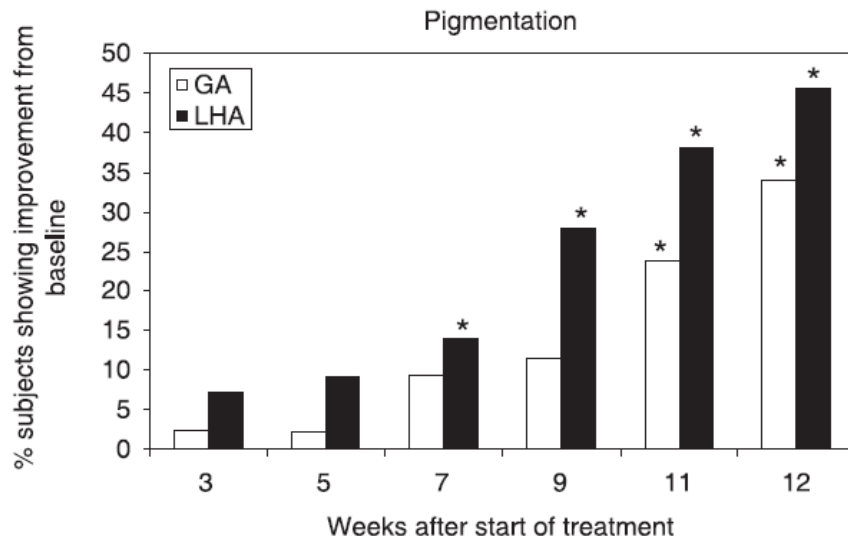
The effects of glycolic acid (GA) or capryloyl salicylic acid (LHA) peel in improving the appearance of lines and wrinkles. Subjects were treated with GA or LHA as described in the Methods section. On the indicated weeks, dermatological evaluation of the face was carried out before the peeling procedure using a scale of 0–5. The improvement from baseline (week 0) was calculated for each subject. The percentage of subjects showing improvement from baseline was calculated using the Wilcoxon signed rank test, and statistical analysis was done using the SMYDERM, SAS program. The number of subjects showing improvement from baseline was plotted against the week in the X axis. Statistically significant changes ($P < 0.05$) from baseline are indicated by an asterisk (*).

12주 후, GA가 30%주름을 감소시킨 것과 비교하여 LHA는 41% 주름을 감소시켰다.

3. ARTICLE

3-1. Clinical tolerance and efficacy of capryloyl salicylic acid peel compared to a glycolic acid peel in subjects with fine lines/wrinkles and hyperpigmented skin

3-1-2. Glycolic acid(GA)와 LHA의 비교 (색소침착 실험)



The effects of glycolic acid (GA) or capryloyl salicylic acid (LHA) on reducing hyperpigmentation. The treatment, dermatological evaluation, grading of skin, and calculations are the same as described for Figure 1. Grading scale is indicated in Table . Statistically significant improvements in pigmentation ($P < 0.05$) are indicated by an asterisk (*).



Figure 4. Patient with photoaging-related pigmentary changes shown before (top) and after four LHA peel sessions at two-week intervals (bottom). Photo courtesy of Marta Rendon, MD.

12주 후, GA가 34% 색소침착을 감소시킨 것과 비교하여 LHA는 46% 색소침착을 감소시켰다.

3. ARTICLE

3-2. NUDGING ACNE BY TOPICAL BETA-LIPOHYDROXY ACID (LHA), A NEW COMEDOLYTIC AGENT.

3-2-1. Material And Method

A total of 14 patients with facial comedonal acne applied a 0.3% LHA formulation on one cheek while the other cheek remained untreated. At entry in the study and after a 1-month treatment cyanoacrylate skin surface strippings (CSSS) were harvested from both cheeks. Specimens were placed on a microscope and examined under visible and ultraviolet light, in combination with computerized image analysis (Figure 1). CSSS were then scraped to isolate the follicular casts and microcomedones (Figure 2). This material was suspended in PBS containing the fluorochromes Baclight in order to perform dual flow cytometry. The sebum output was assessed using lipid sensitive tapes.

3-2-2. Results

Data show significant decreases ($p < 0.01$) in both the number and size of microcomedones at the LHA-treated site. The mean reduction in the number of follicular casts reached 47% at the LHA-treated site ($28 \pm 14/\text{cm}^2$) compared to the untreated site ($53 \pm 18/\text{cm}^2$). The mean reduction in the cumulative size of the follicular casts reached 54% at the LHA-treated site ($1.1 \pm 0.8 \text{ mm}^2$) compared to the untreated site ($2.4 \pm 0.6 \text{ mm}^2$).

