

Deveraux Specialties
est. 1998

DL Linefade

OLIVE LEAF ACTIVE FOR ANTI-AGING SKIN CARE

DEJ COLLAGEN IV ACTIVATOR DELIVERING RETINOID-LIKE BENEFITS



“ Invest in your skin.
It's going to represent you
for a very long time. ”

- *Linden Tyler*



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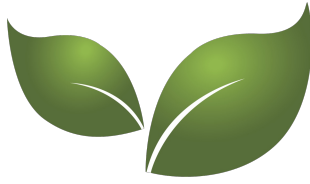


INGREDIENT INFORMATION & APPLICATIONS

I. THE OLIVE LEAF, DL LINEFADE



Functions & Benefits



- ✔ Induces rapid rejuvenation by targeting the major signs of aging skin
- ✔ Promotes **epidermal barrier** repair with ceramide synthesis
- ✔ Strengthens the **dermal-epidermal** junction with Collagen IV synthesis
- ✔ Supports a resilient **extracellular matrix** with Collagen I synthesis

-
- ✔ Erases fine lines by reducing wrinkle depth in as early as 15 days
 - ✔ Lifts re-volumizes sagging skin in as early as 45 days
 - ✔ Smooths the appearance of crepey and dry, rough skin
 - ✔ Amplifies performance of retinol and niacinamide



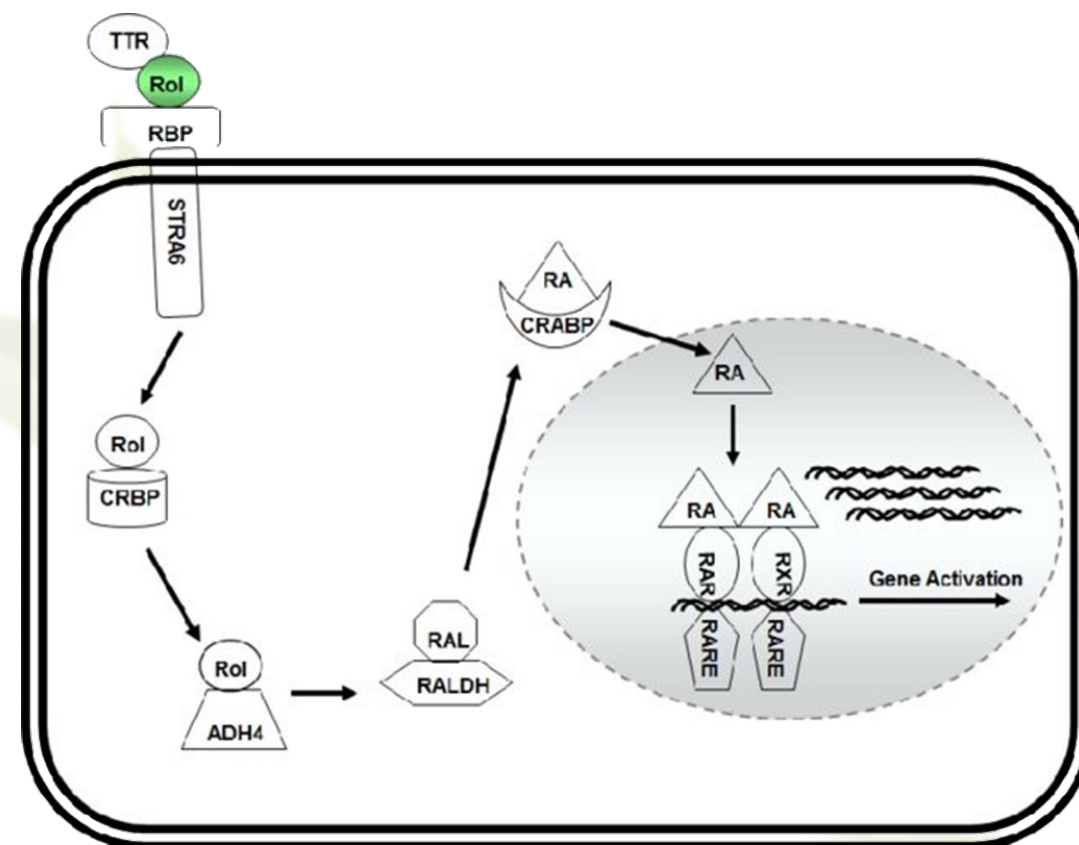
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II. BOOSTING THE PERFORMANCE OF RETINOL & OTHER FORMS OF VITAMIN A

How Does Vitamin A Work to Modulate Cell Metabolism?



- Model for retinol metabolism in a target cell: vitamin A/retinol (Rol) binds with the transthyretin (TTR) and retinol binding protein (RBP) to form a ternary complex that binds to STRA6 receptor on the surface of the target cell.
- Inside the cytoplasm, retinol binds to cellular retinol binding protein (CRBP) and is oxidized to retinaldehyde (RAL) by alcohol dehydrogenase (ADH4).
- RAL is then converted into retinoic acid (RA) by retinaldehyde dehydrogenases (RALDH).
- Retinoic acid is then transported into the nucleus by binding to the cellular retinoic acid binding receptor (CRABP) where it forms a complex with RAR and RXR receptors that binds with retinoic acid response elements (RARE) in the promoter region of responsive genes to activate their expression.



