

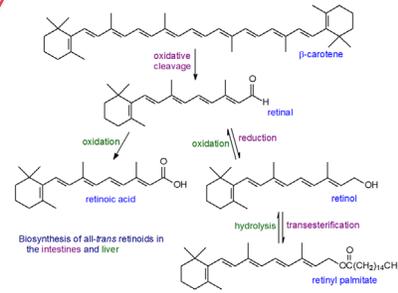
Retinol, retinol-like, Bakuchiol... Why so much buzz?



# Retinol: Anti-Aging Gold Standard



First identified by  
Paul Karrer  
1937 Nobel Prize



Retinol & Retinoids are  
synthetic well-defined  
compounds



Dermatologist  
Anti-Aging Solution

*Clin Interv Aging. 2006;1(4):327-48*

Retinol

>73 M Google Hits

>65 K Pubmed citations



# Retinol: But with Serious Drawbacks



## Photo & Heat Unstable

*Cosmetics & Toiletries, 130(4), May 2015*



## Sensitive Skin

*Clin Interv Aging. 2006;1(4):327-48*



## Unstable in Formulation

*J Cosmetic Dermatol, 20(7):2350-2358, 2021*



# Retinol: But with Serious Drawbacks



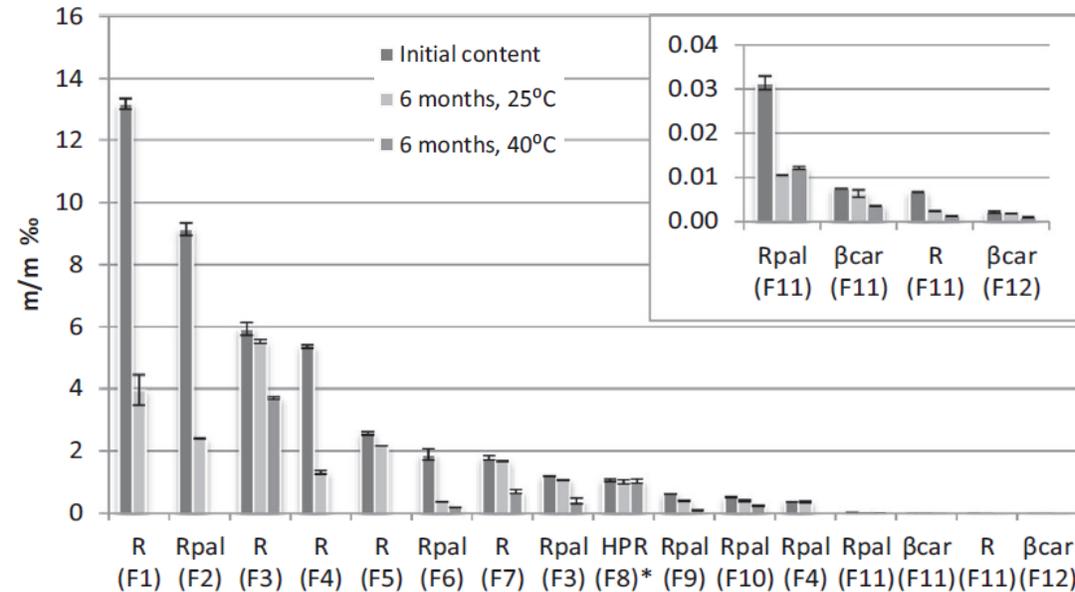
## Unstable in Formulation

*J Cosmetic Dermatol, 20(7):2350-2358, 2021*

12 cosmetic products, various price ranges and formulations, with listed retinoids  
 Day creams (Afrodita, Eveline, Eucerin, Green Line, L'Oreal, Lekarna Ljubljana, and Paula's Choice), day cream for men (Ombia), and serums (2 × The Ordinary, Paula's Choice, and Revolution).

## HPLC tested content

retinol (R), retinyl palmitate (Rpal), β-carotene (βcar) and hydroxypinacolone retinoate (HPR) in various formulations (F)



# Retinol-Like: The Noise



Consumers search  
for alternatives  
"Retinol-Like Products"  
> 35 M hits on Google



7 Actives  
so-called alternatives  
Limited Studies vs Retinol



Only one real Retinol-like  
In-Vitro, Ex-Vivo & In-Vivo  
Comparative Studies &  
Peer Review Publications

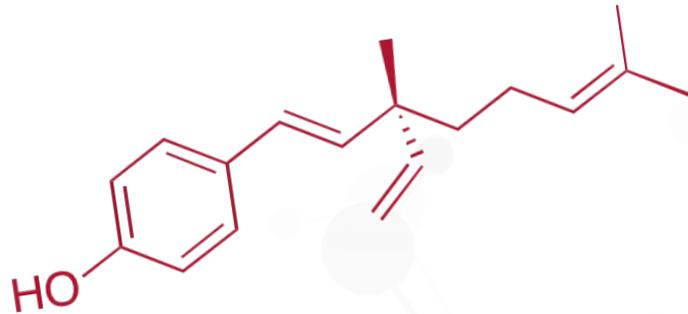
Sytenol® A Bakuchiol



# Sytenol®A, The Real Bakuchiol



- > **Monomolecular ingredient** min 99%
- > **INCI : Bakuchiol**
- > **Oil Soluble**, Yellow to yellowish brown
  - ✓ Natural Origin: Natural ISO16128 = 1
  - ✓ Photostable (*day application possible*)
- > **Use level: 0.5 to 1.0%** clinically tested
  - ✓ **Viscous**
  - ✓  **devoid of hydrolytic stability problem**
  - ✓ Easy to formulate
  - ✓ Multiple clinical studies
  - ✓ Adapted for Sensitive skin
  - ✓ Globally Compliant
  - ✓ Strong toxicological Dossier



# Sytenol<sup>®</sup>A, The Only China Notified Bakuchiol

Breaking news: Now eligible to use in China!



