

Deveraux Specialties
est. 1998

DL Goji Prebiotic

A DERMAL SUPERFOOD PREBIOTIC

FOR A BENEFICIAL MICROBIOME AND ANTI-AGING SKINCARE BENEFITS



“The best thing about having great skin is that it makes me feel beautiful inside and out.”

- Kate Hudson



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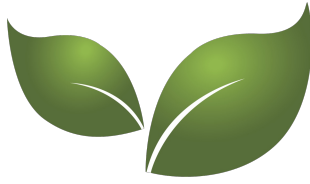


III. INGREDIENT INFORMATION & APPLICATIONS

I. PREBIOTIC TECHNOLOGY & THE GOJI BERRY



Prebiotic Cosmetic Technology



🌿 Your skin and digestive system

- Host major population of commensal microorganisms
 - Provide crucial support of vital functions
- Beneficial microbiota colonization decreases due to competition with infectious pathogen colonization
 - Contributing to a diverse range of diseases

🌿 A range of inflammatory conditions to the skin

- Dermatitis to psoriasis + serious skin infections

🌿 Simple sugars > the nutrient source of microbiota colonization

- Presence of promotes proliferation and colonization by pathogenic bacteria



Prebiotic Cosmetic Technology

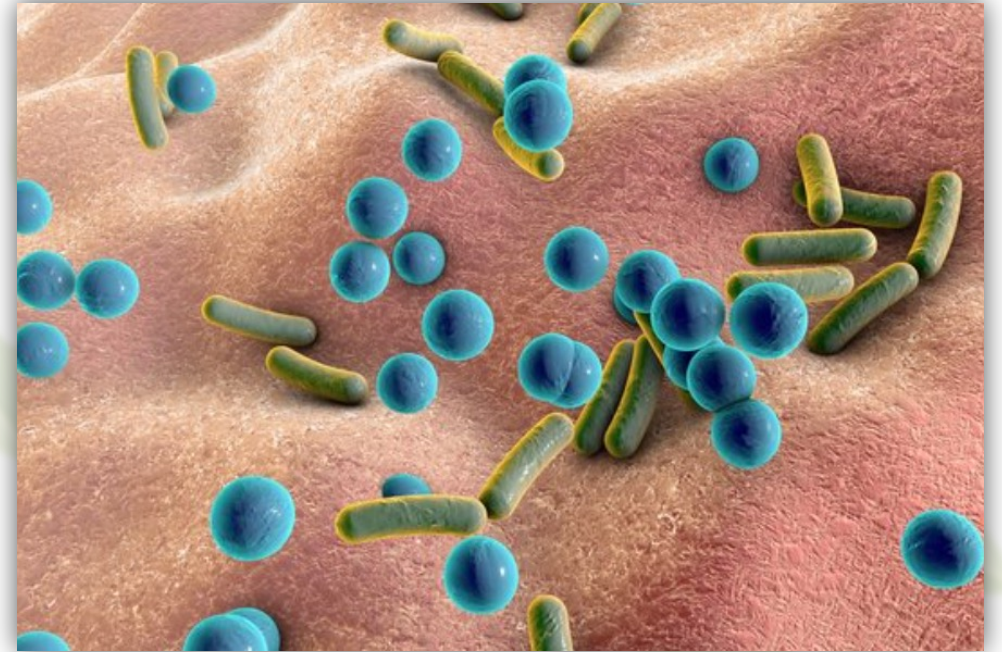


❖ Invasive Species

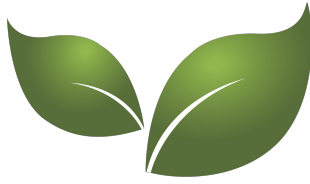
- Cannot readily utilize complex peptidoglycans
- Presence of peptidoglycans reduces nutrient availability

❖ Ideal prebiotic composed of complex peptidoglycans

- Benefits the commensal microorganisms
 - *Staphylococcus epidermidis*
- Does **not** benefit invasive species
 - *Staphylococcus aureus*



A Himalayan Superfood



🌿 Goji, goji berry or wolfberry

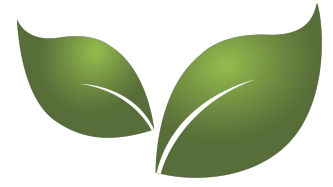
- *Lycium barbarum* / *Lycium chinense*
- High mountain (Himalayas) + desert zones
- Rich in phytonutrients, vitamins + trace minerals
- Glycans such as inulin are known to exhibit prebiotic effects
 - Promotes the growth of beneficial bacteria

🌿 Fruits shield genomic material

- Combination of phytochemicals that provide:
 - Antioxidant defenses + regenerative properties