The amount of living bacteria inside follicles (Figure 3) and autofluorescence of follicular casts were decreased at the LHA-treated site (Figure 4). The viability and adherence of microorganisms appeared to be decreased. Indeed, the global population of bacteria per volume of follicular casts was lowered by $21 \pm 13\%$ by the treatment. The ratio between living and dead microorganisms (Figure 5) was reduced by 39% at the LHA-treated site (2.8 ± 1.8) compared to the untreated site (4.6 ± 2.5). The effect of LHA appeared indeed to induce a shift toward the increase in injured bacteria.

The sebum excretion was kept unmodified as both the number and mean size of the lipid droplets were not significantly altered by the treatment.

3. ARTICLE

3-2. NUDGING ACNE BY TOPICAL BETA-LIPOHYDROXY ACID (LHA), A NEW COMEDOLYTIC AGENT.

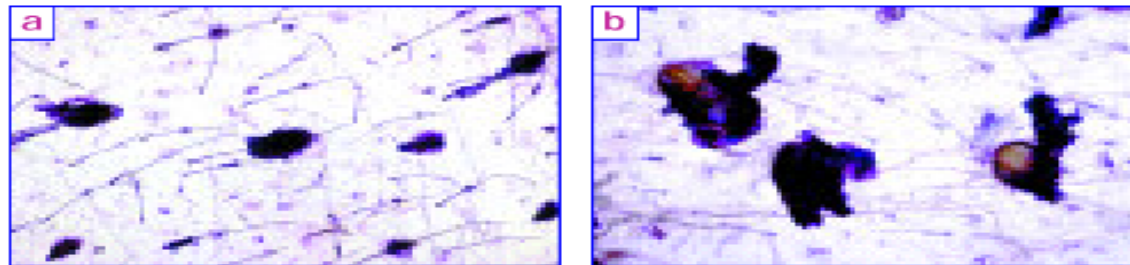


Fig. 1:

Cyanoacrylate skin surface stripping from the face of a patient with acne. Microcomedones are clearly identified.

- a-** LHA-treated site
- b-** Untreated site.

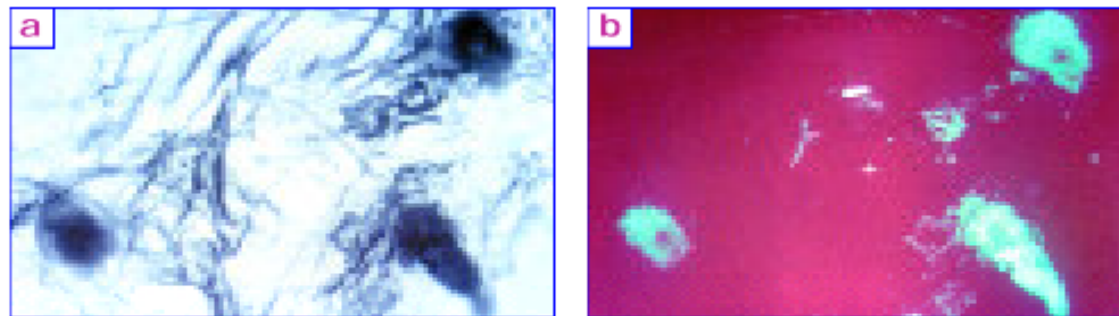


Fig. 2:

Cyanoacrylate skin surface stripping showing microcomedones.

- a-** Aspect under the microscope
- b-** False color transformation for computerized image analysis.

3. ARTICLE

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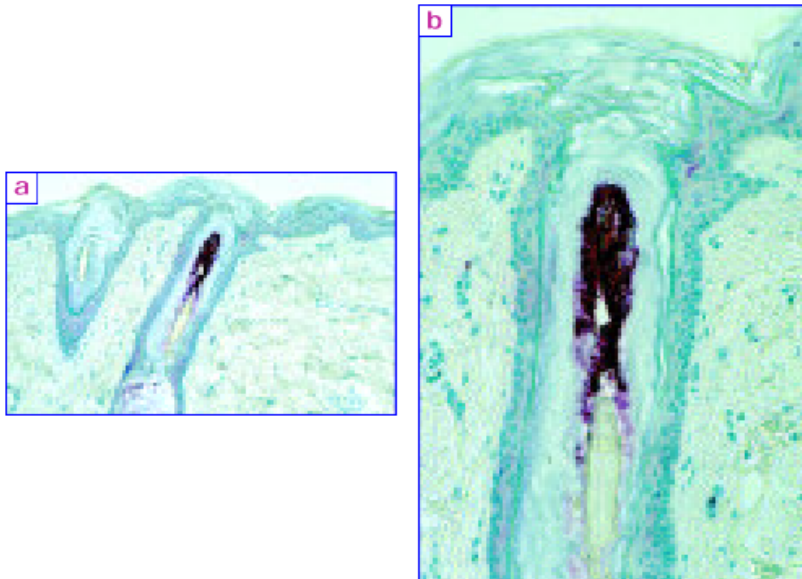


Fig. 3 a, b:

Clumps of bacteria revealed by immunohistochemistry inside a comedo of a patient with acne.

