

RETINOL CB 50

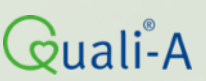
*New grade of Retinol formulated
with natural origin compounds*

August, 2023



RETINOL CB 50: the all-time Hero in Anti-Ageing!

ID Card: 5017297

INCI NAME (ACTIVE)	>	Retinol	>	
TECHNOLOGY	>	RETINOL CB 50 is made from retinyl acetate by hydrolysis, followed by a dissolution into a mixture of undecane and tridecane from natural origin	>	
KEY BENEFITS	>	• Reduces skin photodamage • Improves the appearance of fine lines & wrinkles • Improves skin firmness, smoothness & elasticity • Rebalances uneven skin tone	>	
TECHNICAL	>	Form: Liquid Use level: 0.1–0.6% pH of use: 4.5 - 8	>	
REGISTRATION CERTIFICATION PATENT	>	    	>	

RETINOL CB 50 vs RETINOL GS 50 - Comparison



From RETINOL GS 50 to RETINOL CB 50

RETINOL GS 50	RETINOL CB 50
Retinol	Retinol
Polysorbate 20	Undecane and Tridecane, 100% from natural origin (from coconut oil or RSPO Palm kernel oil)
BHA	Tocopherols (100% from natural origin, extraction and distillation of soybean oil)
BHT	

RETINOL CB 50 has exactly the same retinol content and quality as RETINOL GS 50. Only the formulation differs with the replacement of polysorbate 20 by alkanes of natural origin and the replacement of BHA and BHT by natural mixed tocopherols.



Specifications

		RETINOL GS 50 (5015117)	RETINOL CB 50 (5017297)
Appearance	Colour	yellow liquid	yellow to slight orange liquid
Assay	All trans Retinol % (m/m)	42.75 – 49.50	42.75 – 49.50
	Tocopherol % (m/m)	n/a	0.4 – 1.0
	BHA % (m/m)	0.90 – 1.10	n/a
	BHT % (m/m)	3.15 – 3.50	n/a
Purity	Trans-Retinol in total Retinol % (a/a)	min. 95	min. 95
	Cis-Retinol in total Retinol % (a/a)	max. 5	max. 5



Appearance

	RETINOL GS 50	RETINOL CB 50	RETINOL CB 50	RETINOL CB 50
Lot number	SI2201K015	UT22060002	UT22060003	UT22060004
Retinol content	46.71% (w/w)	48.76% (w/w)	46.45% (w/w)	47.75% (w/w)
Visual aspect				

RETINOL CB 50 has a comparable aspect as RETINOL GS 50.

Stability

Retention of Retinol Initial value (%), stored in aluminum bottle sealed under Argon after 3 months*