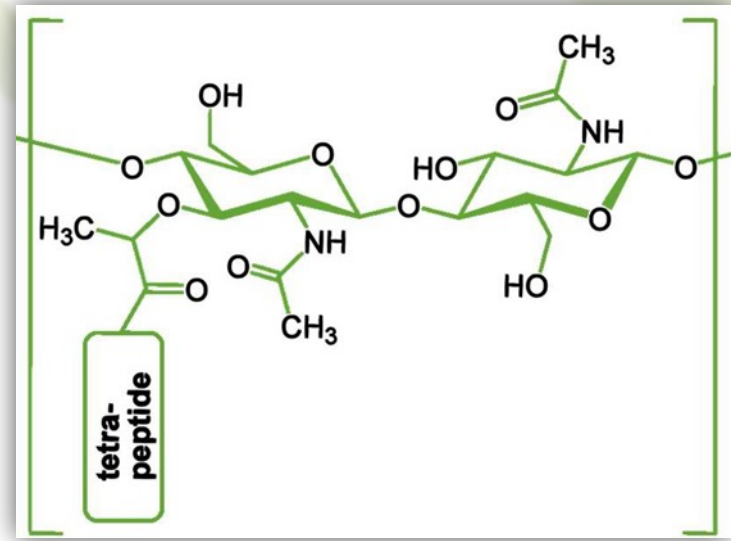


The "Red Diamond"



DL Goji Prebiotic

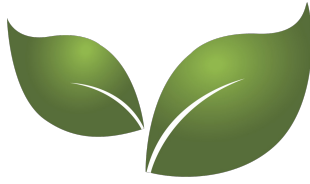
A multi-modal dermal superfood prebiotic for a beneficial microbiome and anti-aging skincare benefits



Peptidoglycan molecular structure



Responsibly Sourced



- 🌿 **100% organic** - cultivation does not pollute the environment
- 🌿 **Drought Resistant** - derived from harsh and poor desert environment and does not require a lot of water
- 🌿 **Sale of Goji berries** - a source of income to the native, rural population
- 🌿 **Only berries harvested** - plant remains intact for future cultivation

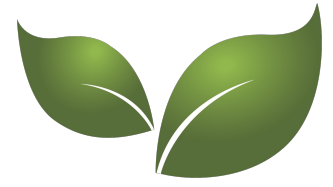


II. HOW DOES IT WORK?

a. In Vitro Testing



Bacterial Growth – Commensal & Infectious

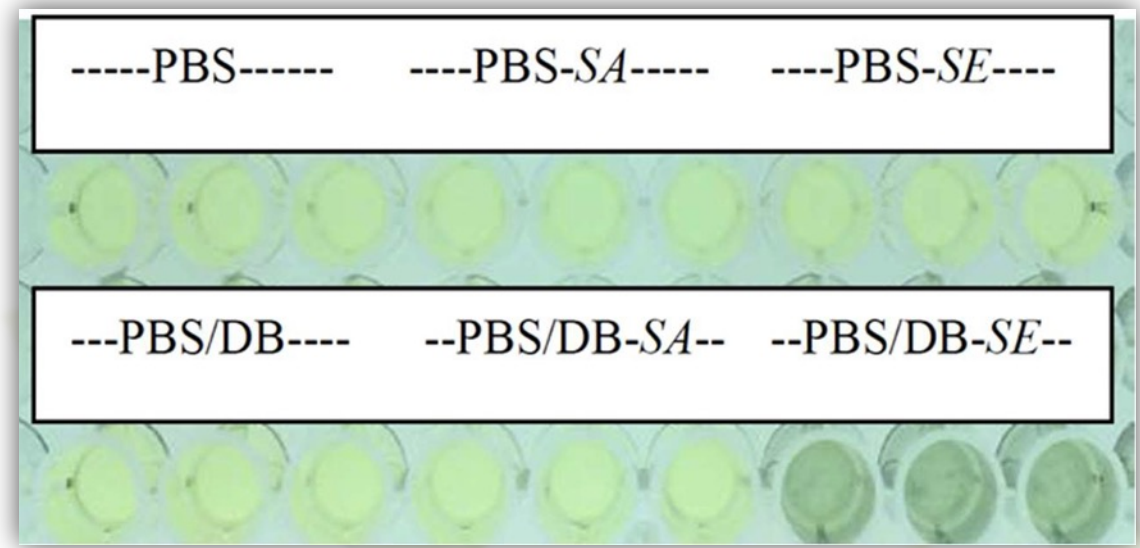


Staphylococcus epidermidis

Darker colored wells represent the metabolism of a healthy skin resident bacteria **Staphylococcus epidermidis**