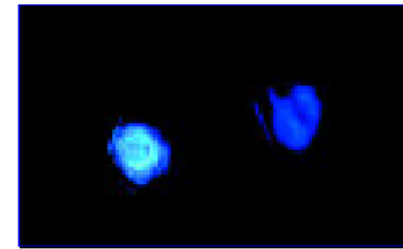


Fig. 4:

Autofluorescence of a comedo harvested by a cyanoacrylate skin surface stripping. This aspect is caused by the presence of porphyrins released by the bacteria inside the follicular cast.

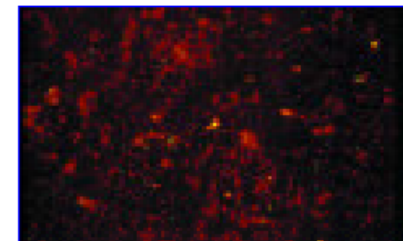


Fig. 5:

Microorganisms collected from scraping follicular casts harvested by a cyanoacrylate skin surface stripping. After staining by BacLight fluorescent dyes, living bacteria appear as green dots, dead bacteria are red and damaged bacteria are yellow.

3-2-3. Conclusion

LHA exhibits a potent comedolytic effect in acne-prone subjects. It also abates the living bacterial load inside the follicular pores. The compound acts probably through distinct mechanisms. It allows the dissociation of corneodesmosomes, thus promoting comedolysis. Bacterial adhesion to corneocytes might also be impaired inside the follicular openings. As LHA is also known to boost the physiological dynamics of the epithelia, it participates through this pathway to control mild ductal hypercornification.

3. ARTICLE

TABLE 1. Action of peeling molecules in the skin

ULTRASTRUCTURE	LHA		SALICYLIC ACID		LACTIC ACID	
	1%	5%	3%	15%	3%	15%
Dermo epidermal junction—separation	+	+++	+++	+++	0	0
Alive epidermis						
Expanded spaces	0	0	+++	+++	0/+	0/+
Vacuoles	0	0	+++	+++	0	0
Perinuclear edema	+	+	+++	+++	+	+
Spoiled membranes	0	0	+++	+++	0	0
Spoiled desmosomes	0	0	+	++	0	0
Granular junction	0	0	+	+++	0	++
Spoiled corneodesmosomes	0	0	++	+++	0/+	+
Stratum compactum—basket weave pattern (BWP)	0	0	+++	+++	++	+++
Central spoiled corneosomes	0	0	+++ (D)	+++ (D)	++	+++
Peripheral spoiled corneosomes	0	0	++	+++	0	0
Spoiled proteic cornea envelope	0	0	+	++	0	0
Spoiled lipidic cornea envelope	0	0	+	++	0	0
Stratum junction compactum/stratum disjunctum BWP	0	+	Nonidentifiable			
Central spoiled corneosomes—rupture	+++	+++				
Peripheral spoiled corneosomes—rupture	0	0				
Spoiled cornea envelope	+	++				
Saw tooth corneocytes	+	++				
Stratum disjunctum BWP	+	+++	+++	+++	+++	+++
Peripheral spoiled corneosomes—rupture	0	+++	+++	+++ (D)	++	+++
Spoiled proteic cornea envelope	+	++	+++	+++	+++	+++
Spoiled lipidic cornea envelope	+	+++	+++	+++	+++	+++
Saw tooth corneocytes	+	+++	+++	+++	+++	+++
Keratin content	0	0	0	0	0	0

Adapted from Berson D, et al. *J Drugs Dermatol.* 2009;8:803–811

4. SPECIFICATION OF Brillian-CSA

- Character :White or almost white crystal powder
- Odor: Odorless
- Solubility: It can dissolve in lipid and can't dissolve in water
- Identification: Conforms
- Melting point: 112.0-117.0 °C
- Loss on drying: $\leq 0.5\%$
- Ignition Residue: $\leq 0.1\%$
- Heavy metals: $\leq 0.002\%$
- Content: $\geq 98.00\%$

5. CONCLUSION

- 피부자극과 부작용의 문제로 최근 사용량이 줄고 있는 SA나 기타 AHA, BHA제품의 대안으로서 LHA는 주름, 색소침착, 항균, 여드름 등 화장품 원료로서 가져야 할 거의 모든 기능을 가지고 있어 광범위한 사용이 예상된다.
- 화장품업계의 선진국이라 할 수 있는 유럽국가나 북미에서는 LHA의 사용이 AHA와 BHA제품의 대안 Peeling제로서 사용되고 있는 추세이다.



THANK YOU.

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