

SYN[®]-Peptides

SYN-STAR[®]



The global beauty
maximizer

NUTRITION • HEALTH • SUSTAINABLE LIVING



DSM

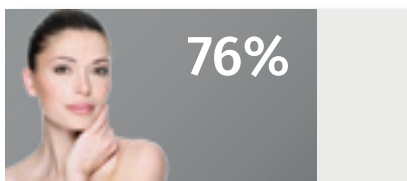
BRIGHT SCIENCE. BRIGHTER LIVING.

Satisfaction test

SYN-STAR® delivers consistent beauty improvements for all women:

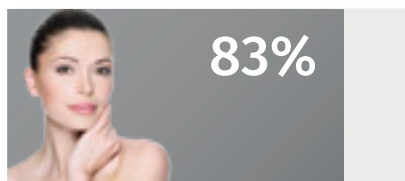
SYN-STAR® makes
my skin visibly
smoother

“totally agree” / “rather agree”



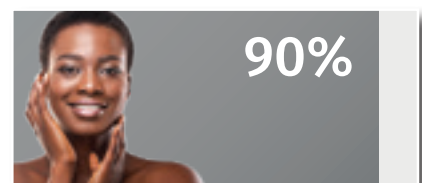
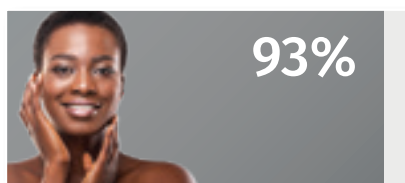
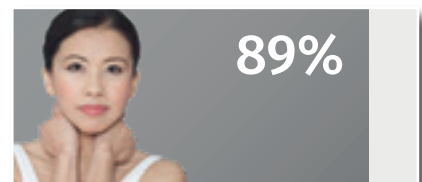
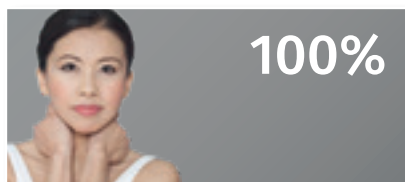
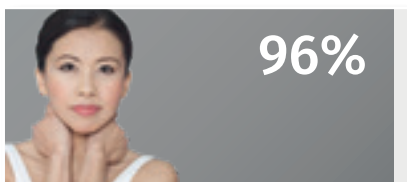
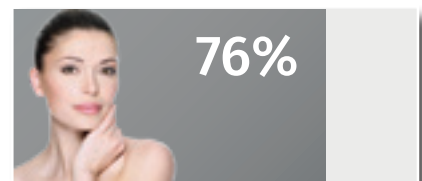
SYN-STAR® makes
my skin visibly
less shiny

“totally agree” / “rather agree”



SYN-STAR® makes
my skin visibly
more beautiful

“totally agree” / “rather agree”



With **SYN-STAR®**
83%* of women feel **more confident**
and are **ready for a fabulous day**



*Average satisfaction rate from 75 women with different skin tones

Introduction

Have you ever wondered why women in magazines look so perfect? Digital enhancements often portray beauty so far from reality that consumers sometimes feel it is almost impossible to access that level of beauty. To reach a perfect skin appearance, digital enhancements often use multiple strategies. Not only wrinkles but shine and gloss are also minimized to improve the look of skin's surface. Does such beauty maximizing exist in reality?

Thanks to DSM Personal Care's extensive knowledge in skin ageing and sebum control research, we have discovered a unique set of multifunctional activities to improve the skin's beauty.

Our scientists identified a new property from one of our peptide technology to optimize the effect of the PLOD3 enzyme (Procollagen-lysine,2-oxoglutarate 5-dioxygenase 3). The PLOD3 is known to be important for the stability of intermolecular

crosslinks of the collagen molecule. Secondly, we analyzed a new activity of our active ingredient to bind and act on a novel target the DPP4 (Dipeptidyl peptidase-4), to modulate the sebum flow.

