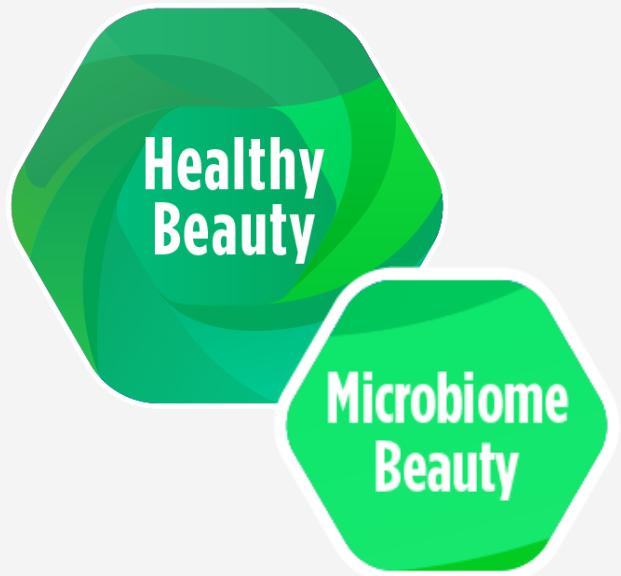


# Microbiome: Market Insights and the role of DSM

# Microbiome Beauty

One of the sub-trends DSM has been monitoring within the Healthy Beauty trend

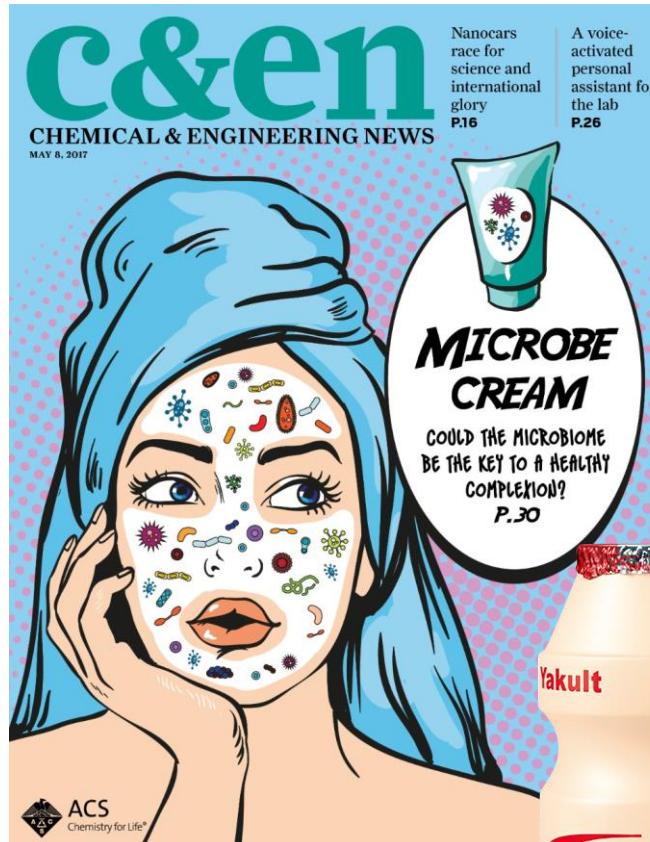




# What is the Skin Microbiome?

- An “ecological community of commensal, symbiotic and pathogenic microorganisms”
- All plants and animals, from simple life forms to humans, live in close association with microbial organisms.
- The relationship with their host is called *mutualistic* when organisms perform tasks that are known to be useful for the host, *parasitic*, when disadvantageous to the host.
- Food products that act on the gut microbiome are an established trend