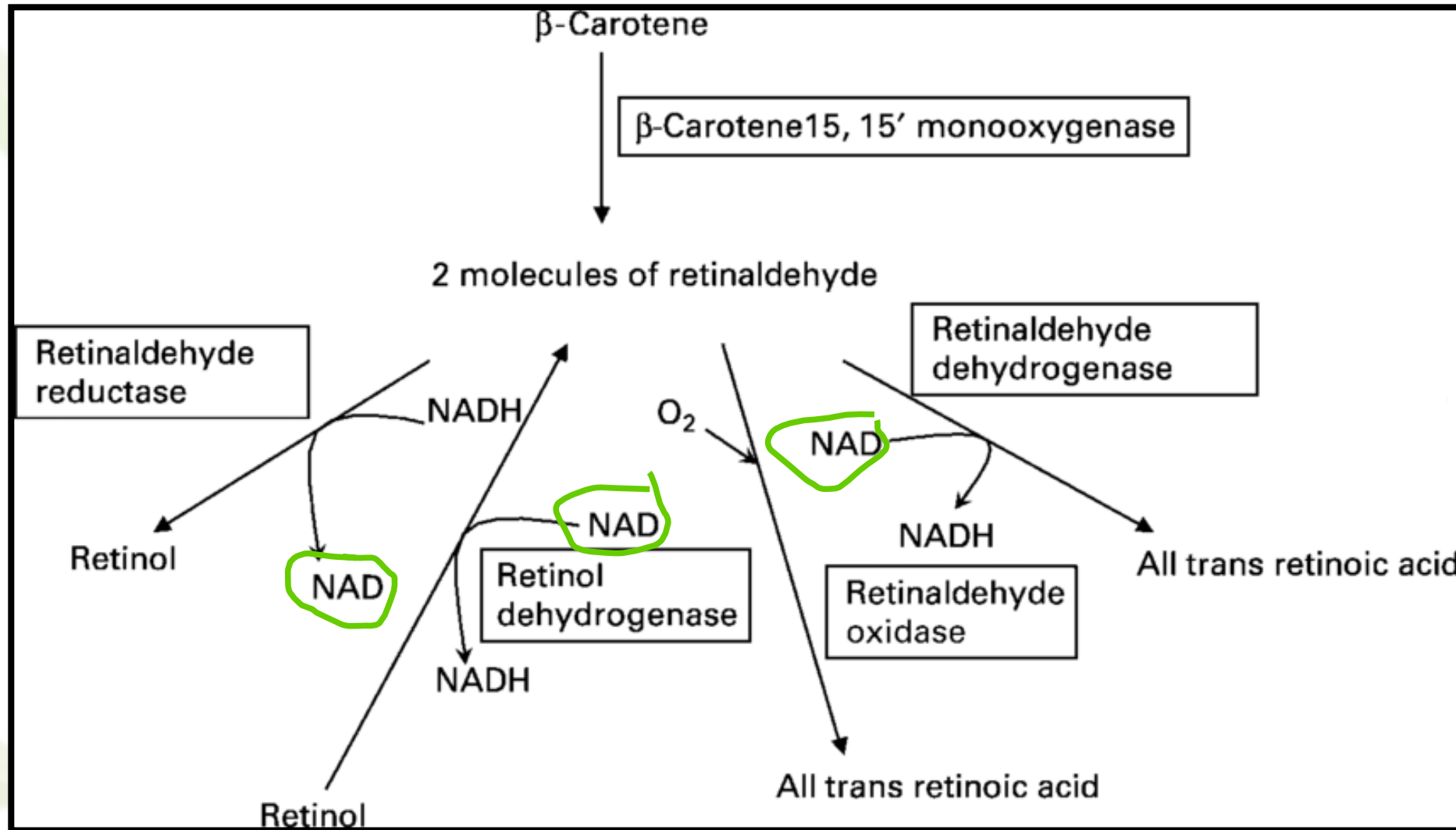


Targeting Enzymes in Vitamin A Metabolism with Agonists & Inhibitors

Target	Ingredient Examples	Comments
CYP26 inhibitors	Climbazole and other azoles, quercetin	CYP26s clear RA from receptors
AKR inhibitors	DL Linefade™ (inhibits AKR1B10)	AKRs convert retinal to retinol
LRAT inhibitors	Lecithin derivatives	LRATs convert retinol to retinyl esters
PPAR agonists	DL Linefade™ (induced PPAR transcription) Hydroxystearic acids, others	Activated PPARs heterodimerize with RXR receptors to induce gene expression
ALDH agonists	?	ALDH catalyzes retinal into RA
ADH, RDH, DHR agonists	DL Linefade™ (expresses RDH)	RDH catalyzes retinol into retinal

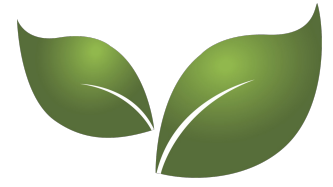


NAD⁺ Cofactor Involved in Vitamin A Metabolism



III. THE ROLES OF COLLAGEN & PPAR

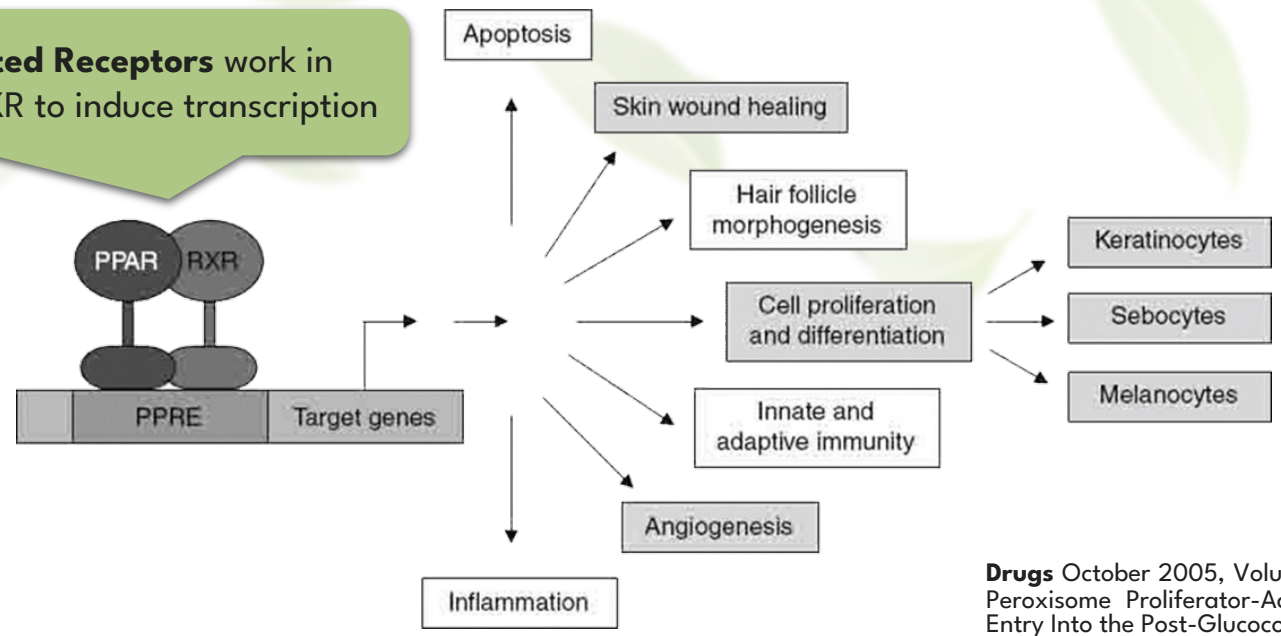




Peroxisome Proliferator-Activated Receptors

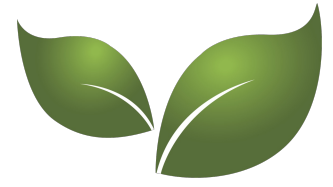
- Similar to retinoid receptors PPARs are nuclear hormone receptors. When activated with ligand binding PPARs act as transcription factors to modulate expression of target genes by binding to specific DNA sequences.
- This ligand-activated transcription has been shown to regulate activities across various skin cell types and metabolic activities.
- PPAR- α heterodimerizes with retinoid X receptor beta and the two receptors cooperate for the activation of the acyl-CoA oxidase gene promoter.