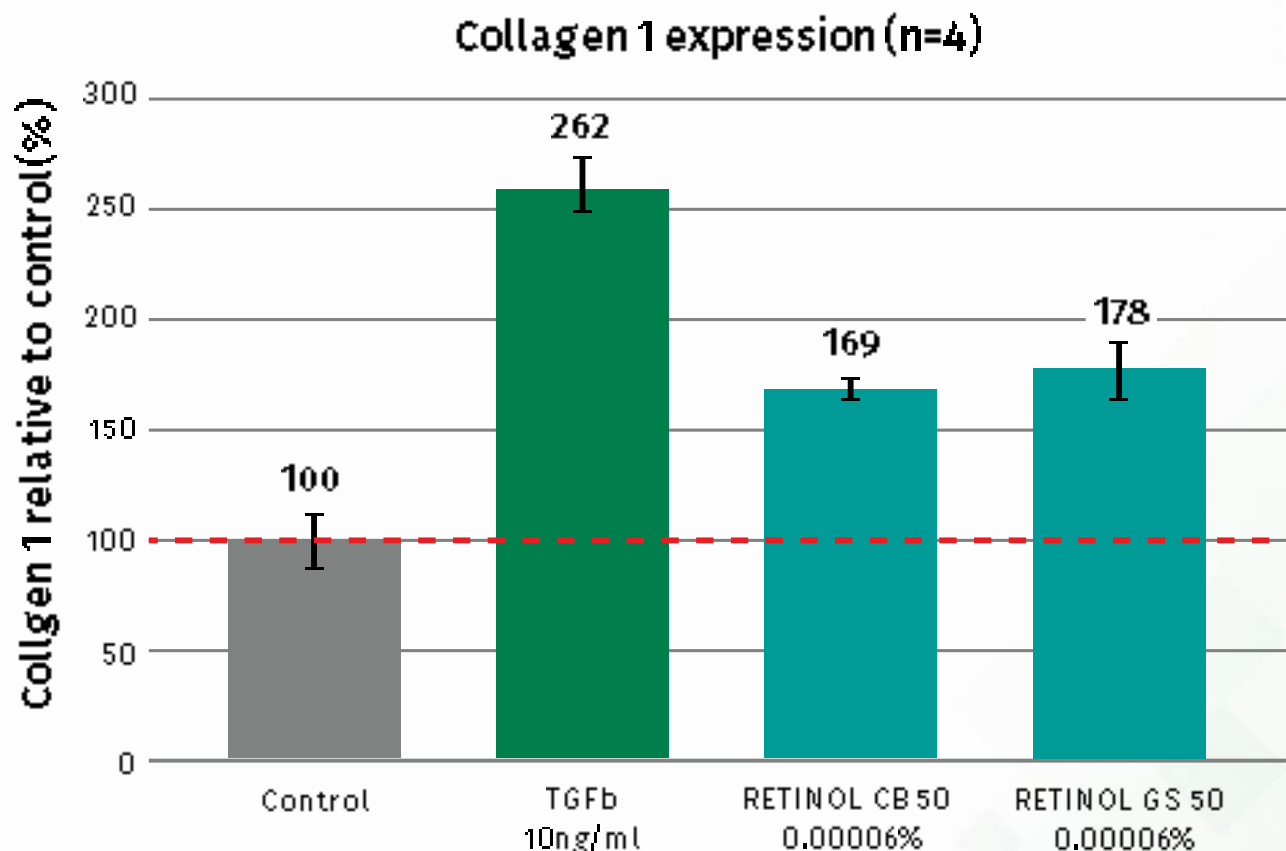
	Lots	15°C	25°C
RETINOL CB 50	UT22060002	98.3	93.3
	UT22060003	97.6	93.0
	UT22060004	97.2	93.1
RETINOL GS 50	SI13040003	94.9	99.5
	SI13040004	100.7	96.9
	SI13040005	97.3	96.3

RETINOL CB 50 shows comparable stability at 15°C and 25°C after 3 months vs RETINOL GS 50

* Stability study still on going

Collagen expression *in vitro*

Same performance with RETINOL CB 50 and RETINOL GS 50 as expected



Retinol co-culture assay with HPEK and HDF

- The cells are treated with starvation media and the actives are added for 72 hours.
- TGF β is used as a positive control.
- The cells are stained and measured via flow cytometry.

RETINOL CB 50 shows comparable collagen I expression as RETINOL GS 50 *in vitro*, around +70% vs Control at 0.00006%

Formulation



Formulation Tips

RETINOL CB 50

- RETINOL CB 50 *is soluble* in fats and oils
- **Sensitive to Oxygen.** It is therefore recommended to manufacture retinol formulations under an inert atmosphere or to reduce the presence of Oxygen during handling and production to the possible minimum.
- **Sensitive** to higher **temperatures** (> 40°C) and daylight.
- To improve the **stability** of RETINOL CB 50 in the formulation it is recommended to add **chelating agents** like EDTA, **UV absorbers** like PARSOL® Guard* and antioxidants like **Mixed Tocopherols** or STAY-C® 50.
- **STAY-C® 50** has recently shown **high performance to recover retinol content** at room temperature and 40 °C. Be aware, that it is a salt and may impact the stability of electrolytes sensitive systems.
- Recommended **pH** of the final formulation: **4.5 – 8.0**