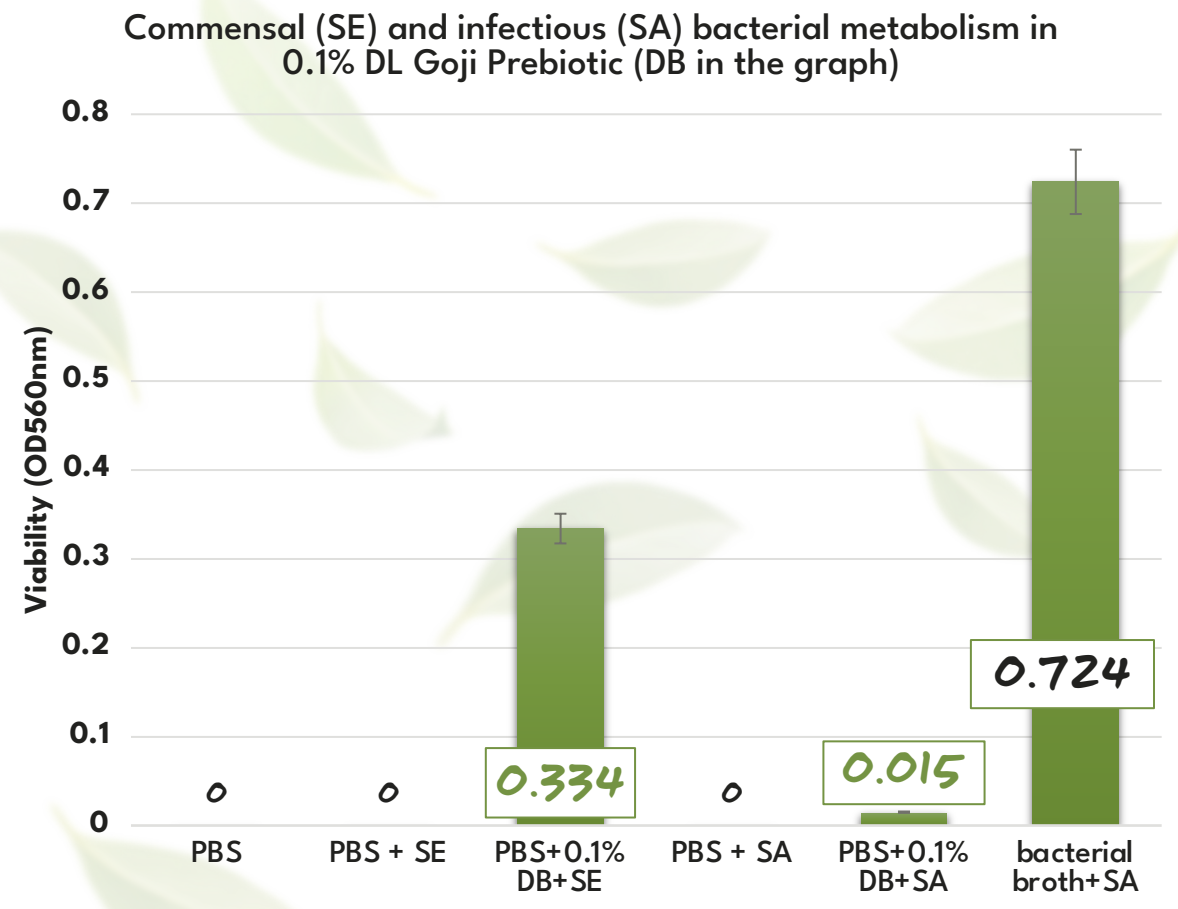
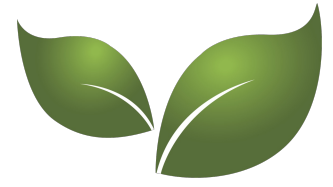
Staphylococcus aureus

Lack of color in wells represents no proliferation of infections **Staphylococcus aureus**



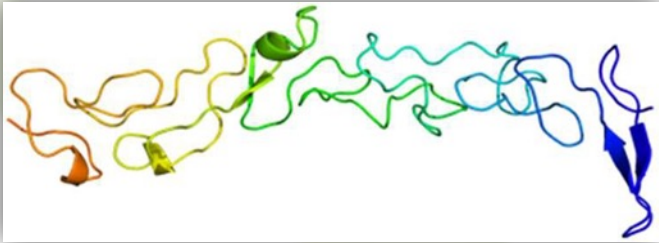
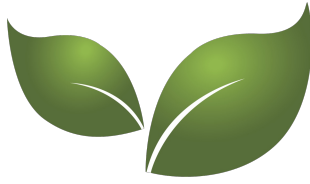
Commensal and infectious bacterial growth in 0.1% DL Goji Prebiotic (DB) in a phosphate-buffered saline (PBS).

A Selective Prebiotic Effect



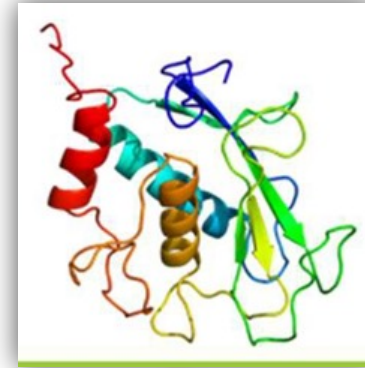
- Even at very low concentrations, **DL Goji Prebiotic** supports metabolism of a beneficial microbiome resident bacterial *S. epidermidis*
- Phosphate-buffered saline (PBS) alone does not promote growth of *S. epidermidis* (SE) or *S. aureus* (SA)
- DL Goji Prebiotic** does not promote the metabolism of the infectious *S. aureus* as does bacterial broth