Peroxisome Proliferator-Activated Receptors work in conjunction with retinoid receptor RXR to induce transcription

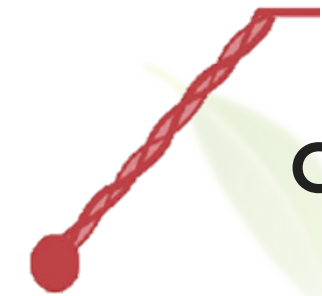


Drugs October 2005, Volume 65, Issue 14, pp 1919-1934 | Cite as Peroxisome Proliferator-Activated Receptors and their Ligands Entry Into the Post-Glucocorticoid Era of Skin Treatment?

Collagen IV, the Anchoring Protein

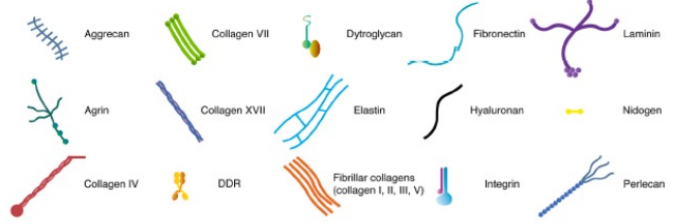
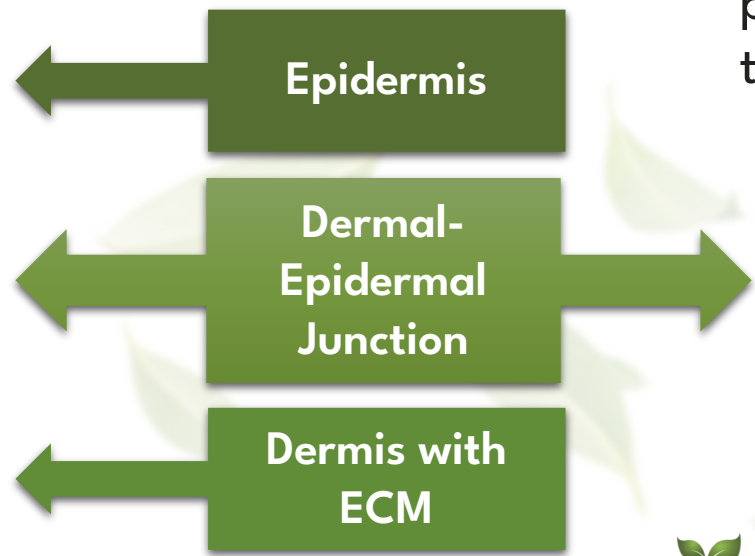
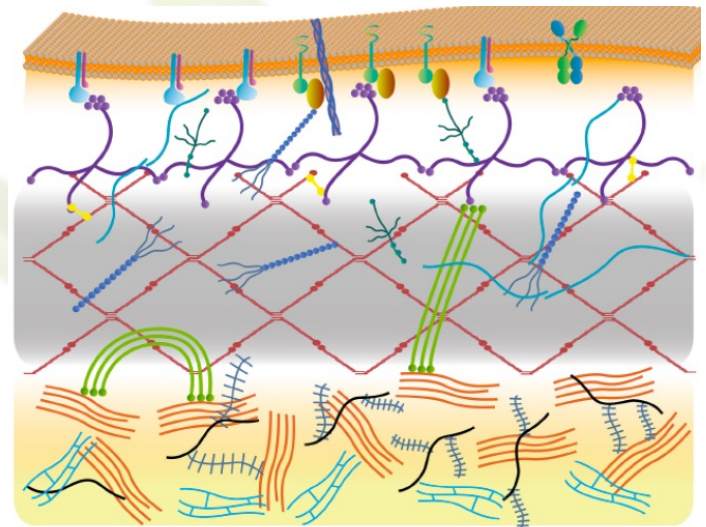


Collagen IV, a sheet-like matrix protein that anchors the epidermis to the dermis



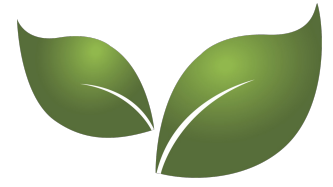
Collagen IV

Unlike most other collagens, **Collagen IV** is uniquely positioned closer to the skin surface greatly affecting the visible changes of skin.



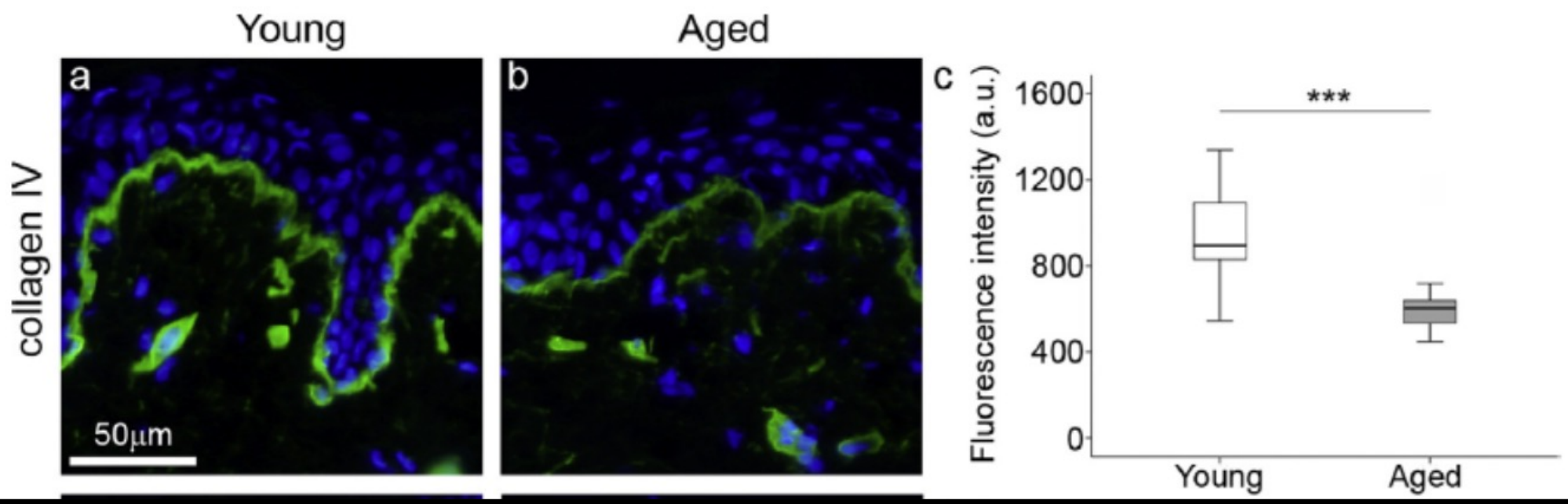
Nutrients 2014, 6, 4984-5017; doi:10.3390/nu6114984