*INCI Name: Octocrylene (and) Homosalate (and) Butyl Methoxydibenzoylmethane (and) Tocopherol (and) Helianthus Annuus (Sunflower) Seed Oil

Stability in formulation

RETINOL CB 50 vs RETINOL GS 50 in 2 different formulations

	Cream Gel 4°C – RT – 40°C -50°C - DL			W/O Emulsion 4°C – RT – 40°C -50°C - DL		
RETINOL CB 50 Lot UT22060004						
RETINOL GS 50 Lot SI2201K015						
Retinol recovery %	Cream gel			Emulsion W/O		
6 weeks	4°C	RT	40°C	4°C	RT	40°C
RETINOL CB 50	76	78	65	97	90	75
RETINOL GS 50	93	67	72	93	89	77

RETINOL CB 50/GS 50 at 0.2% in a cream gel and and w/o emulsion.

Stability* at 4°C, RT, 40°C, 50°C and under daylight after 6 weeks

RETINOL CB 50 shows comparable stability at all conditions after 6 weeks vs RETINOL GS 50

* Stability study still on going

Retinol: take your Cocooning time

New formulations for Millennials non-gendered

Retinol reduces the appearance of lines and wrinkles while improving firmness and elasticity of the skin.

3 new formulations:



Radiant Youth
Face & Body
Scrub



Cocooning
Vitamins Mask Soap



Skin Smoothing
Massage Oil

Radiant Youth Face & Body Scrub

*Formulation: 99.75% natural origin**

A face, lips and body scrub with **Retinol** at low concentration for a plumping and smoothing effect to fight the first signs of aging with a radiant younger looking skin. Gentle exfoliation scrub with naturally derived undissolved **Ascorbic Acid** for a revitalized and purified skin

	Ingredients	Function	% w/w
A	Caprylic/Capric Triglyceride	Emollient	24.00
	Octyldodecanol	Emollient	24.00
	Copernicia Cerifera Cera	Thickener	15.00
	Candelilla Cera	Thickener	5.00
	Polyglyceryl-4 Oleate	Solubilizer	10.00
	C15-C19 Alkane, Dextrin Palmitate	Thickener	10.00
	ARGAN OIL (Argania Spinosa Kernel Oil)	Emollient	1.00
	Tocopherol, Helianthus Annuus Seed Oil	Antioxidant	0.20
B	RETINOL CB 50 (Retinol, Undecane, Tridecane, Tocopherol)	Active	0.10
	Ascorbic Acid	Active - Exfoliant	10.00
	Parfum	Parfum	0.70

Technical data

pH: N.A.

Viscosity: Solid

SK-E-102011-37

* Natural origin content calculated according to ISO 16128 by including formulation water

Cocooning Vitamins Mask Soap

*Formulation: 99.89% natural origin**

A cocooning face mask soap with **Retinol**, the golden standard of pro-ageing reducing the appearance of lines, improving firmness of the skin, and stabilized vitamin C for a glowing and purified skin.

	Ingredients	Function	% w/w
A	Prunus Amygdalus Dulcis Oil	Emollient	14.60
	Passiflora Incarnata Seed Oil	Emollient	14.60
	Persea Gratissima Oil	Emollient	6.10
	ARGAN OIL (Argania Spinosa Kernel Oil)	Emollient	3.00
	Theobroma cacao Seed Butter	Emollient	3.70
	Macadamia Integrifolia Seed Oil	Emollient	14.60
	Life's GLA™ '10' n-6 Oil (Oenothera Biennis Oil, Ascorbyl Palmitate, Tocopherol)	Emollient, Active	2.00
	Ricinus Communis Seed Oil	Emollient	2.00
B	Kaolin	Absorbing agent	10.00
	VALVANCE® Look 100 (Silica, Titanium Dioxide)	Sensory Modifier, Whitener	3.00
	CI 77891, Polyglyceryl-2 Tetraisostearate	Pigment	2.00