Last but not least, for the first time a study was performed on 150 female volunteers, above age 40, with different skin tones. The volunteers applied a cream with 4% of our peptide technology for 28 days. The results: skin is visibly smoother, more beautiful with less shine in just 4 weeks.

83% of all women agreed to be more confident and ready for a fabulous day after a treatment with SYN-STAR® (satisfaction test average responses of investigated women).

SYN-STAR® the Global Beauty Maximizer, great confidence with your skin, the right age is your age!

Key facts

UNIQUE PRODUCT FEATURES

- Synthetic tripeptide with mol weight below 500 Da
- PLOD3 enabler and DPP4 modulator
- Safe for topical applications
- Glycerin-based solution without additional preservatives

BENEFITS

- Multifunctional global anti-ageing
- Visibly reduce shine look
- Improve skin smoothness and make skin more beautiful

COSMETIC APPLICATION

- Global anti-ageing cream and serum
- Skin beauty maximizer mask

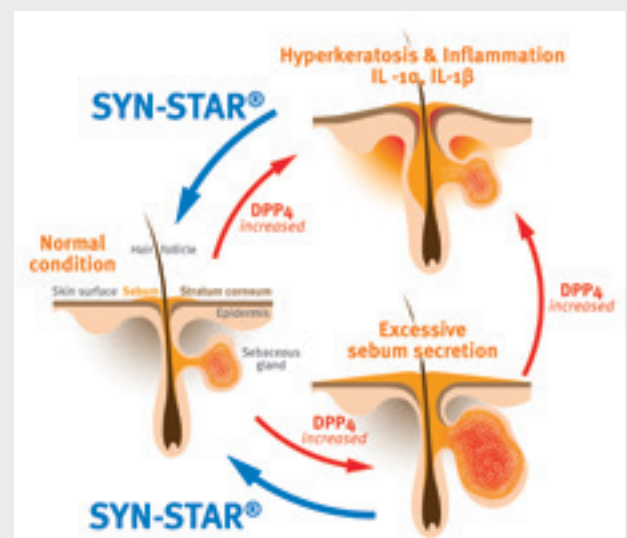
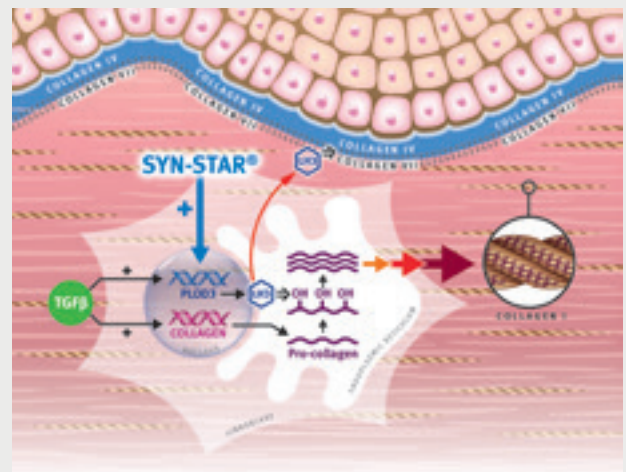
SUGGESTED CONCENTRATION