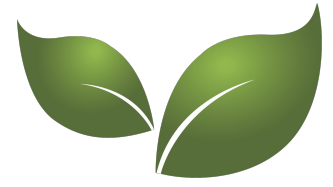
Collagen IV & Intrinsic Aging



Collagen IV decreases at the dermal-epidermal junction with age

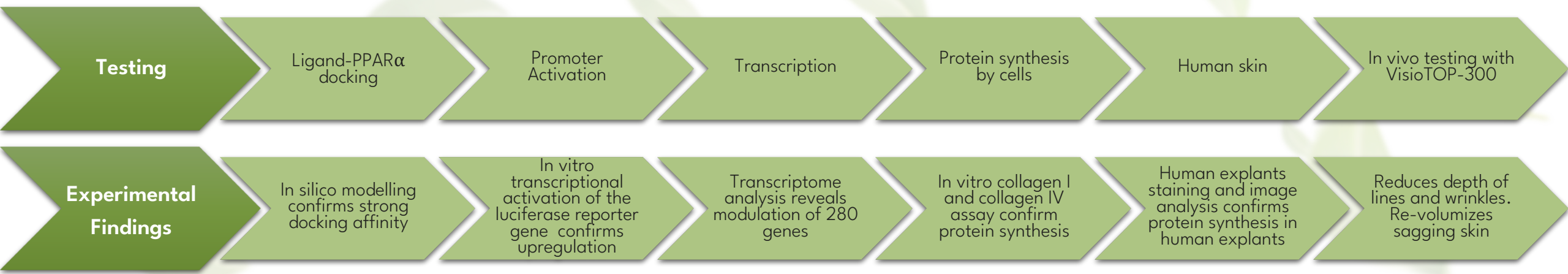
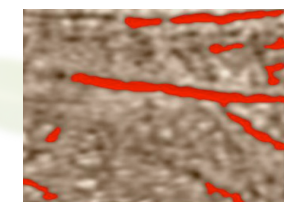
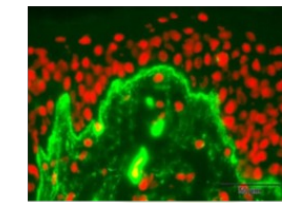
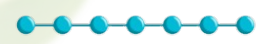
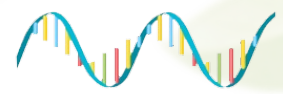
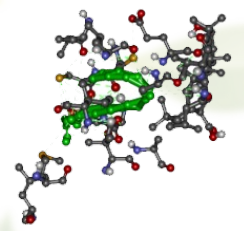
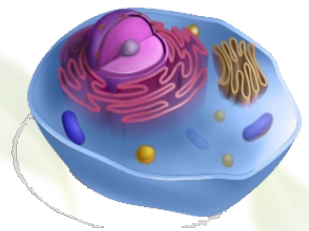
A.K. Langton et al. / Mechanisms of Ageing and Development 156 (2016) 14–16





PPAR Activation to Visible Improvement

Confirming PPAR activation by DL Linefade translates into skin care benefits



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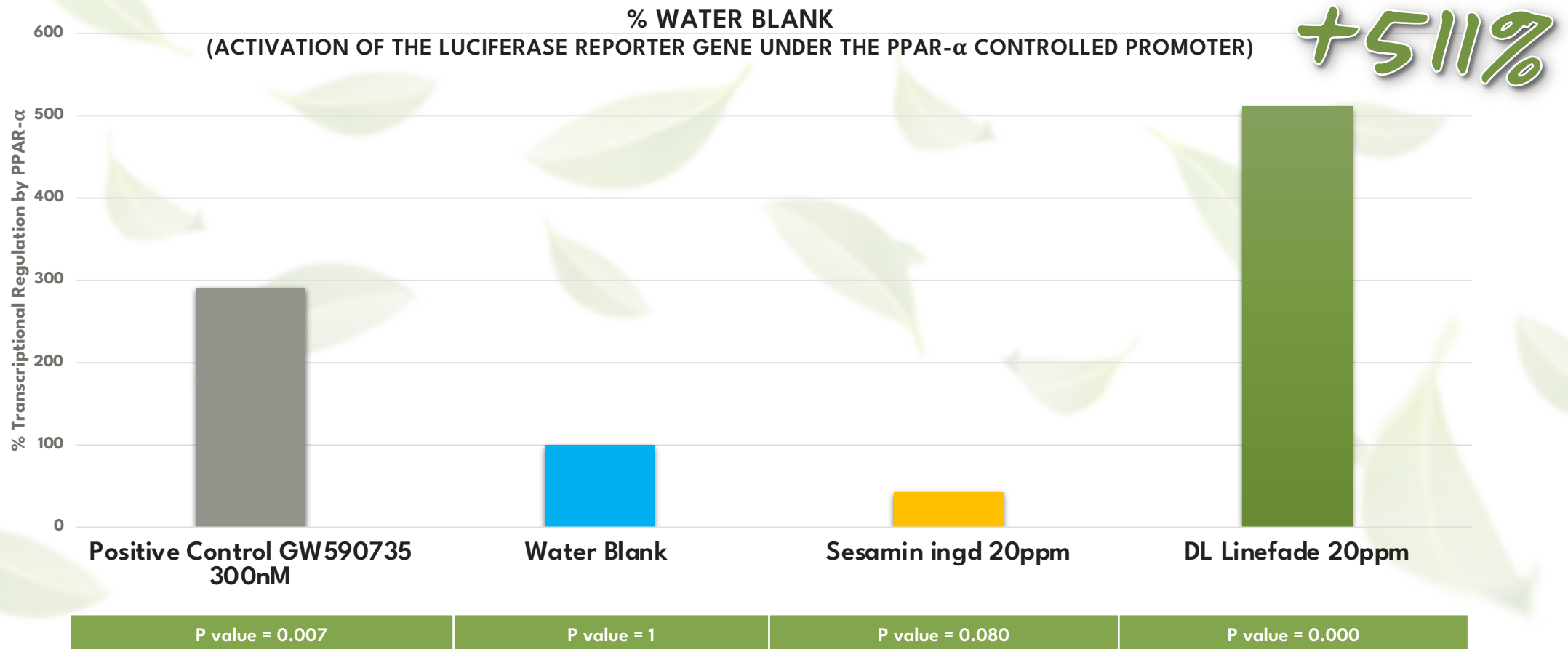
III. THE ROLES OF COLLAGEN & PPAR