	Ingredients	Function	% w/w
C	Sodium Hydroxide	Buffer	7.60
	Aqua	Solvent	14.20
D	RETINOL CB 50 (Retinol, Undecane, Tridecane, Tocopherol)	Active	0.20
	STAY-C® 50 (Sodium Ascorbyl Phosphate)	Active	0.50
	Tocopherol, Helianthus Annuus Seed Oil	Active	0.20
	PENTAVITIN® (Saccharide Isomerate, Aqua, Citric acid, Sodium Citrate)	Active	1.00
	Parfum	Parfum	0.70

SK-E-102144-10

Technical data

pH: 10.79

Viscosity: Solid

* Natural origin content calculated according to ISO 16128 by including formulation water

Skin Smoothing Massage Oil

*Formulation: 99.91% natural origin**

A face & body massage oil with **Retinol** for a smoothing effect with a radiant younger looking skin. This oil, easily absorbed by the skin, nourishes while leaving a satin finish.

	Ingredients	Function	% w/w
A	Simmondsia Chinenses seed Oil	Emollient	32.79
	Prunus Amygdalus Dulcis Oil	Emollient	15.00
	Sesamus Indicum Seed Oil	Emollient	10.00
	Passiflora Incarnata Seed Oil	Emollient	20.00
	Caprylic/Capric Triglyceride	Emollient	20.00
B	ARGAN OIL (Argania Spinosa Kernel Oil)	Emollient	1.00
	RETINOL CB (Retinol, Undecane, Tridecane, Tocopherol)	Active	0.20
	Mixed Tocopherols 95 (Tocopherol)	Antioxidant	0.50
	Beta-carotene	Colorant	0.01
	Parfum	Parfum	0.50

Technical data

pH: N.A.

Viscosity: Liquid

SK-E-102196-18

* Natural origin content calculated according to ISO 16128 by including formulation water

Retinol Scientific evidence

Learn more...



Request a sample



Retinol Efficacy



WRINKLES REDUCTION

Consumer Benefits

- Reduces appearance of fine lines & wrinkles
- Improves skin firmness & elasticity

Molecular & Gene Level

- Increases synthesis of Collagen & Elastin
- Inhibits MMPs, reducing Collagen & Elastin degradation

Structural & Functional Level

- Improves organization of Collagen and Elastin fibres in papillary dermis
- Improves structure of Dermal-Epidermal Junction (DEJ)



EPIDERMAL THICKENING

Consumer Benefits

- Improves skin smoothness
- Decreases skin roughness

Molecular & Gene Level

- Stimulates Ki-67 expression
- Increases deposition of Glycosaminoglycan in the epidermis

Structural & Functional Level

- Increases epidermal proliferation
- Thickens the epidermis
- Compacts the stratum corneum