Human Gene Expression



LAMC1 – Component of the Laminin Complex

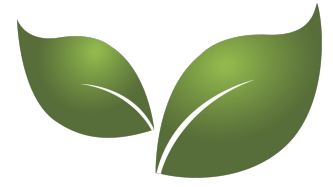
- ❖ Essential for the structural integrity of the dermal-epidermal junction
- ❖ Laminin expression decreases with age



MMP1 – Extracellular Matrix Degrading Enzyme

- ❖ Degrades the ECM and Type III collagen thereby reducing dermal structural integrity
- ❖ MMP1 expression increases with age

Human Gene Expression

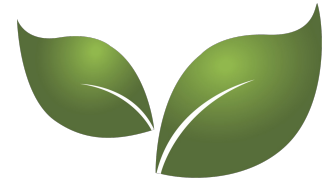


Method: EpiDerm Skin Substitutes + PCR Micro Array	
GENE SYMBOL	FOLD CHANGE
LAMC1	4.6
MMP1	-1.5

- Enhances gene expression of gene coding LAMC1 for the essential component of the laminin network
- Decreases the gene expression of gene coding MMP1

LAMC1 and MMP1 consistently found to be modulated by DL Goji Prebiotic (2% dilution)

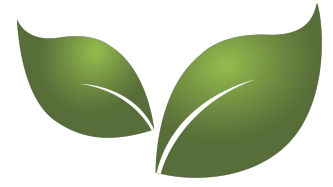
DPPH Assay



❖ DPPH (2,2-diphenyl-1-picrylhydrazyl): stable free radical Assay uses the reduction of the DPPH radical (purple) to diphenylpicrylhydrazine (yellow) as an indication of free radical scavenging capacity

Produced significant free radical quenching in a DPPH (2,2-diphenyl-1-picrylhydrazyl) model capable of 44% DPPH reduction at a 0.5% dilution ($p < 0.001$)

ORAC Assay

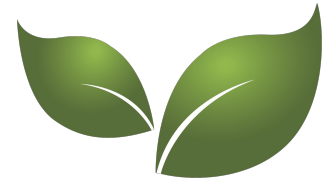


Test Material	ORAC μmoles TE/g
H ₂ O	0
DL Goji Prebiotic	258

Demonstrated powerful antioxidant activity in the ORAC assay model

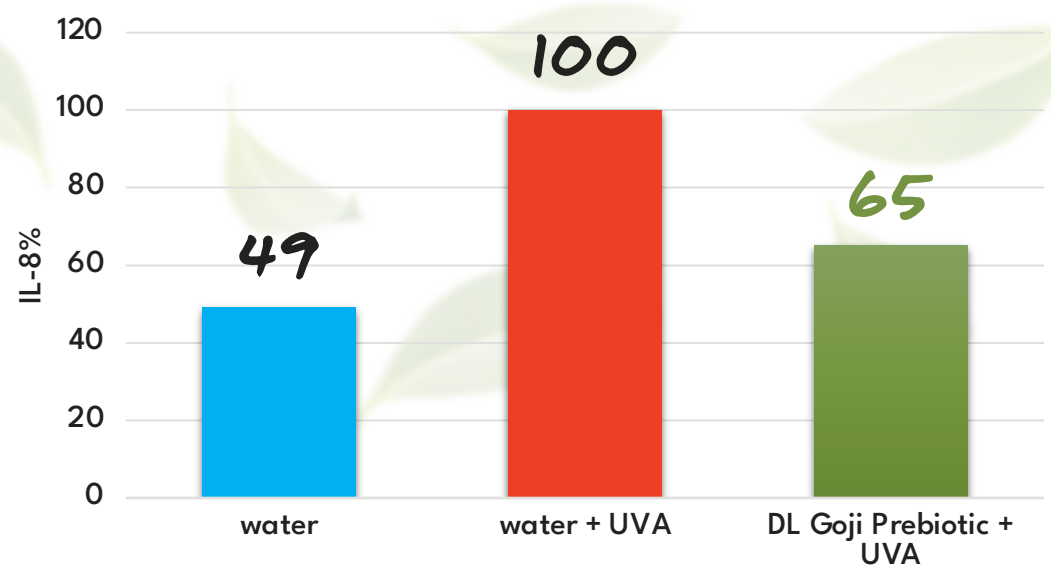
Underscores the unique action of Goji peptidoglycans, a non-polyphenolic antioxidant fraction of Goji Berries

IL-8 Cytokine Inhibition



Inhibition of UVA-Induced IL-8 Proinflammatory Cytokine

Inhibition of UVA-Induced IL-8



Demonstrated a strong protective effect against UVA-induced interleukin-8 production in human epidermal keratinocytes

IL-8 (NM_000584)

1310	1372	848	888
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p=0.0323 DL Goji Prebiotic (0.25%) inhibits IL8 gene expression by 35%

In Vitro Summary



DL Goji Prebiotic

- ❧ A complex peptidoglycan that selectively supports metabolism of commensal bacteria, such as *S. epidermidis*, but not the pathogens, such as *S. aureus*
- ❧ Boots LAMC1 and decreases MMP1 gene expression thus promoting dermal structural integrity repair
- ❧ Free radical scavenger that prevents oxidative damage to cells
- ❧ Inhibits the production of UVA-induced IL-8, a chemotactic and proinflammatory cytokine produced in the skin under inflammatory stimuli

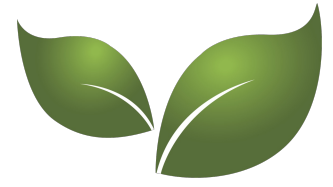


The background is dark green with several lighter green leaves scattered across it. A thin vertical line is on the left side. At the bottom, there is a solid green horizontal bar.