a. In Vitro Results

Reporter Assay System



Transcriptional Regulation by PPAR- α in the Reporter Assay System



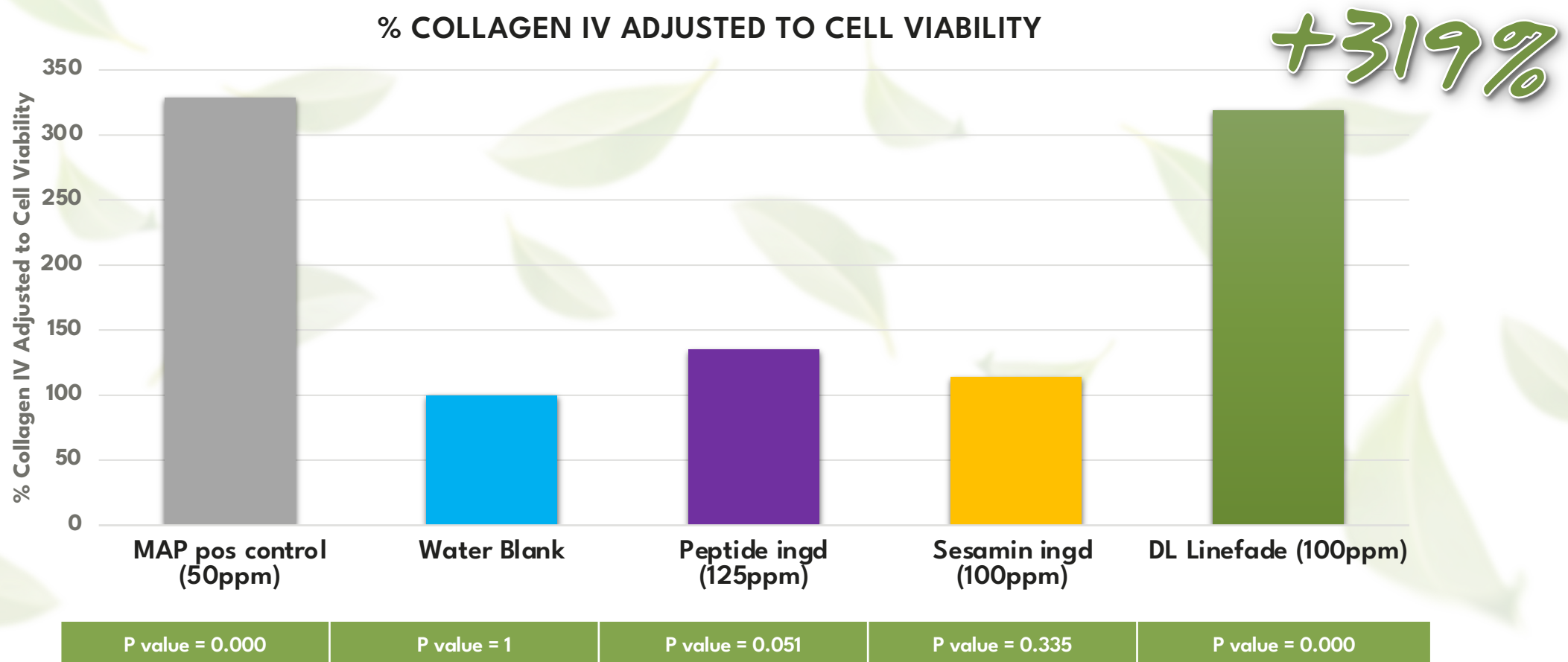
Type IV Collagen Output



Adult Human Fibroblasts Model

Collagen IV is a type of anchoring collagen found primarily in the basement membrane (basal lamina)