EVEN SKIN TONE

Consumer Benefits

- Reduces discoloration, mottled pigmentation
- Rebalances uneven tone

Molecular & Gene Level

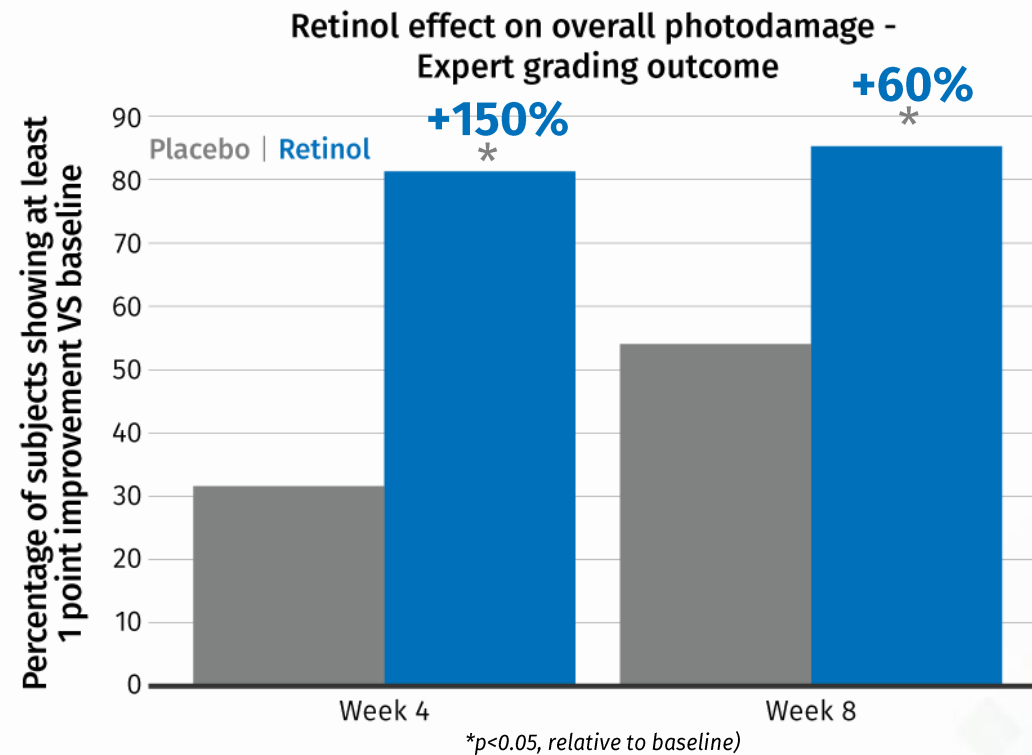
- Downregulates Tyrosinase activity
- Decreases Melanin content

Structural & Functional Level

- Inhibits Melanosome transfer

RETINOL visibly improves skin photo-damages in just 1 month

Photo-damage is the main reason (90% of the cases) of extrinsic skin ageing. Retinol is one of the few available skin care actives effectively fighting against it.



8-weeks, double-blind, split-face, vehicle-controlled, randomized *in vivo* study* Conducted during winter-time among 64 female volunteers aged 40–65.

0.1% Retinol containing moisturizer was applied daily. Clinical evaluations were performed by Dermatologists at baseline and at weeks 4 and 8 on each side of the face, based on the 0–9 expert grading scale.

in vivo
study

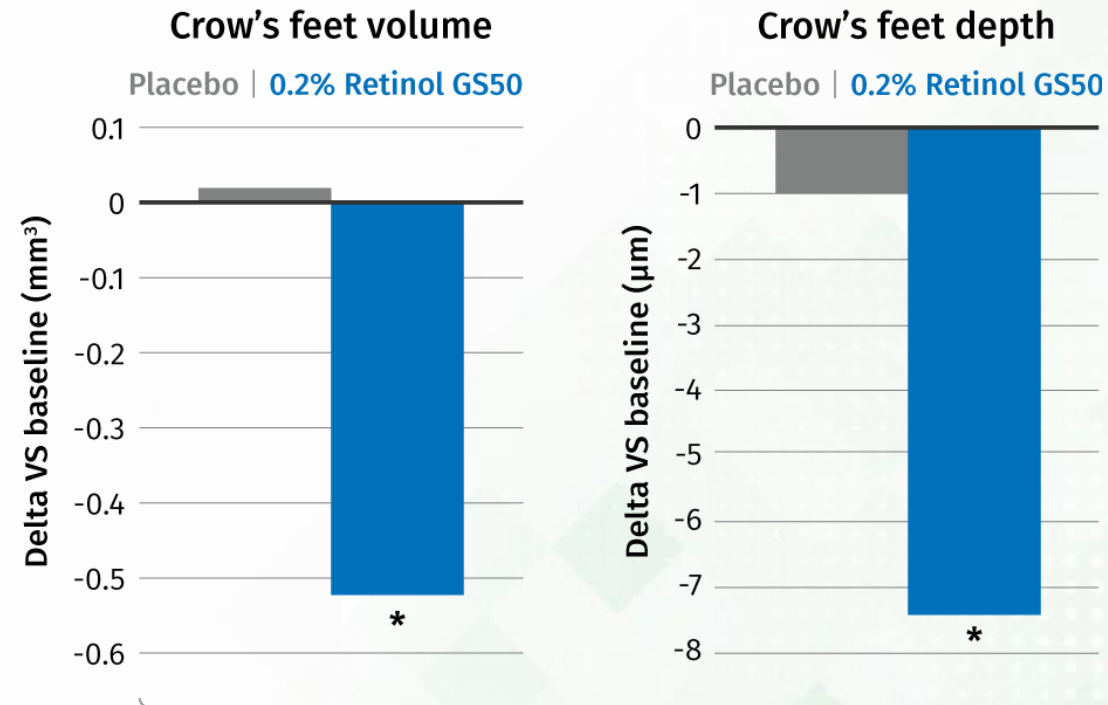
The aim of the study performed by S. Tucker-Samaras, T.Zedayko, C.Cole et al, 2009 was to determine the effect of Retinol on photo-ageing. It showed significant improvement on overall photodamage in just one month.