Categorized as a low-risk ingredient

- ❖ Function: antioxidant and skin conditioner
- ❖ Range of concentrations: 0.1% to 2%
- ❖ Applications: skincare, scalp care and lip products

Forbidden to use another quality of Bakuchiol

(Chapter V - art 59 of the CSAR Regulation)

3 years Cosmeto-Vigilance monitoring before final approval and listing in IECIC list



# Sytenol<sup>®</sup>A, True Retinol Like: Extended Anti-Aging Benefits



# Sytenol® A, The Only Clinically Validated Bakuchiol

**Multidirectional activity of bakuchiol against cellular mechanisms of facial aging - Experimental evidence for a holistic treatment approach**

Anita Bluemke, *et al*- Int J Cosmet Sci. 2022 May 5

**Clinical Evaluation of a Nature-Based Bakuchiol Anti-Aging Moisturizer for Sensitive Skin**

Zoe Diana Draelos, *et al*- J Drugs Dermatol. 2020; 19(12): 1181-1183

**Bakuchiol may be another natural solution to reverse the course of nature**

ML Levy - British J Dermatology, 180:253-254, 2019

**Prospective, randomized, double-blind assessment of topical bakuchiol and retinol for facial photoaging**

S Dhaliwal *et al*. - British J Dermatology, 180:289-296, 2019

**Bakuchiol: A retinol-like functional compound modulating multiple retinol and non-retinol targets**

RK Chaudhuri - Cosmeceuticals and Active Cosmetics, 3<sup>r</sup> Edition, Eds., RK Sivamani, J Jagdeo, P Elsner & HI Maibach, Francis & Taylor, Boca Raton, Chapter 1, 1-18, 2015

**Bakuchiol to stabilize retinol and polyunsaturated lipids,**

RK Chaudhuri & B Ou - Cosm & Toil, 130:64-75, 2015

**Bakuchiol: A retinol-like functional compound revealed by gene expression profiling and clinically proven to have anti-aging effects**

RK Chaudhuri & K Bojanowski - International J Cosmetic Science, 36(3):221-230, 2014

**Bakuchiol in the management of acne-affected skin**

RK Chaudhuri & F Marchio - Cosm & Toil, 126:502-510, 2011

**The Miracle of Retinol: Why is there still so much fuss about retinoids and retinoid-like products?**

RK Chaudhuri - SPC, 23-24, May 2010

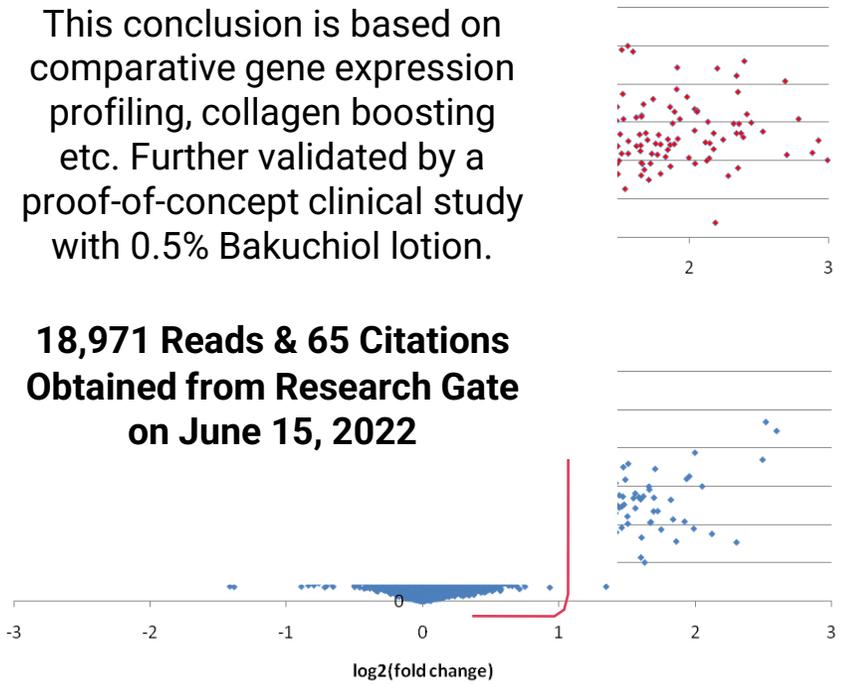


# Sytenol<sup>®</sup>A, Retinol-like Activity



Sytheon provides evidence that Bakuchiol having no structural resemblance to retinoids, can function as a functional analogue of retinol. This conclusion is based on comparative gene expression profiling, collagen boosting etc. Further validated by a proof-of-concept clinical study with 0.5% Bakuchiol lotion.

**18,971 Reads & 65 Citations**  
**Obtained from Research Gate**  
**on June 15, 2022**

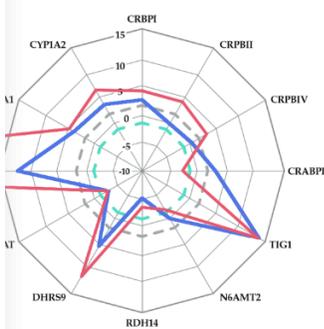


2014

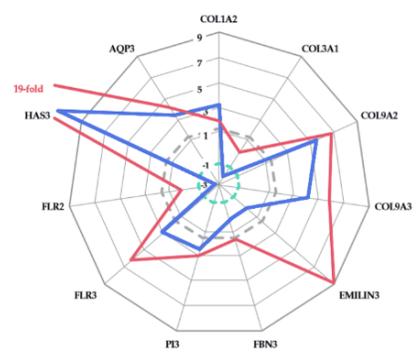
## Bakuchiol: a retinol-like functional compound revealed by gene expression profiling and clinically proven to have anti-aging effects

R. K. Chaudhuri, K. Bojanowski [International J Cosmetic Sciences, 36\(3\):221-23-, 2014; https://doi.org/10.1111/ics.12117](https://doi.org/10.1111/ics.12117)