% COLLAGEN IV ADJUSTED TO CELL VIABILITY

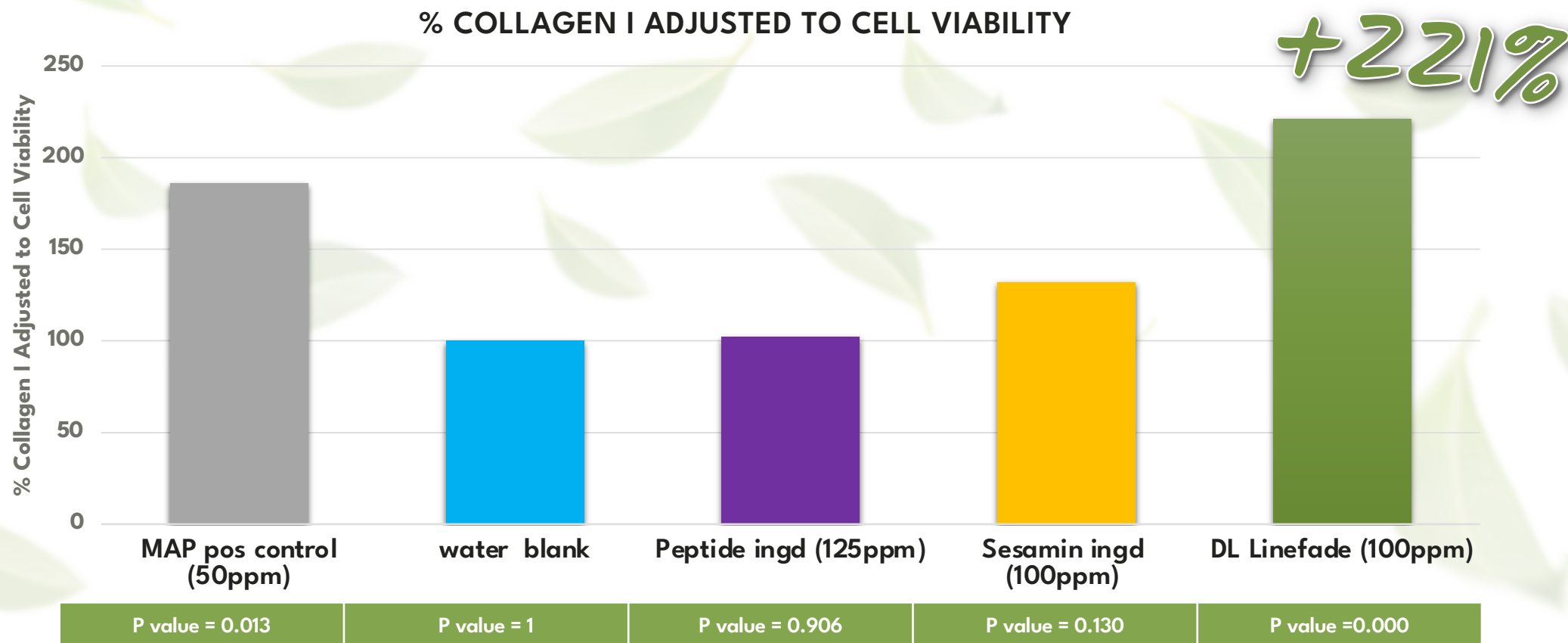


Type I Collagen Output



Adult Human Fibroblasts Model

Type I Collagen is a major constituent of the dermis and extra-cellular matrix



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III. THE ROLES OF COLLAGEN & PPAR

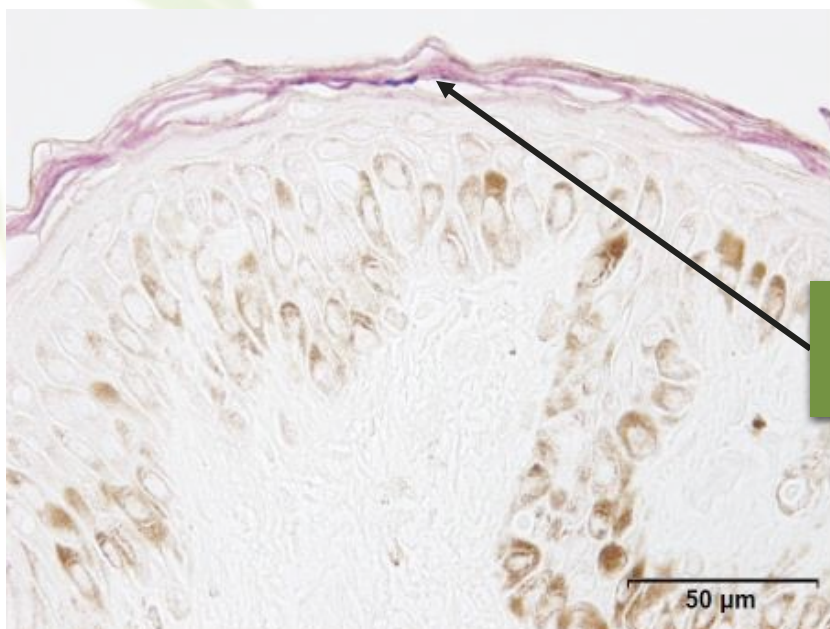
b. Ex Vivo Results

Immunostaining of Ceramides



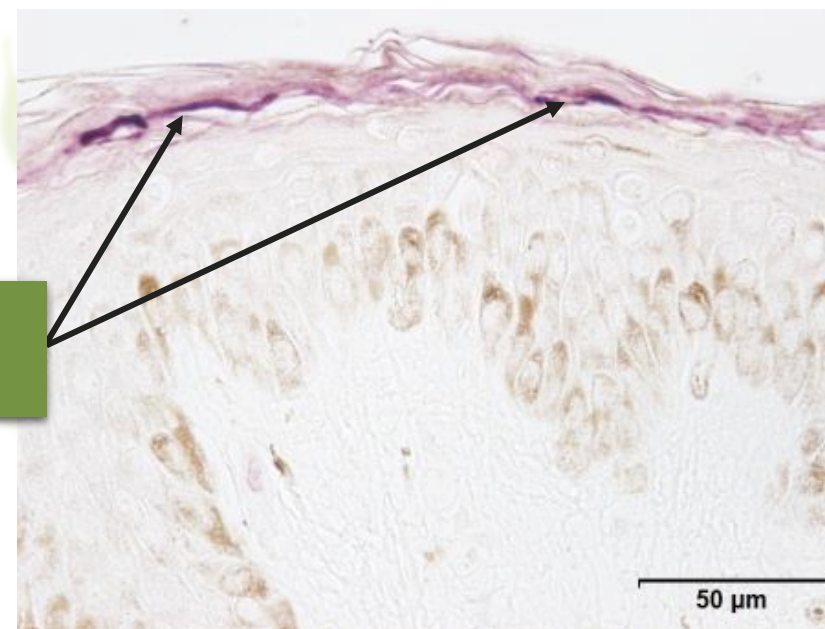
Day 1 – Human Skin Explants Study

Image analysis concludes a significant increase of ceramides in delipidated explants



Delipidated untreated explant

CERAMIDES IN EPIDERMIS



2.5% DL Linefade treated explant
+25% increase in Ceramides

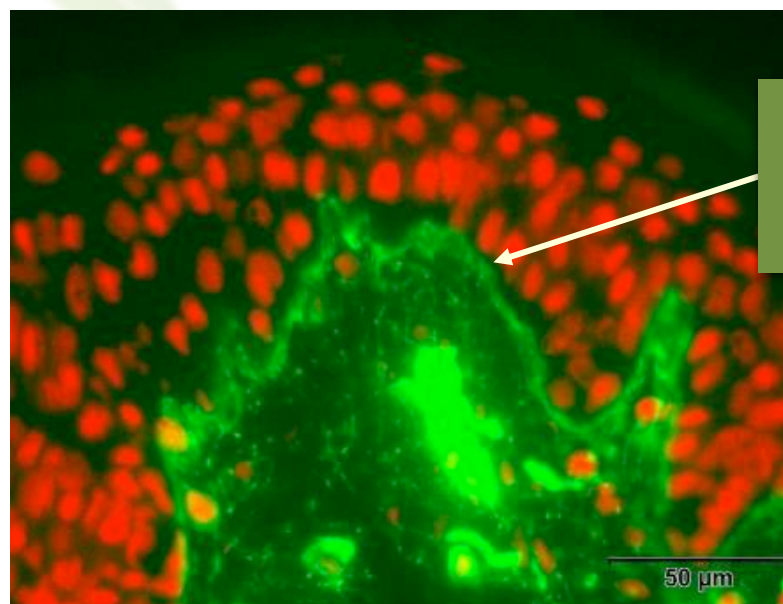
$p < 0.05$ (2.5% DL Linefade vs. untreated)
Excipient = Caprylic/Capric Triglyceride