Source: C6eN Magazine, May 8 2017

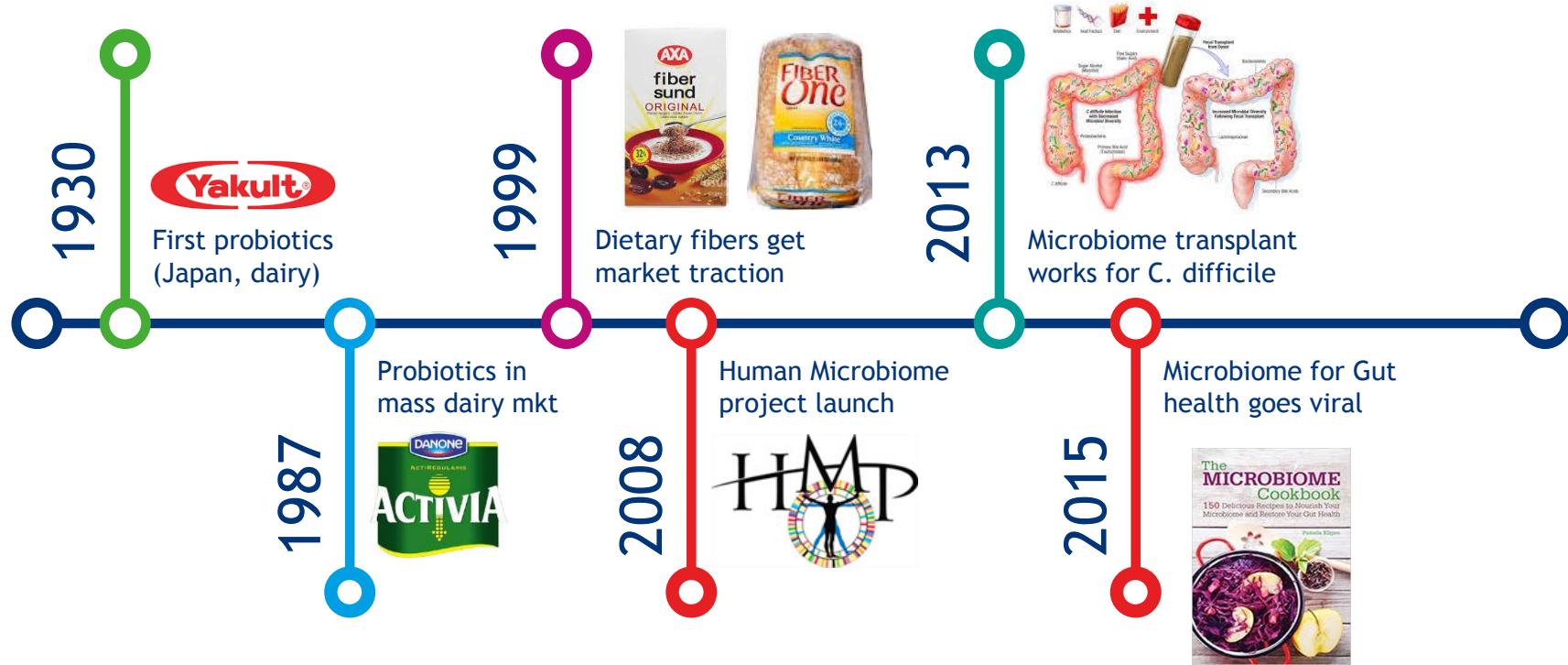


Source: <https://de.yakult.ch/was-ist-yakult/>



# The human Microbiome

A topic for Health and Nutrition for decades; in recent years, the topic has become of primary importance in the food industry



# Understanding the human Microbiome

*The MICROBIOME has also become a relevant topic for Skin, primarily in the context of Acne, and it is now evolving towards broader relevance for Beauty*

Bacteria 'as bad', for example as a cause for Acne, is still recognized as the dominant idea but bloggers, brands and dermatologists are trying to change this.

Discussions around microbiome and 'good bacteria' trends up and constantly highlight the surprising and 'unlikely' nature of the skin care solution.