II. HOW DOES IT WORK?

a. In Vivo Testing

Clinical Model



Facility:

- Abich Cosmetic Lab in Montréal (Québec) Canada

Subjects + Inclusion Criteria:

- 11 healthy female volunteers; 35-55 years old
- Fine lines and wrinkles in the face and/or in the contours of their eyes
- Visible redness on the skin

Formulation Tested:

- Cream with DL Goji Prebiotic (2%)
- Cream without DL Goji Prebiotic

Variables:

- Fine lines and wrinkles, porphyrins

Application:

- Everyday use of products on each side of the face—same side, same cream for 60 days

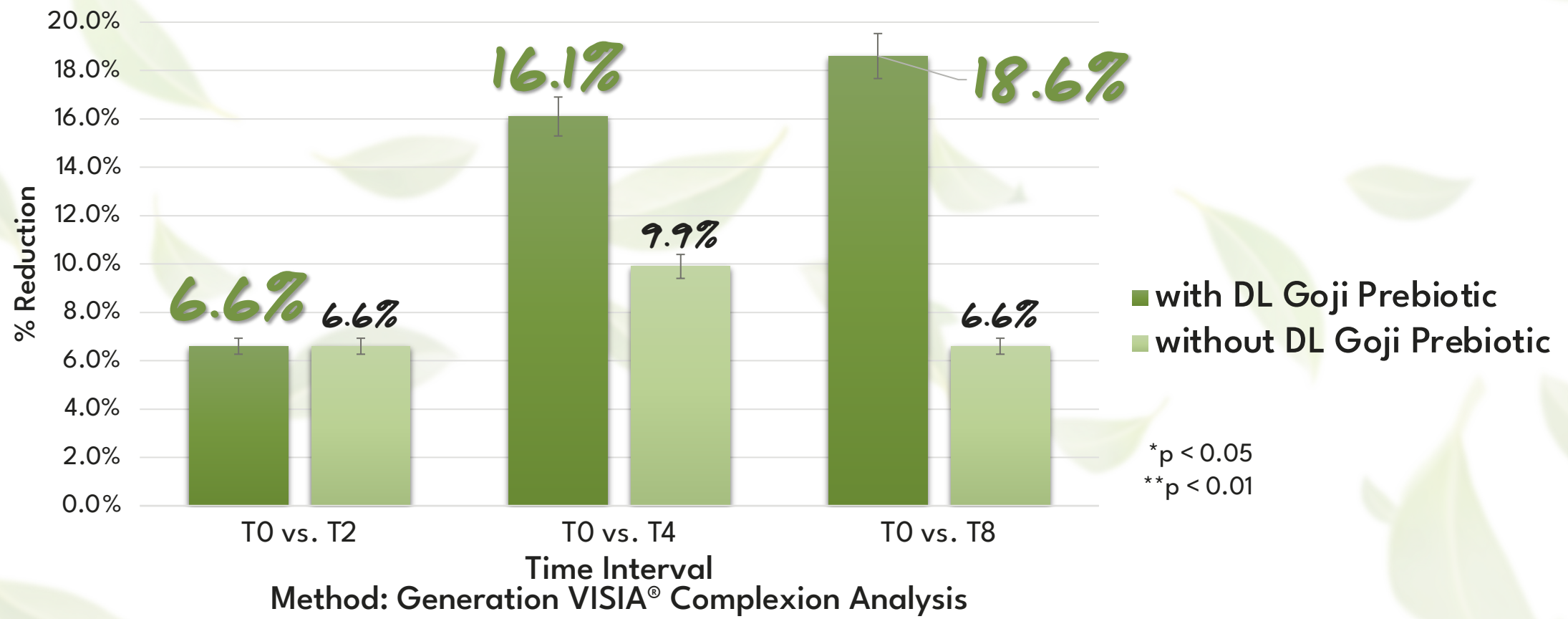
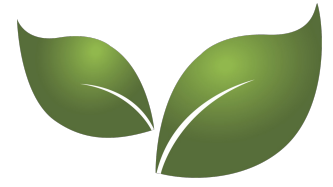
Measurement time intervals:

- T0 (prior to product application), T2 (2 weeks), T4 (4 weeks), T8 (8 weeks)

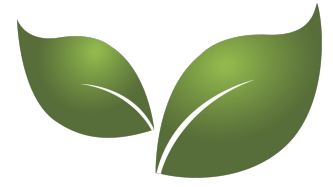
Equipment:

- Generation VISIA® Complexion Analysis System + Standard Laboratory Equipment

Anti-Aging Efficacy



Wrinkle Counts

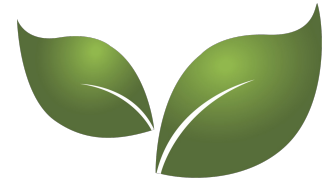


Significant Reduction in Wrinkle Count



Subject – ANSO0039

Wrinkle Counts

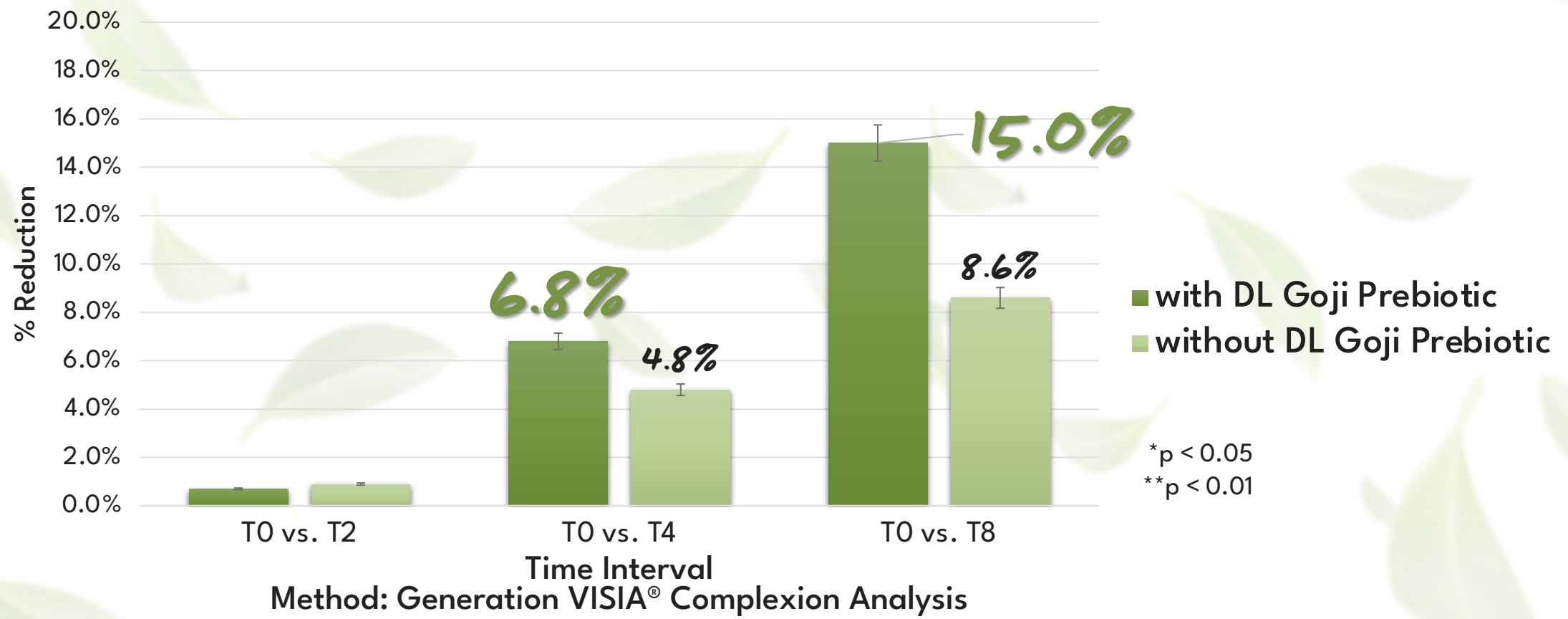
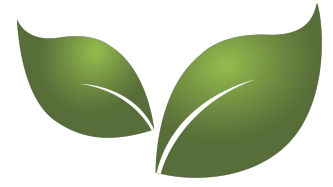