1–4% SYN-STAR®

INCI NAME

Dipeptide Diaminobutyroyl Benzylamide Diacetate

Potential mechanism based on *in vitro* data



PLOD3 enabler and DPP4 modulator *in vitro*

Efficacy – *in vitro*

Discovery #1 PLOD3

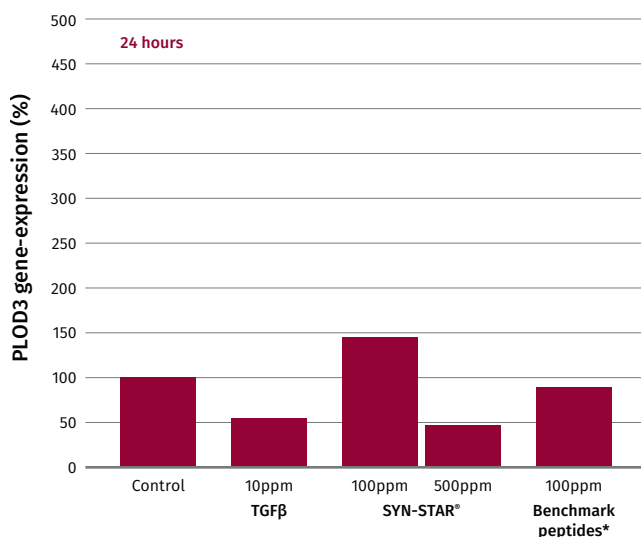
- Tests performed on human dermal fibroblasts of young (18) and old (63) donors
- Test performed in partnership with Good Laboratory Practice external Institute
- Patent pending

Dermal & DEJ Collagen Fibers Quality

+387%

Positive PLOD3 induction *in vitro*

Relative PLOD3 gene-expression in
dermal fibroblasts of a 18-year-old female donor



Relative PLOD3 gene-expression in
dermal fibroblasts of a 63-year-old female donor

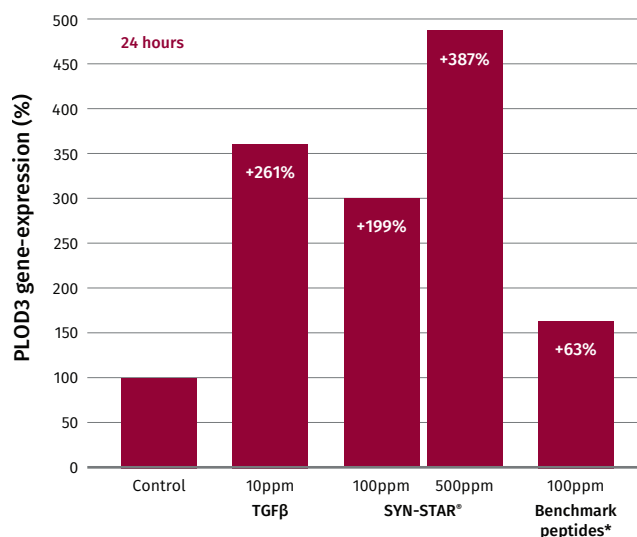


Figure 1: SYN-STAR® induced PLOD3 gene-expression in dermal fibroblasts from a 63-year-old female donor up to 3.5fold compared to control (100%). Measured by rt-PCR on a LightCycler Device (Roche Molecular Diagnostics Inc). Experiment was done in duplicates.

* Palmitoyl Oligopeptide and Palmitoyl Tetrapeptide-7

Discovery #2 DPP4

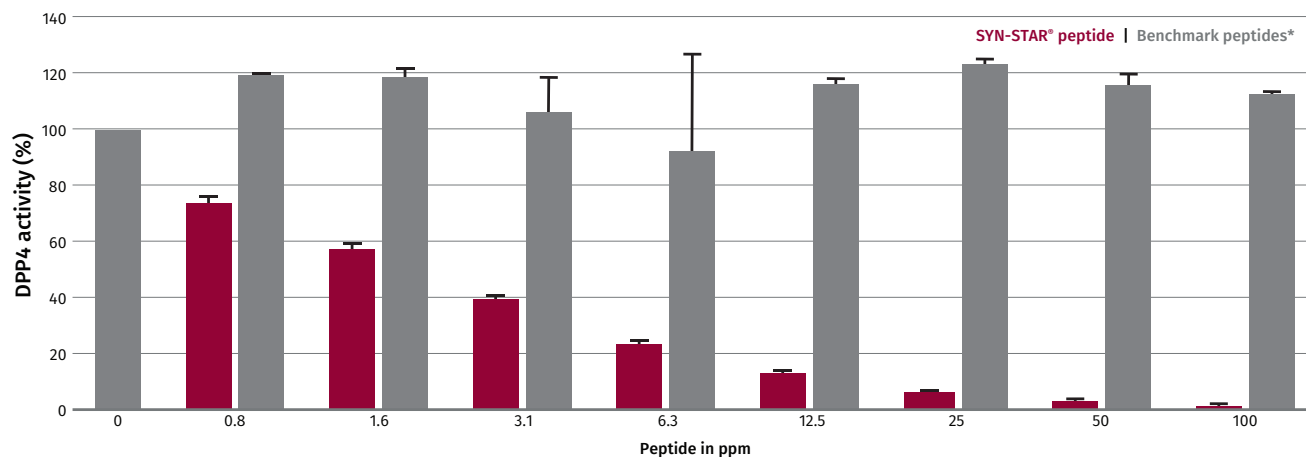
- Tests performed *in tubo* DPP4 assay kit
- Patent pending