Retinol* proven to reduce crow's feet wrinkles in just 4 weeks

Visible effect and quantification by Primos^{lite} measurement



In 4 weeks only



DSM Nutritional Products
own study

4 weeks

Double blind in vivo study
25 volunteers per group, 50 – 65 y.o.
Application 2x per day, full face, for 4 weeks

in vivo
study

Significant ($p < 0.05$) improvement on crow's feet parameters (less volume and depth)

In the same time placebo effect was negligible

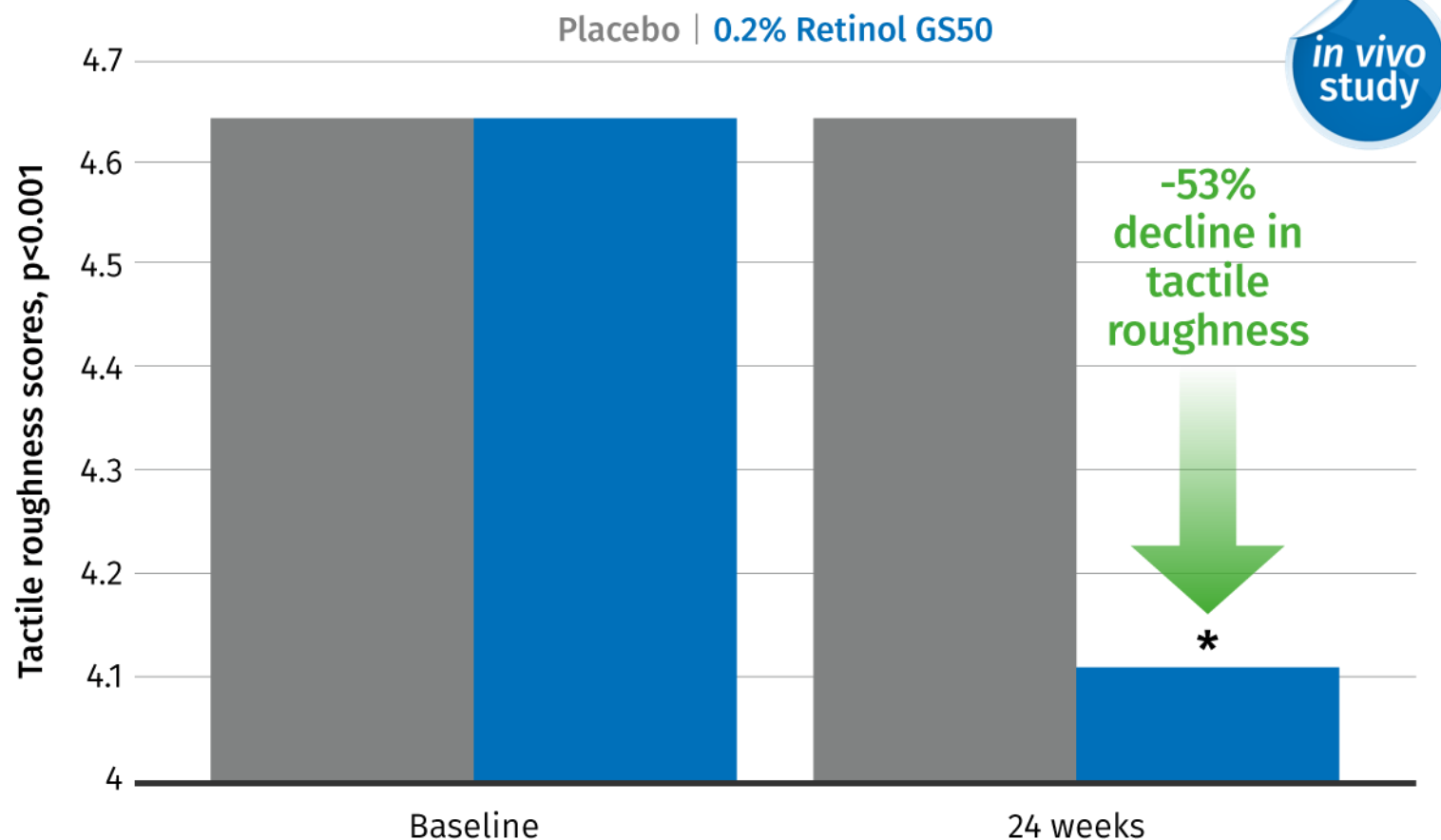
With prolonged retinol application a continuous improvement over time is expected