Significant Reduction in Wrinkle Count

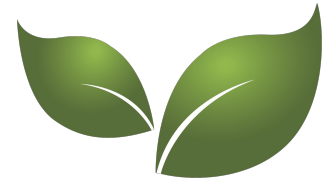


Subject – ANVA0551

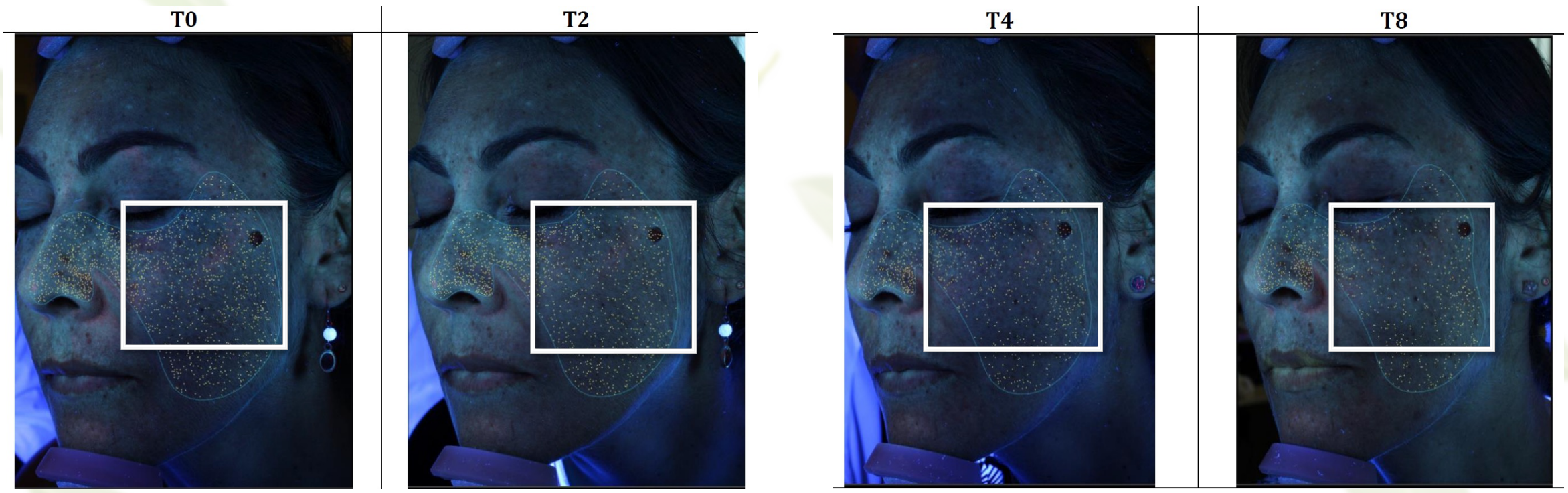
Porphyryrins Reduction Efficacy



Porphyrin Counts

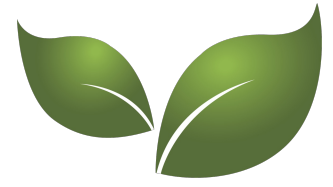


Significant Reduction in Porphyrin Count

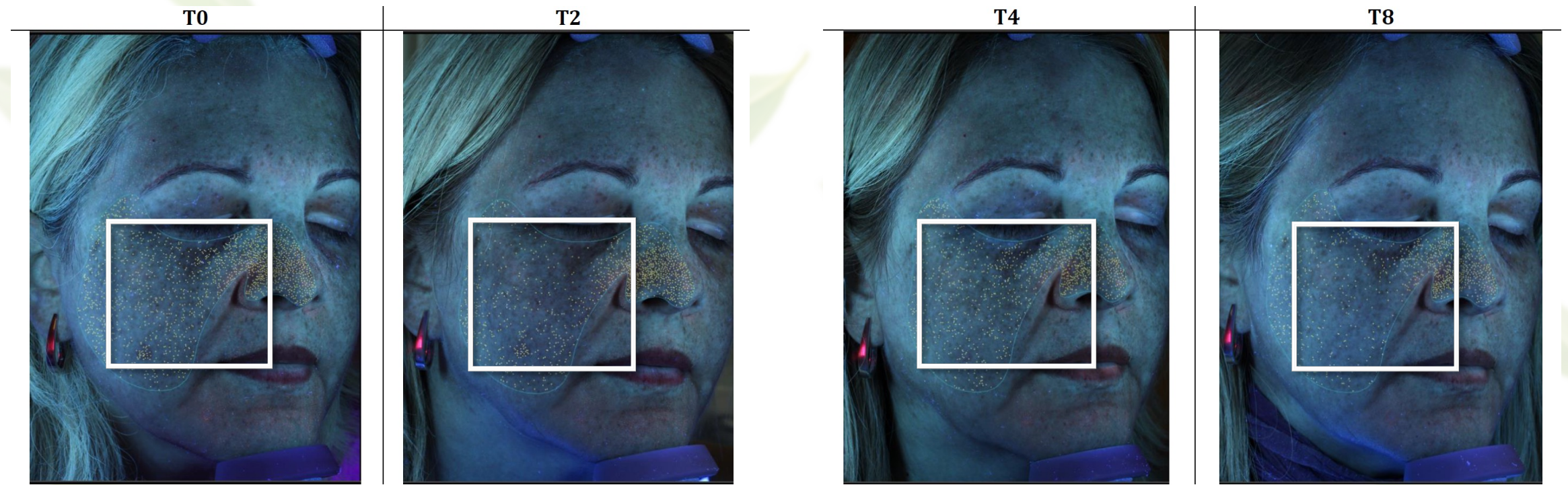


Subject – ANVA0551

Porphyrin Counts

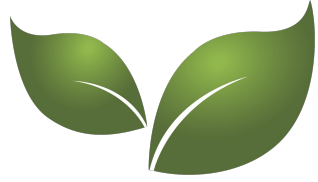


Significant Reduction in Porphyrin Count



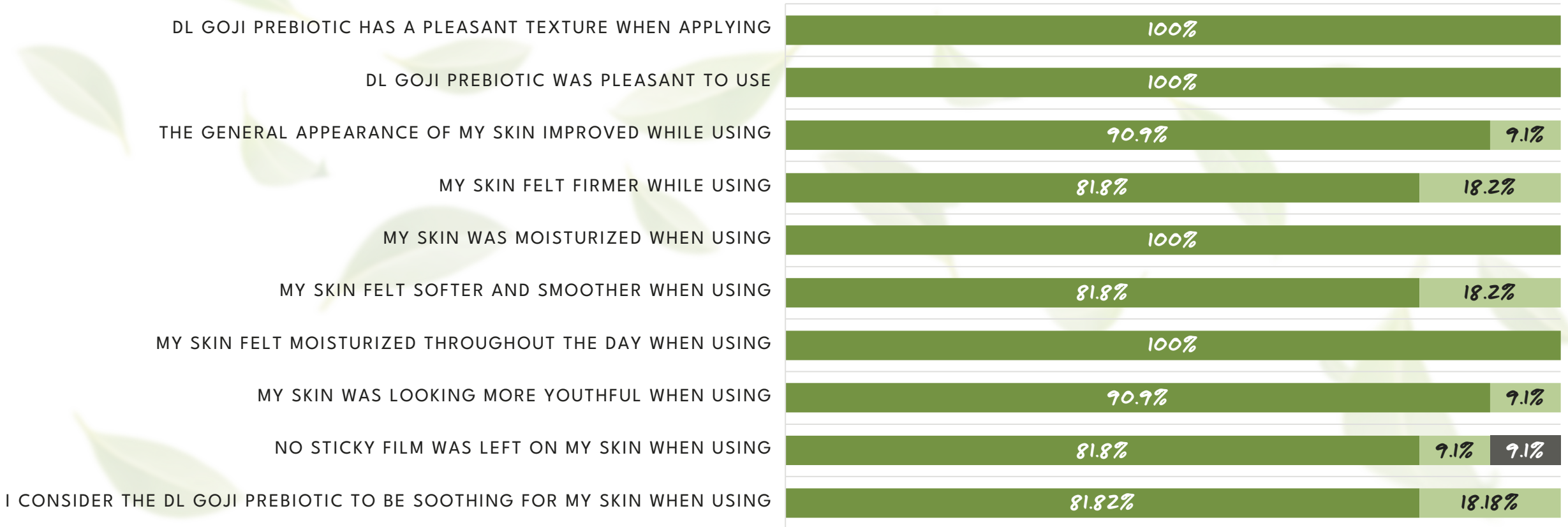
Subject – GASU0504

User Perception



Questionnaire: After 8 weeks of using DL Goji Prebiotic

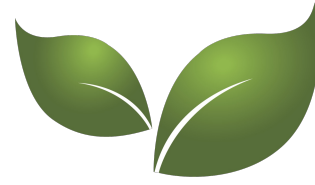
■ Strongly Agree / Agree ■ Neither Agree nor Disagree ■ Disagree / Strongly Disagree



III. INGREDIENT INFORMATION & APPLICATIONS



Summary



DL Goji Prebiotic A proprietary 5% active solid fraction of water-soluble goji peptidoglycans extracted from certified organic goji berries.

This cosmetic ingredient can be formulated at 1-2% to promote:

- 🌿 A healthy skin microbiome
- 🌿 Up regulate gene expression of laminin, an essential extracellular matrix structural protein
- 🌿 Down regulate MMP1 gene expression, subsequently reducing degradation of the ECM and collagen
- 🌿 Deliver antioxidant protective anti-inflammatory properties