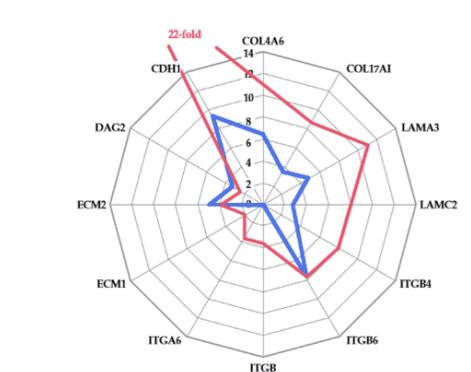
Retinoid Binding genes



Modulation of Extracellular Matrix Gene

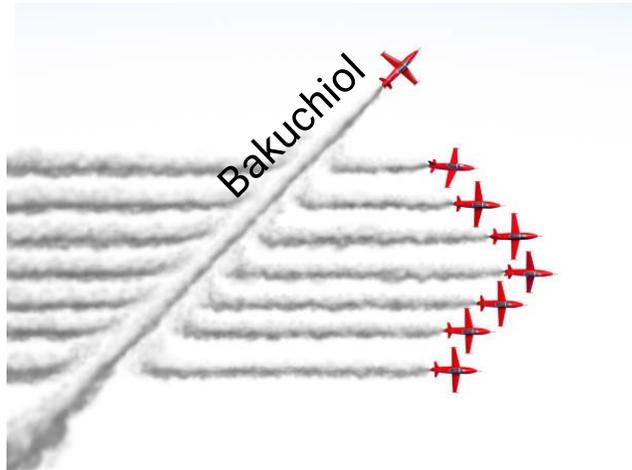


Modulation of Dermo-epidermal Junction Gene



# Sytenol®A, Better Skin Tolerance than Retinol

The Game Changer  
publication



2019

## Prospective, randomized, double-blind assessment of topical bakuchiol and retinol for facial photoageing

S. Dhaliwal,<sup>1</sup>I. Rybak,<sup>1</sup>S.R. Ellis,<sup>1</sup>M. Notay,<sup>1</sup>M. Trivedi,<sup>2</sup>W. Burney,<sup>1</sup>A.R. Vaughn,<sup>3</sup>M. Nguyen,<sup>4</sup>P. Reiter,<sup>5</sup>S. Bosanac,<sup>4</sup>H. Yan,<sup>1</sup>N. Foolad.<sup>1</sup>and R.K. Sivamani<sup>1,6</sup>British J Dermatology, 180:289-296, 2019, <https://onlinelibrary.wiley.com/doi/10.1111/bjd.16918>

### ABSTRACT

**Background** Bakuchiol is a phytochemical that has demonstrated cutaneous antiageing effects when applied topically. Early studies have suggested that bakuchiol is a functional analogue of topical retinoids, as both compounds have been shown to induce similar gene expression in the skin and lead to improvement of cutaneous photodamage. No in vivo studies have compared the two compounds for efficacy and side-effects.

**Objectives** To compare the clinical efficacy and side-effect profiles of bakuchiol and retinol in improving common signs of cutaneous facial ageing.

**Methods** This was a randomized, double-blind, 12-week study in which 44 patients were asked to apply either bakuchiol 0.5% cream twice daily or retinol 0.5% cream daily. A facial photograph and analytical system was used to obtain and analyse high-resolution photographs of patients at 0, 4, 8 and 12 weeks. Patients also completed tolerability assessment questions to review side-effects. During study visits, a board-certified dermatologist, blinded to study group assignments, graded pigmentation and redness.

**Results** Bakuchiol and retinol both significantly decreased wrinkle surface area and hyperpigmentation, with no statistical difference between the compounds. The retinol users reported more facial skin scaling and stinging.

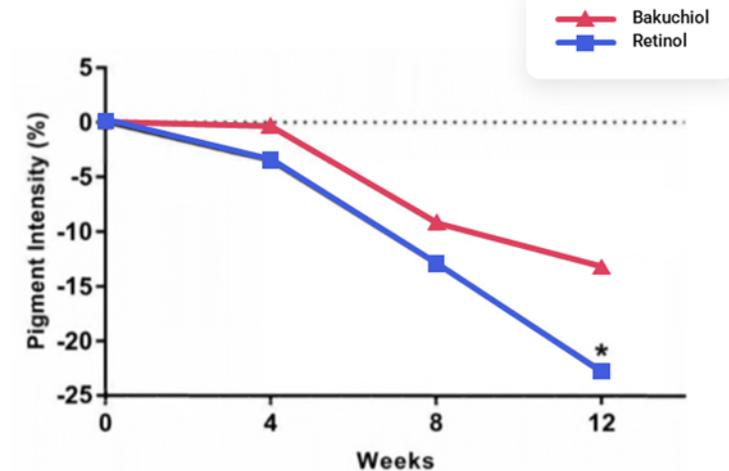
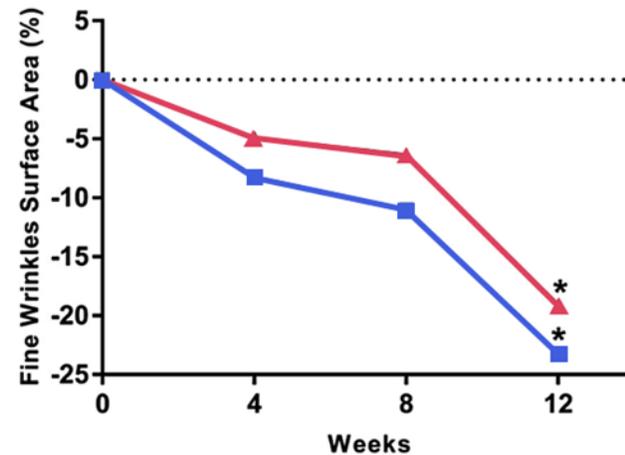
**Conclusions** Our study demonstrates that bakuchiol is comparable with retinol in its ability to improve photoageing and is better tolerated than retinol. Bakuchiol is promising as a more tolerable alternative to retinol.