* RETINOL GS 50, same efficacy with RETINOL CB 50

Retinol smoothens skin

Retinol perceptibly improves tactile skin roughness

Retinol effect on tactile roughness



In vivo study performed by R. Kafi et al, 2007

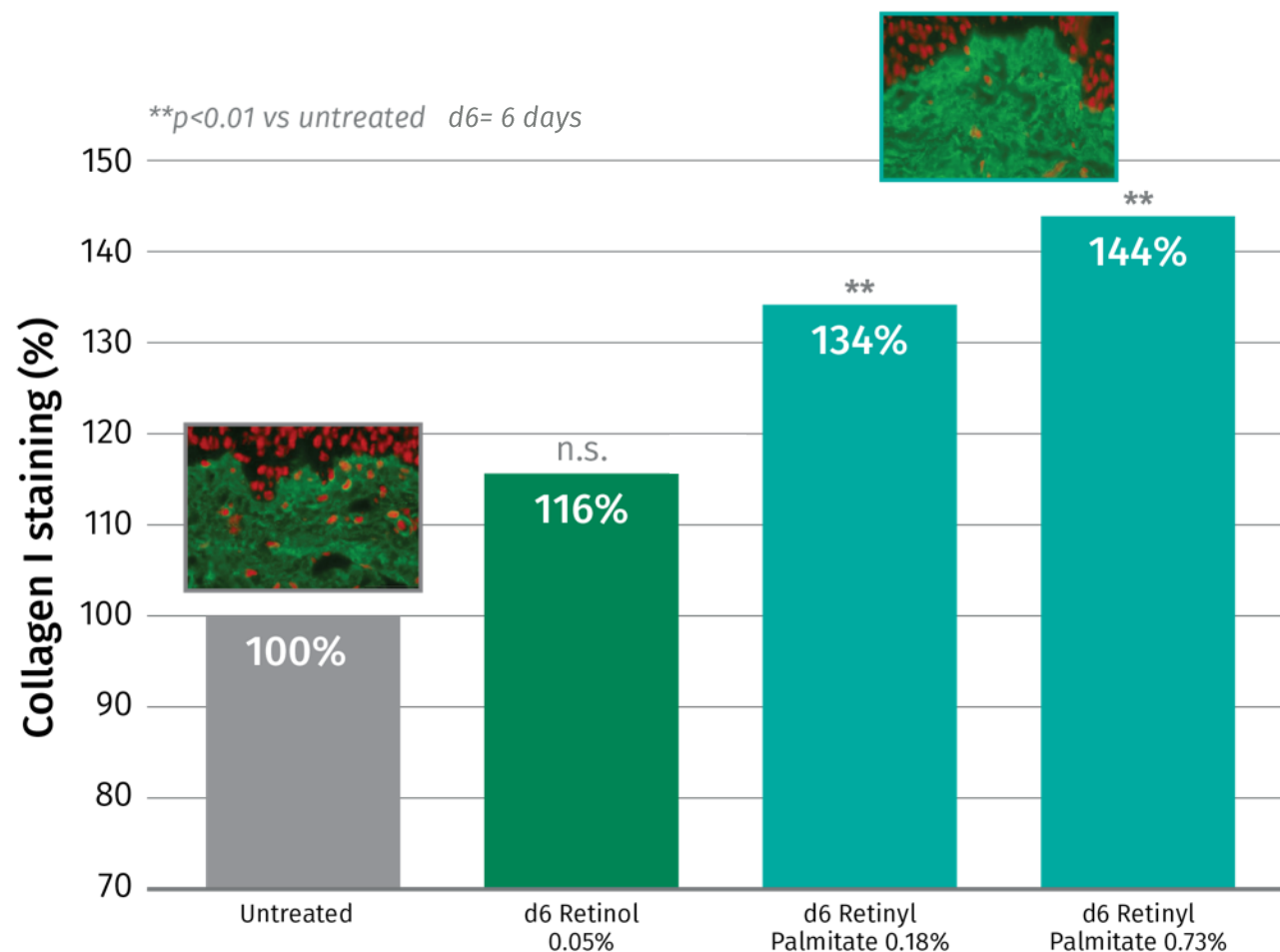
The improvement in tactile roughness in chronologically aged skin is shown with Retinol treatment.