Immunostaining of Ceramides



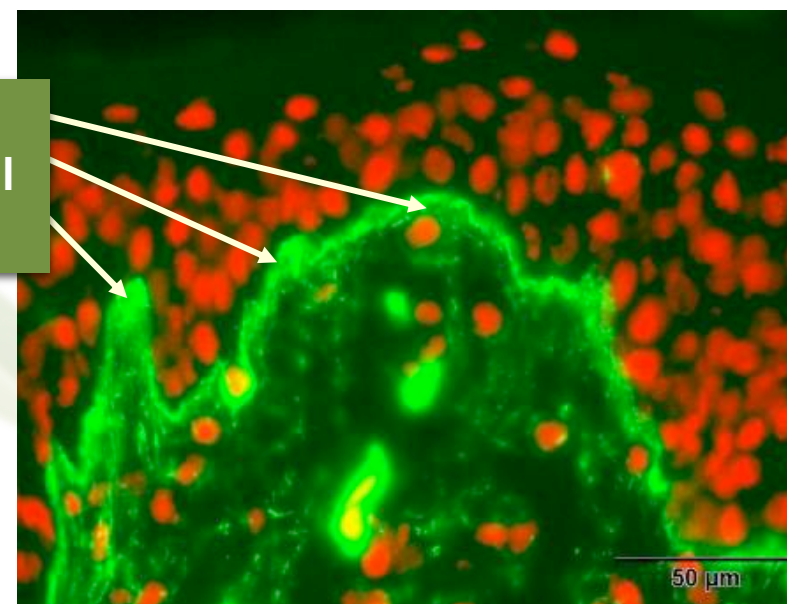
Day 3 – Human Skin Explants Study

Image analysis concludes a significant increase of Collagen IV at the dermal-epidermal junction



Untreated explant

Collagen IV in
dermal-epidermal
junction



1% DL Linefade treated explant

52% increase in Collagen IV

p<0.01 (1% DL Linefade vs. untreated)
Excipient = Caprylic/Capric Triglyceride

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III. THE ROLES OF COLLAGEN & PPAR

c. In Vivo Results

Efficacy Studies vs. Placebo

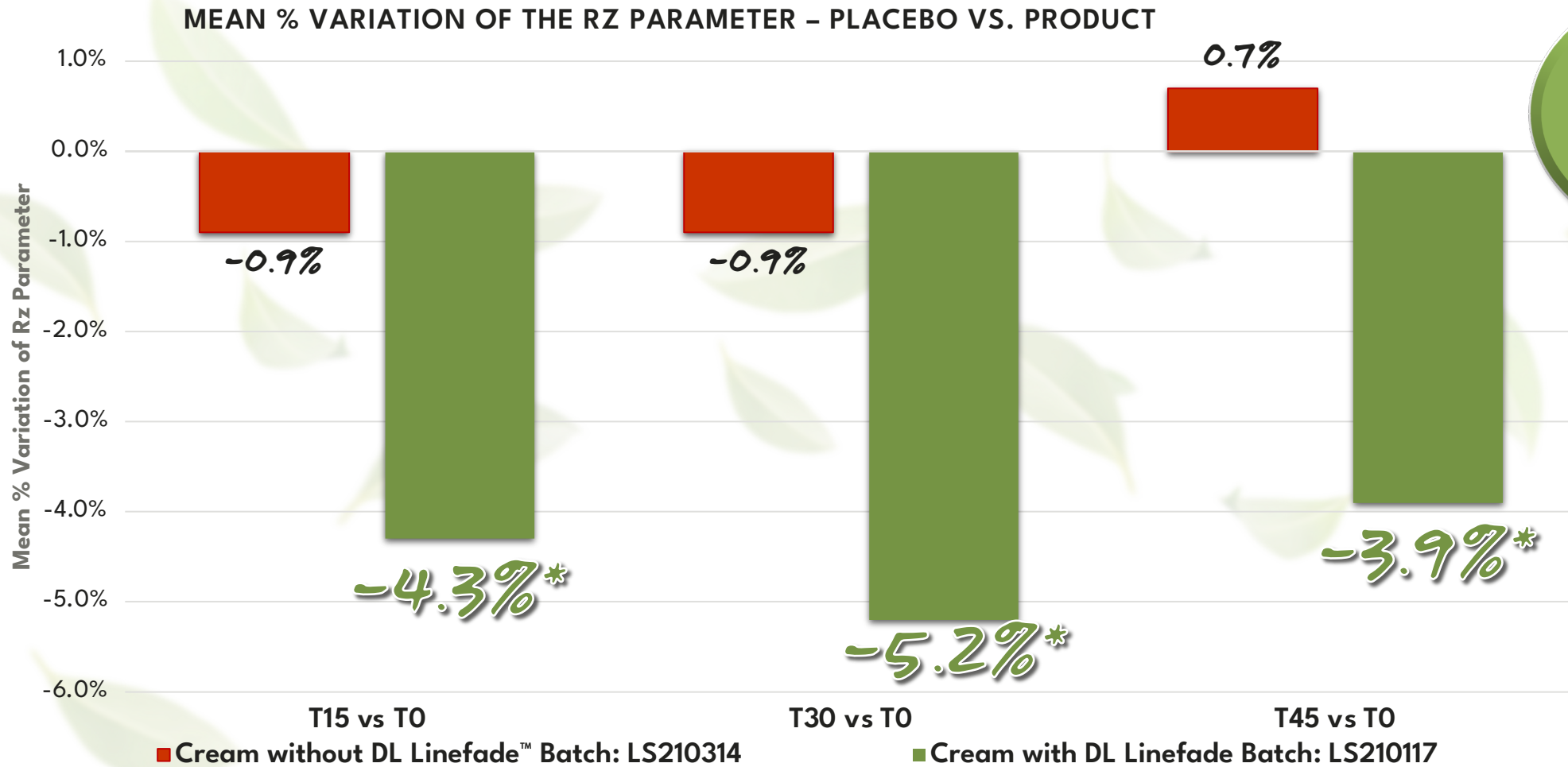
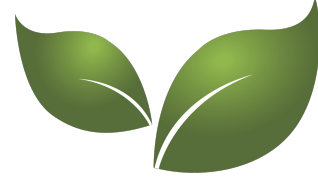


Efficacy study of 2% DL Linefade cream vs. Placebo (containing niacinamide + glycerin cream)

- 🌿 Single-blinded randomized study with placebo control
- 🌿 3-D macrophotographic image analysis with **VisioTOP-300 + AEVA-V3** software
- 🌿 Testing endpoints:
 - 🌿 Crow's feet roughness and wrinkles efficacy
(Rz parameter mean depth of wrinkles)
 - 🌿 Jaw contour sagging
(positive volume parameter by instrument measurement)
- 🌿 **20 human subjects**; between ages 35-65; half face application with placebo and test cream
- 🌿 Product applied twice daily, measurements taken at Days 0, 15, 30, 45.