# Sytenol<sup>®</sup>A, Better Skin Tolerance than Retinol

## Prospective, randomized, double-blind assessment of topical bakuchiol and retinol for facial photoageing

S. Dhaliwal,<sup>1</sup>I. Rybak,<sup>1</sup>S.R. Ellis,<sup>1</sup>M. Notay,<sup>1</sup>M. Trivedi,<sup>2</sup>W. Burney,<sup>1</sup>A.R. Vaughn,<sup>3</sup>M. Nguyen,<sup>4</sup>P. Reiter,<sup>5</sup>S. Bosanac,<sup>6</sup>H. Yan,<sup>1</sup>N. Foolad,<sup>1</sup>and R.K. Sivamani,<sup>6</sup>British J Dermatology, 180:289-296, 2019, <https://onlinelibrary.wiley.com/doi/10.1111/bjd.16918>



Sytenol<sup>®</sup>A and retinol both significantly decreased wrinkle surface area and hyperpigmentation, with no statistical difference between the compounds

$p \leq 0.05$



# Sytenol<sup>®</sup>A, Better Skin Tolerance than Retinol

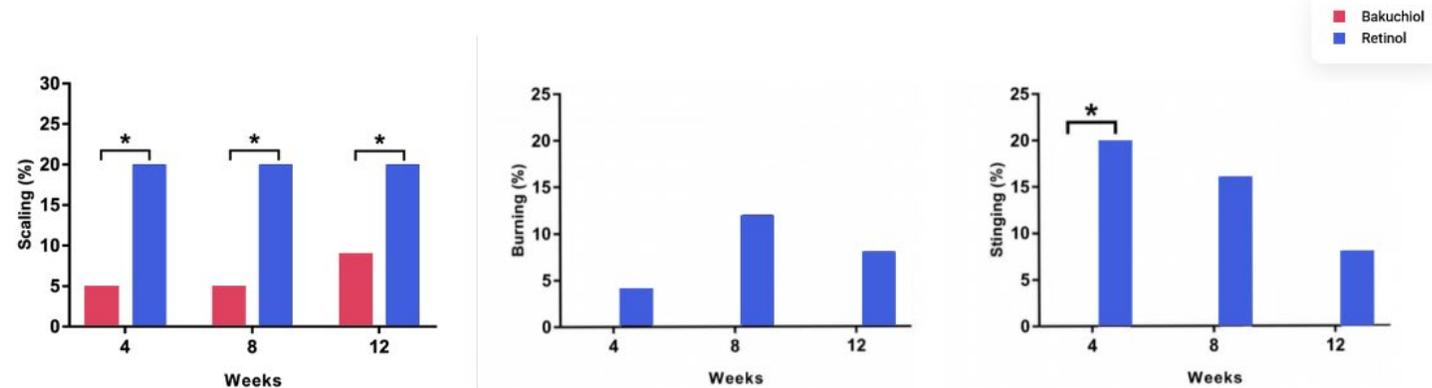
BJD

Bakuchiol (Sytenol<sup>®</sup>A) was shown in a study published in British J Dermatology to match the established benefits of retinol, with much better skin tolerance

After this publication, there has been a strong emphasis on Bakuchiol from key opinion leaders

## Prospective, randomized, double-blind assessment of topical bakuchiol and retinol for facial photoageing

S. Dhaliwal,<sup>1</sup>I. Rybak,<sup>1</sup>S.R. Ellis,<sup>1</sup>M. Notay,<sup>1</sup>M. Trivedi,<sup>2</sup>W. Burney,<sup>1</sup>A.R. Vaughn,<sup>3</sup>M. Nguyen,<sup>4</sup>P. Reiter,<sup>5</sup>S. Bosanac,<sup>6</sup>H. Yan,<sup>1</sup>N. Foolad,<sup>7</sup>and R.K. Sivamani,<sup>8</sup>British J Dermatology, 180:289-296, 2019, <https://onlinelibrary.wiley.com/doi/10.1111/bjd.16918>



There were more subjective reports of itching and burning in the retinol group, though this was not statistically significant. There were more statistically significant subjective reports of stinging in the retinol group



# Sytenol® A: The Digital Buzz

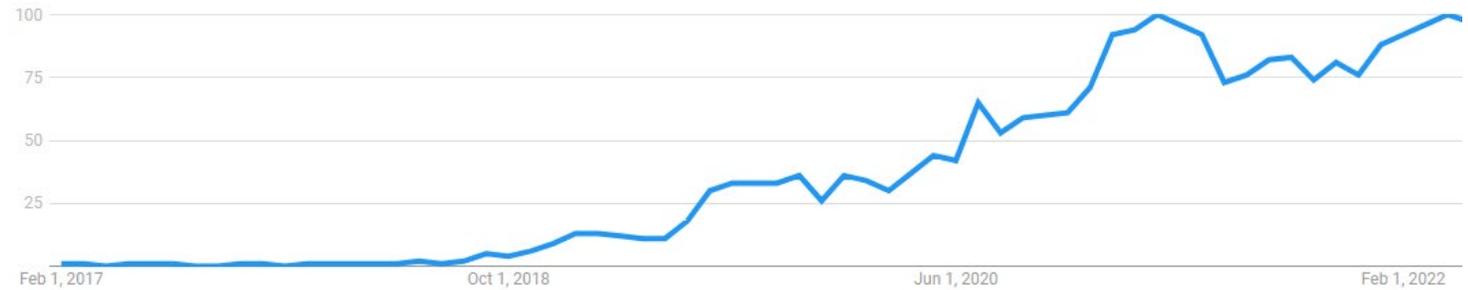
Since 2018, major buzz around Bakuchiol

- Mintel listed Bakuchiol among the top trends in 2019 and beyond

MINTEL

SEE SOURCE

On Google Trends, the popularity of « bakuchiol » increased dramatically

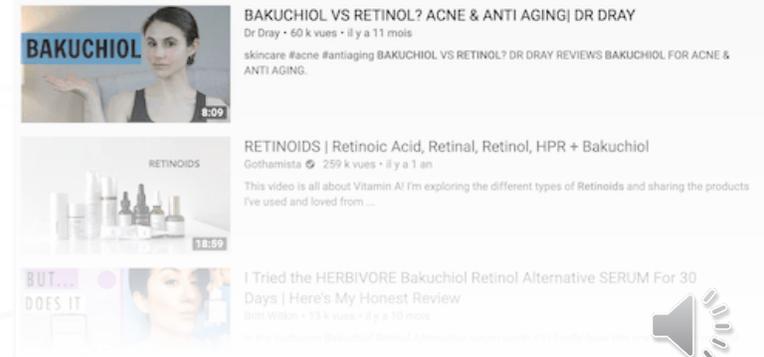


Multiplication of articles:  
Sytenol® A is the most wanted active ingredient in the world