Experimental data from DPP4 activity assay kit with comparison of SYN-STAR® peptide to the anti-ageing peptides. Dose dependent inhibition is observed with SYN-STAR® peptide whereas the anti-ageing peptides were ineffective.

DPP4 Control

Highly specific activity

Novel potential target linked
to sebaceous activity

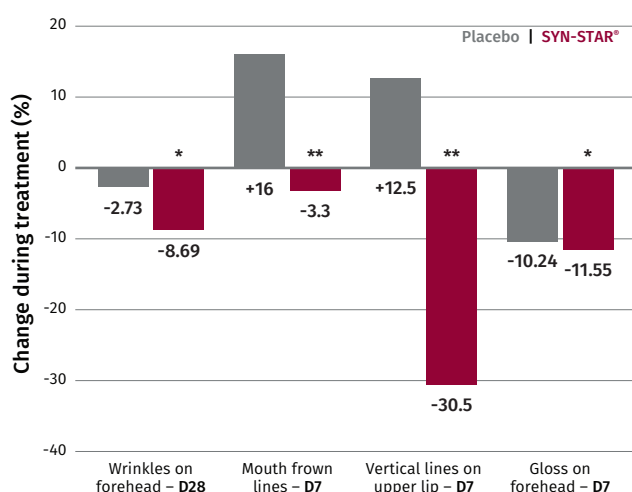


* Palmitoyl Oligopeptide and Palmitoyl Tetrapeptide-7

Efficacy – *in vivo*

4 week study – for the first time on three different skin tone groups of volunteers

In each skin tone group was 50 female volunteers, aged 40–64. 25 volunteers received Product A (Placebo) and 25 received Product B (SYN-STAR®). The assessment methods were: 1. Self assessment; 2. Visia CR; and 3. Newton pictures analysis.



* $p < 0.05$ compared to Day 0 ** $p < 0.05$ compared to Placebo

- Volunteers had to apply their respective product on full face twice daily in the morning and in the evening for 28 days
- On day 28 we performed a consumer survey with all volunteers, comprising of questions about the efficacy of the products
- On days 28 they had to report to the laboratory and images were taken. Two images were taken half face at 45° C angle and one image was taken full face at 90° C angle

Statistically significant reduction of wrinkles and gloss look

Uniquely tested on different skin tones

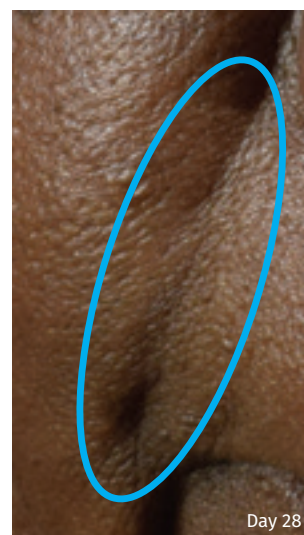
Newton picture analysis

Anti-wrinkle effect on vertical lines on upper lip



Volunteer #27

Nasogenian folders smoothing effect



Volunteer #119

Shine control efficacy



Volunteer #29

For more information, please visit www.dsm.com/personal-care

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