Product Information



DL Goji Prebiotic A proprietary 5% active solid fraction of water-soluble goji peptidoglycans extracted from certified organic goji berries.

- 🌿 **INCI NAME:** Water (and) Propanediol (and) Lycium Barbarum Fruit Extract
- 🌿 **PRESERVATIVE SYSTEM:** 1% Geogard Ultra™ (Gluconlactone & Sodium Benzoate & Calcium Gluconate)
- 🌿 **APPEARANCE:** Slightly colored liquid
- 🌿 **SOLUBILITY:** Water and any polar solvent
- 🌿 **COLOR:** Light red
- 🌿 **ODOR:** Characteristic
- 🌿 **USE LEVEL:** 1-2%

References



Protective effect of Fructus Lycii polysaccharides against time and hyperthermia-induced damage in cultured seminiferous epithelium; Yanrong Wang , Hui Zhao , Xincheng Sheng , Patricia E. Gambino , Brian Costello, Krzysztof Bojanowski; Journal of Ethnopharmacology 82 (2002)

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Lycium barbarum glycoconjugates: effect on human skin and cultured dermal fibroblasts; H. Zhao, A. Alexeev, E. Chang, G. Greenburg, K. Bojanowski; Phytomedicine 12 (2005) 131-137

Lycium Barbarum Polysaccharide (LBP); A Novel Prebiotics Candidate for Bifidobacterium and Lactobacillus; F. Zhou, X. Jiang, T. Wang, B. Zhang and H. Zhao. Front. Microbiol. 9:1034



Thank you!

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