## KEY OPINION LEADERS



## YOUTUBE VIDEOS



# Sytenol® A: The Digital Buzz

## #bakuchiol Hashtag Videos on TikTok



#bakuchiol. 39.6M views. Get the full experience on the app. Follow your favorite accounts, explore new trends, and create your own videos. Open [TikTok](#).



# Sytenol<sup>®</sup>A, Suitable for Sensitive Skin

2020

## Clinical Evaluation of a Nature-Based Bakuchiol Anti-Aging Moisturizer for Sensitive Skin

Zoe Diana Draelos MD,<sup>a</sup> Hemali Gunt PhD,<sup>b</sup> Joshua Zeichner MD,<sup>c</sup> Stanley Levy MD<sup>d</sup> *J Drugs Dermatol.* 2020;19(12):1181-1183. doi:10.36849/JDD.2020.5522

### ABSTRACT

**Background:** Patients with sensitive skin find topical retinoid use for anti-aging purposes challenging due to irritation. Bakuchiol, a meroterpene from the *Psoralea corylifolia* seed, has retinol functionality through retinol-like regulation of gene expression.

**Objective:** This research examined the tolerability, efficacy, and barrier effects of a nature-based bakuchiol-containing cleanser and moisturizer in subjects with sensitive skin.

**Methods:** 60 female subjects Fitzpatrick skin types I–V age 40–65 years with sensitive mild to moderate photodamaged skin were enrolled in this 4-week study. A sensitive skin panel was constructed: 1/3 eczema/atopic dermatitis, 1/3 rosacea, 1/3 cosmetic intolerance syndrome. Subjects used a nature-based cleanser and moisturizer twice daily and underwent transepidermal water loss (TEWL), corneometry, tolerability assessments, and efficacy assessments at baseline, 5–10 minutes post-application, and week 4.

**Results:** The skin care products were well tolerated and efficacious ( $P < 0.001$ ) in terms of investigator assessed improvement in visual smoothness, tactile smoothness, clarity, radiance, overall appearance, and global anti-aging. Cheek corneometry measurements demonstrated a statistically significant 16% increase in skin moisture content ( $P < 0.001$ ).

**Conclusion:** *A bakuchiol nature-based anti-aging moisturizer is well tolerated and effective in individuals with sensitive skin.*



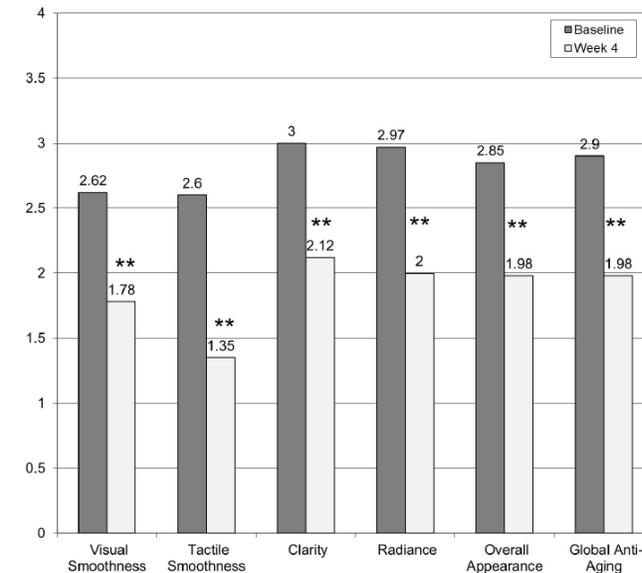
# Sytenol® A, Suitable for Sensitive Skin

JDD

1% Bakuchiol lotion was shown in a clinical study published by Z Draleos et al., J Drugs Dermatology, 2020 to be well tolerated and effective in individuals with sensitive skin (eczema, rosacea, cosmetic intolerance syndrome)

## Clinical Evaluation of a Nature-Based Bakuchiol Anti-Aging Moisturizer for Sensitive Skin

Zoe Diana Draelos MD,<sup>a</sup> Hemali Gunt PhD,<sup>b</sup> Joshua Zeichner MD,<sup>c</sup> Stanley Levy MD<sup>d</sup> *J Drugs Dermatol.* 2020;19(12):1181-1183. doi:10.36849/JDD.2020.5522



Cleanser/moisturizer combination show good tolerability in a challenging sensitive skin population with improvement of skin glow

# Sytenol® A, Additional Skin Benefits

## Multidirectional activity of bakuchiol against cellular mechanisms of facial ageing - Experimental evidence for a holistic treatment approach

Anika Bluemke, et al/ First published: 05 May 2022 *Int. J. Cosm. Sci.* <https://doi.org/10.1111/ics.12784>

IJCS

**Beiersdorf scientists further validated Sytheon's results with recent publication in *Inter J Cosmetic Sci*, 2022. The data shows the multidirectional efficacy of bakuchiol against cellular hallmarks of skin aging.**

### ABSTRACT

**Objective** Skin ageing is a multifactorial process involving formation of reactive oxygen species, consecutive inflammation with reduced epidermal and dermal cell viability and resulting damage to the extracellular matrix. Effective dermocosmetic treatment modalities should ideally address these hallmarks in a holistic approach. Here, we determined the corresponding activity profile of bakuchiol, a plant-derived meroterpene, in an array of in vitro, ex vivo and in vivo studies and compared it to retinol, currently considered as gold standard in topical antiageing cosmetics.