Ingredients	Placebo Cream w/w%	DL Linefade™ Cream w/w%
Water	Qs.	Qs.
Geogard Ultra Non-GMO	1.0	1.0
Niacinamide USP	3.0	3.0
Glycerin	3.0	3.0
Cetyl Alcohol	4.0	4.0
Caprylic/Capric Triglyceride	5.0	5.0
IPM 1514	7.00	7.00
DL LineFade	0.0	2.00
Olivoil Glutamate	6.0	6.00

Variation of the Rz Parameter



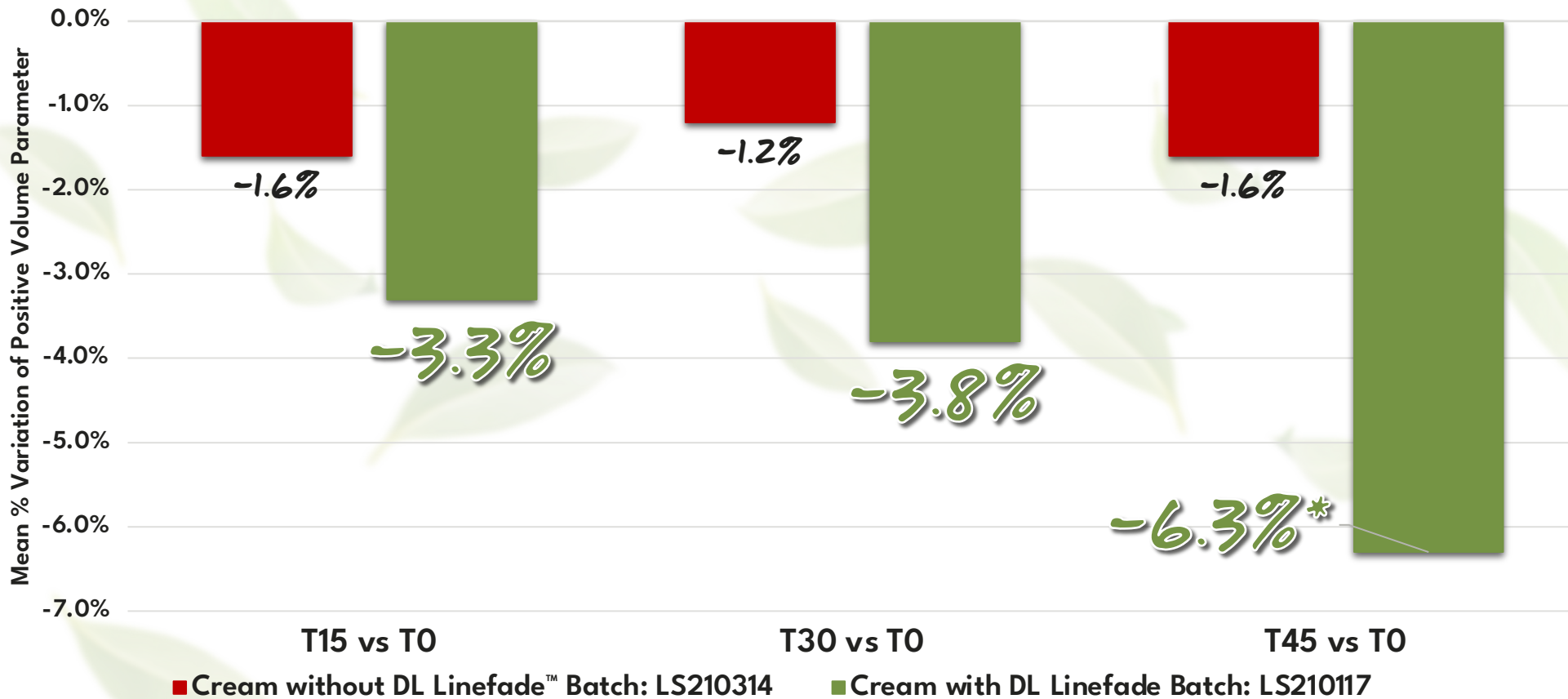
*Change in Wrinkle Depth with respect to placebo

*p-Values <0.05 refer to a statistically significant variation of the Rz value of product vs. control, based on 20 subjects

Variation of the Rz Parameter



MEAN % VARIATION OF THE POSITIVE VOLUME PARAMETER
PLACEBO VS PRODUCT



*Change in Sagginess with respect to placebo

*p-Values <0.05 refer to a statistically significant variation of the Rz value of product vs. control, based on 20 subjects

Clinical & Skin Model Results



❧ PROMOTES EPIDERMAL BARRIER FUNCTION

+25% increase in ceramides (ex vivo human explants)

❧ STRENGTHENS DERMAL-EPIDERMAL JUNCTION

+319% increase collagen IV (in vitro human fibroblasts)

+52% increase collagen IV (ex vivo human explants)

❧ SUPPORTS A RESILIENT DERMAL EXTRA-CELLULAR MATRIX (ECM)

+221% increase collagen I (in vitro human fibroblasts)

❧ ERASES LINE AND WRINKLE DEPTH IN 15, 30 AND 45 DAYS

Significantly reduces wrinkle depth (in vivo 20 subject vs placebo)

❧ Re-volumizes sagging skin in 45 days

Significantly reduces sagginess (in vivo 20 subject vs placebo)

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IV. INGREDIENT INFORMATION & APPLICATIONS

Ingredient Information



DL Linefade a lipid-soluble olive leaf extract offers functional skin care properties.

🌿 **INCI NAME:** Glyceryl Ricinoleate, Dimethyl Isosorbide, Olea Europaea (Olive) Leaf Extract

🌿 **USE LEVEL:** 1-3%

🌿 **FORMULATION:** compatible with polar lipids, incorporate by dispersing into an oil phase, or add into an emulsion at < 60° C. Ideal formulation pH is between 4-6

🌿 **ORIGIN:** 100% plant renewably sourced

Ingredient Information



- ❧ Skin firming/lifting
- ❧ Minimizing crepey skin
- ❧ Line filling/Skin smoothing
- ❧ DEJ strengthening/Anti-sagging
- ❧ Wrinkle reducing
- ❧ Niacinamide performance enhancing
- ❧ Vitamin A boosting
- ❧ Neck creams
- ❧ Skin barrier enhancing
- ❧ Sustainable vegetable origin
- ❧ Formulates into skin care and color





Thank you!

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