After 24 weeks, significant differences between retinol-treated and vehicle-treated skin for changes in tactile roughness scores (-0.53 [95% CI, -0.73 to -0.33] vs 0.00 [95% CI, 0.00 to 0.00]; $P=0.001$ [N=36]).

* RETINOL GS 50, same efficacy with RETINOL CB 50

Retinol and derivative- Collagen I

6 days of ex vivo skin treatment



Collagen I staining was quantified in the papillary dermis using cellSens software

DSM Nutritional Products
own study

NEW

Retinol 0.05% boosts collagen I by **16%**

Retinyl Palmitate, significantly boosts collagen I, but at higher concentration than Retinol – and dose dependently

- **34%** collagen I boost at 0.18%
- **44%** collagen I boost at 0.73%

	Retinol equivalent
0.05% Retinol= 0.1% Retinol GS50	1x
0.18% Retinyl Palmitate	2x
0.73% Retinyl Palmitate	8x

Collagen I is the most abundant collagen in the dermis but more difficult to boost

RETINOL (Vitamin A)

The all-time anti-aging hero

PROVEN BENEFITS

- ✓ Reduces skin photo-damage effects
- ✓ Improves the appearance of fine lines & wrinkles
- ✓ Improves skin firmness & elasticity
- ✓ Improves skin smoothness
- ✓ Decreases skin roughness
- ✓ Reduces skin discoloration & mottled pigmentation
- ✓ Rebalances uneven skin tone



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Stability in formulation

RETINOL CB 50 vs RETINOL GS 50 in 2 different formulations

	Cream Gel 4°C – RT – 40°C -50°C - DL			W/O Emulsion 4°C – RT – 40°C -50°C - DL		
RETINOL CB 50 Lot UT22060004						
RETINOL GS 50 Lot SI2201K015						
Retinol recovery %	Cream gel			Emulsion W/O		
3 months	4°C	RT	40°C	4°C	RT	40°C
RETINOL CB 50	50	56	33	91	81	55
RETINOL GS 50	87	75	45	94	86	57

RETINOL CB 50/GS 50 at 0.2% in a cream gel and and w/o emulsion.

Stability* at 4°C, RT, 40°C, 50°C and under daylight after 3 months

RETINOL CB 50 shows comparable stability at all conditions after 3 months vs RETINOL GS 50 especially for in a w/o emulsion

BRIGHT SCIENCE. BRIGHTER LIVING.™