**Methods** The antioxidative capacity and power of bakuchiol and retinol were analysed by measuring 2,2'-diphenyl-1-picrylhydrazyl (DPPH) reduction via its absorption decay and electron spin resonance spectroscopy, respectively. Effects on prostaglandin E2 (PGE2), macrophage migration inhibitory factor (MIF), fibroblast growth factor 7 (FGF7), collagen type I and VII (COL1A1, COL7A1), fibronectin (FN) levels as well as the metabolization of water-soluble tetrazolium 1 (WST-1) were determined in human dermal fibroblasts. Epidermal regeneration was assessed utilizing an in vitro wound healing model. FN protein levels were analysed ex vivo after treatment with a formulation containing bakuchiol, retinol or vehicle using suction blister fluid. Skin condition improvement was determined in vivo in a split-face comparison study after application of bakuchiol or vehicle.

**Results** In contrast to retinol, bakuchiol demonstrated high antioxidative efficacy. Levels of PGE2 and MIF were significantly decreased by both bakuchiol and retinol. Bakuchiol but not retinol significantly increased FGF7 protein levels. WST-1 metabolization levels were significantly augmented by bakuchiol and retinol. Bakuchiol and retinol application led to a significant augmentation of COL1A1, COL7A1 and FN protein levels. Wounds supplemented with bakuchiol but not retinol displayed a significant increase in epidermis regeneration. Clinically, areas treated with a bakuchiol-containing formulation showed a statistically significant increase in FN protein values after a 4-week application compared to untreated areas and areas treated with vehicle.

**Conclusion** These data provide evidence for the multidirectional efficacy of bakuchiol against cellular hallmarks of skin ageing. Its activity profile shares some common features with retinol but demonstrates several hitherto unknown biopositive effects in our studies, namely stimulation of the critical extracellular matrix component FN, and accelerated epidermal regeneration and wound healing.

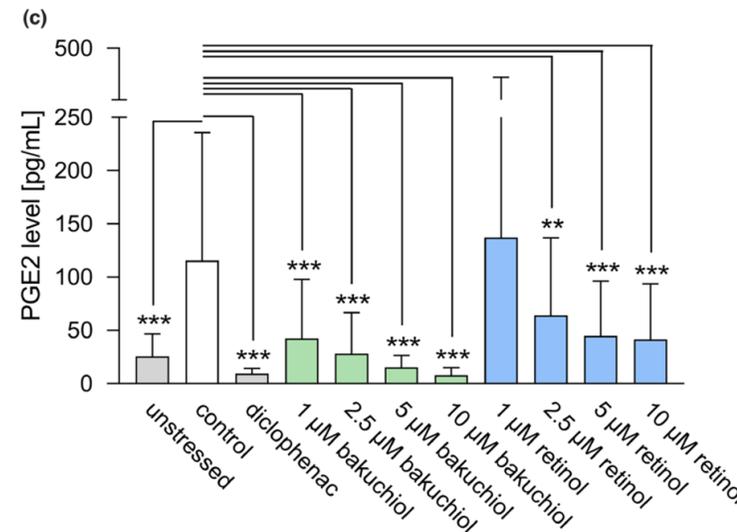
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## Multidirectional activity of bakuchiol against cellular mechanisms of facial ageing - Experimental evidence for a holistic treatment approach

Anika Bluemke, et al / First published: 05 May 2022 *Int. J. Cosm. Sci.* <https://doi.org/10.1111/ics.12784>

IJCS

Beiersdorf scientists further validated Sytheon's results and more



Sytenol®A shows stronger anti-inflammatory effect than Retinol



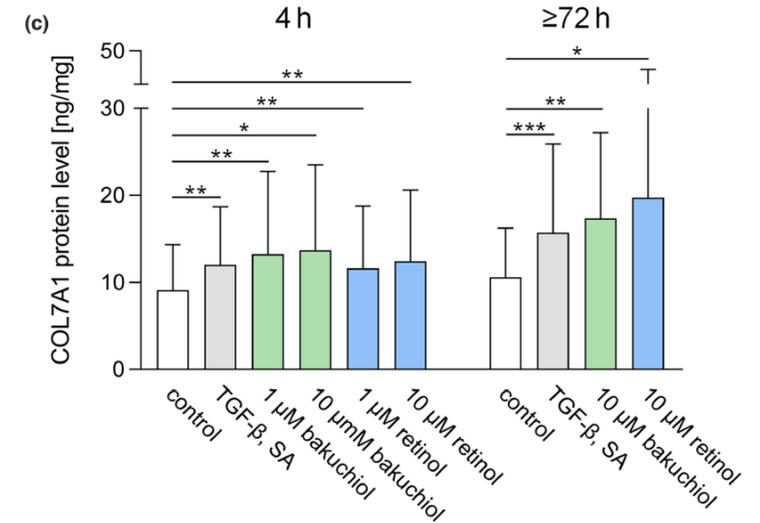
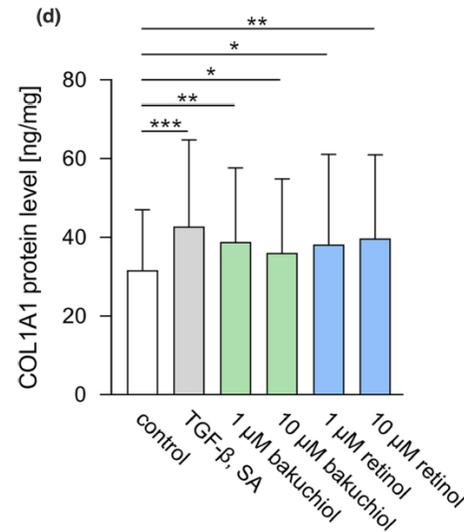
# Sytenol<sup>®</sup>A, Additional Skin Benefits

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IJCS

Beiersdorf scientists further validated Sytheon's results and more



Study confirms Sytenol<sup>®</sup>A & Retinol stimulate Collagens production



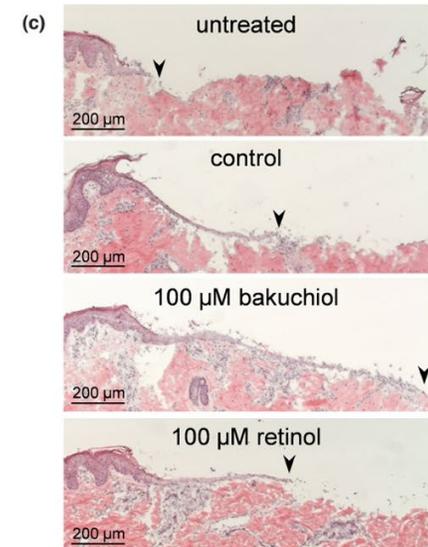
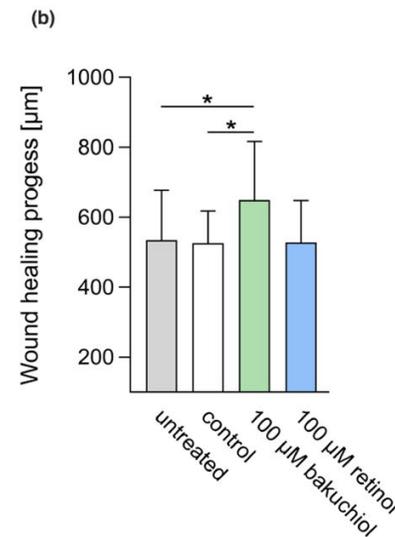
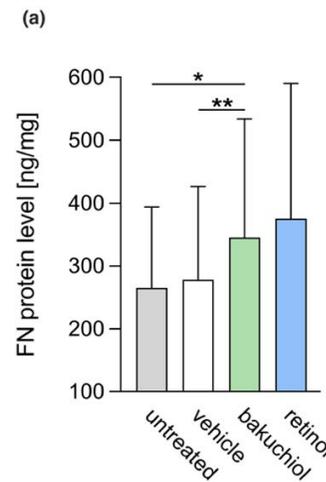
# Sytenol<sup>®</sup>A, Additional Skin Benefits

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Anika Bluemke, et al First published: 05 May 2022 *Int. J. Cosm. Sci.* <https://doi.org/10.1111/ics.12784>

IJCS

Beiersdorf scientists further validated Sytheon's results and more



Both Sytenol<sup>®</sup>A and Retinol stimulate fibronectin production ex-vivo  
Sytenol<sup>®</sup>A show higher wound healing effect than Retinol



# Sytenol®A : INCI Bakuchiol

## Sytenol®A, Bakuchiol

- > INCI Bakuchiol  
CAS # 10309-37-2  
REACH # 01-2120113117-71-0000
- > 99 % Standardized Pure Molecule
- > Residual solvents < 25ppm  
(typical value <10 ppm)
- > Residual Psoralenes < 25ppm  
(typical value <10 ppm)
- > Retinol Like Activity (Anti-Acne)  
based on dermatological and clinical studies



To learn more: [www.sytheonol.net](http://www.sytheonol.net)

SAFE FOR TOPICAL USE

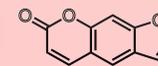
## Babchi oil / Bakuchi oil

- > INCI *Psoralea Corylifolia* seed oil or seed or plant extract
- > No or Minor amount of Bakuchiol
- > Possibly high in Psoralenes
- > P... (A...)
- > Trad... family based on  
Fur... *Ethnopharmacology* 232  
(2019)

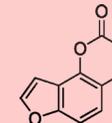
INCI: *Psoralea corylifolia* extracts  
forbidden in Cosmetic in China



Babchi oil



Psoralene



Isopsoralene

Vitiligo treatment  
Psoriasis (PUVA-therapy)

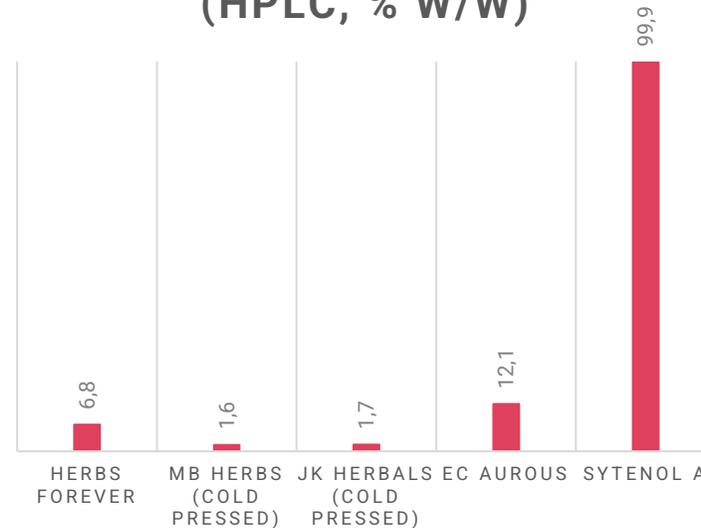
NOT STANDARDIZED & POTENTIALLY PHOTOTOXIC

# Bakuchiol versus Babchi/Bakuchi oils

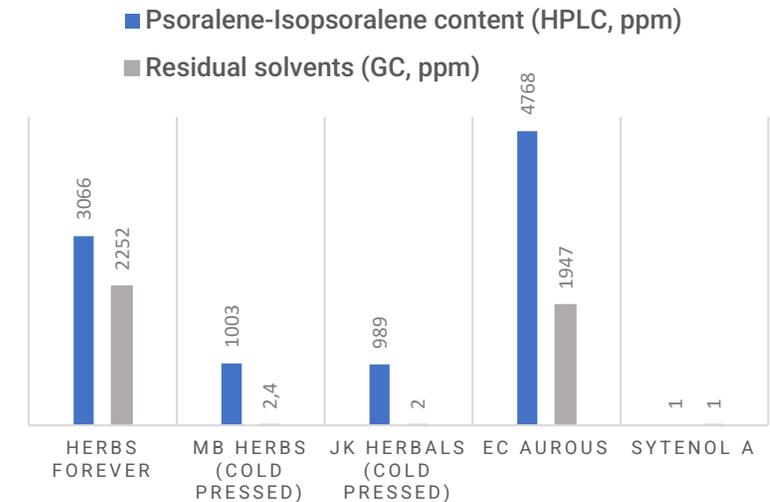
Confusion between Bakuchi Oil and Bakuchiol important issues

- ❖ Regulatory
- ❖ Efficacy
- ❖ Toxicity

### BAKUCHIOL CONTENT (HPLC, % W/W)



### CONTAMINANTS CONTENT (PPM)



Cleanser/moisturizer combination show good tolerability in a challenging sensitive skin population with improvement of skin glow



# Bakuchiol Claim

- ❖ In 2020, because of the success of Bakuchiol, Sytheon (Originator of Bakuchiol for commercial use) commissioned an analytical study to assess the level of Bakuchiol in 9 commercial cosmetic products from the USA and Europe:



<https://www.prnewswire.com/news-releases/exclusive-new-study-from-sytheon-on-9-commercial-cosmetic-products-to-assess-the-level-of-bakuchiol-the-natural-alternative-to-retinol-301221498.html>

- ❖ The study found, Herbivore Bakuchiol Serum contained only 2.27 ppm of Bakuchiol when 1% has been claimed by the brand on social media.
- ❖ This indicates Herbivore has been falsely claiming the percentage of the active ingredient found in their product.
- ❖ For more information, visit [bakuchiol.net](http://bakuchiol.net)

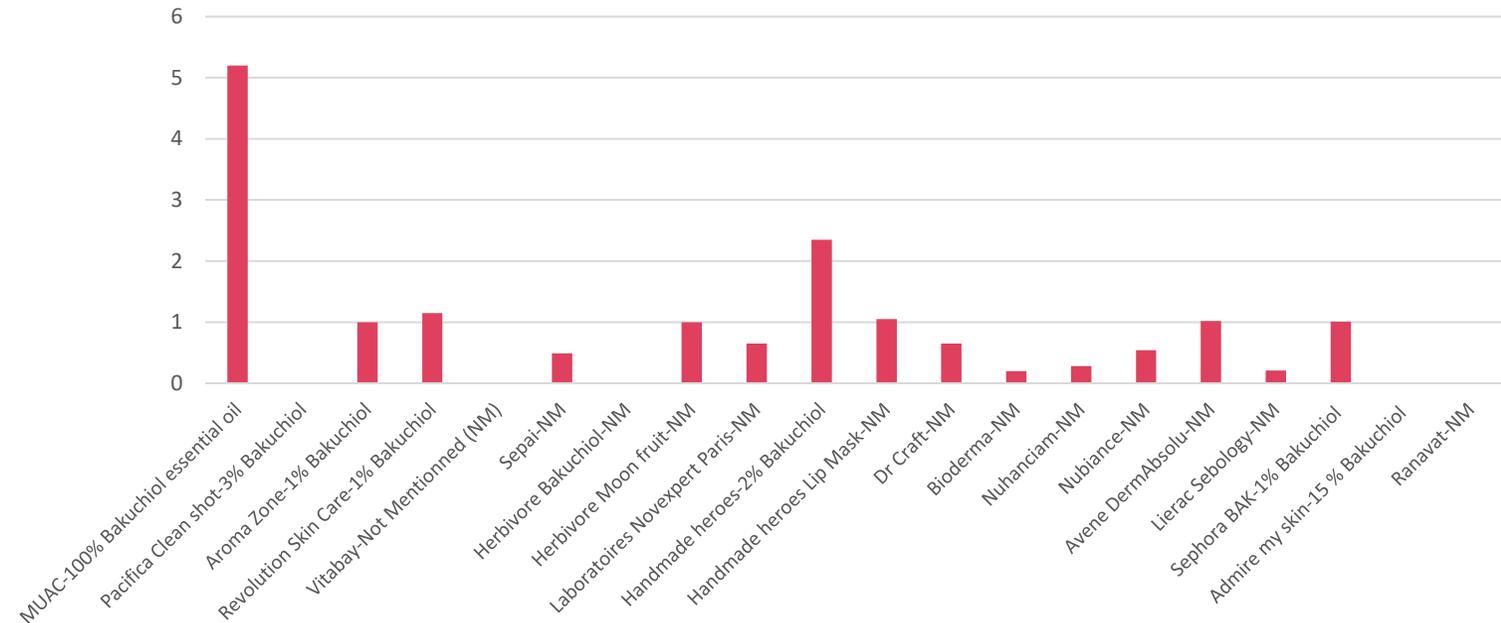


# Bakuchiol Claim Mislabeling & Fraud

New 2022 study with 20 products

Confusion leads to mislabelling and finally failing trust from final consumers

Tested Bakuchiol content (% w/w HPLC)



Most of the brands follow the clinically tested 0.5% content but 25% of the products tested have false claim with no Bakuchiol !



# Sytenol<sup>®</sup>A, The Only True Bakuchiol



- ✓ Experience
- ✓ Quality
- ✓ Regulatory
- ✓ Patents
- ✓ Efficacy

**Sytenol<sup>®</sup>A**

The only safe, registered, efficacy-proven Bakuchiol





### **Sytheon USA**

info@sytheonltd.com

+1-973-988-1075

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### **Sytheon France**

sytheon@sytheonltd.com

+33-141-108-182

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### **Sytheon Asia**

apac@sytheonltd.com

+65-665-383-25

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[www.sytheonltd.com](http://www.sytheonltd.com)