**Meet The Pharmacist Putting Bacteria In Your Skincare Regime**

GEORGIA MURRAY  
20 NOVEMBER 2017, 06:55

Please RT #health #fitness Skin Microbiome: Why You want Bacteria On Your Skin [tinyurl.com/z4dnz9z](http://tinyurl.com/z4dnz9z)

**SKIN MICROBIOME**  
(Why you want bacteria on your skin...)

DECEMBER 13, 2017 2:14 AM  
by LAUREN VALENTI

Why Probiotic Skin Care Is (Actually) Worth It, According to Experts

dedejohnson3 • Follow  
of dollars to try and "fix my face". ▲ Not to mention, we are not even DOCTORS. After all, wasn't it supposed to be a healthy thing and why am I going through this? Anyone want to guess if I believe the true issue lies and why it would not be resolved until it was treated no matter how much mess I slapped on my face in my gut? ▲#trustworthy  
Wellness Mama's basic point: #microbiome is your second brain. If your gut is out of whack, EVERYTHING else will be out of whack too. It's called #dysbiosis and it's not just your gut microbiome (all over/inside/outside the body) ▲#inflammation. Research it yourself. ▲#skincare #revolution

If you want to #Resolve the issue you have to get to the root of it and stop with the band-aids. ▲ As you can see those

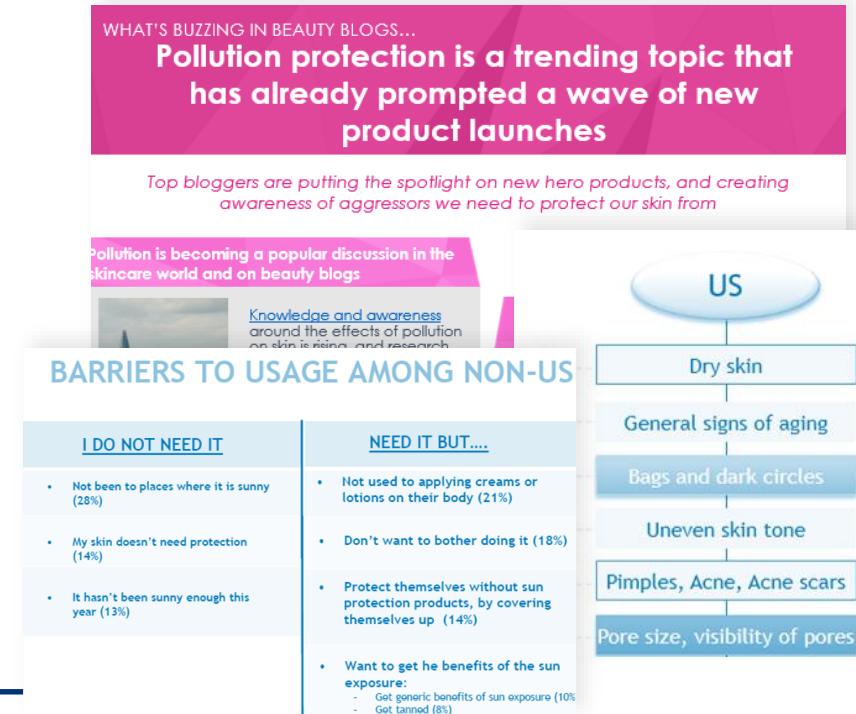
15 likes  
NOVEMBER 11, 2017  
Add a comment...

# DSM leverages strong internal Consumer Insights Capabilities, with a proven track record of business building research

## BOTH SECONDARY AND PRIMARY RESEARCH

- Social Listening (online conversation)
- Bloggers' Platform: The Beauty Connection
- Qualitative research
- Quantitative surveys
- Consumer Reports and Global Product Database
- Consumer Trends via specialized Agencies

We decided to conduct proprietary research on the Skin Microbiome to understand how the topic is evolving



THE BEAUTY CONNECTION



# DSM's comprehensive research on Skin Microbiome to understand key stakeholders



## WHAT PEOPLE WRITE SPONTANEOUSLY IN SOCIAL MEDIA

- Social Listening across all key digital media platforms
- Anglo-saxon speaking world
- Consumers, Bloggers, Dermatologists, Brands
- Specialized agency
- Statistics, but also human reading, clustering, seeking true insights

## DEEPENING OUR UNDERSTANDING BY SPEAKING TO BLOGGERS AND REVIEWING BRAND COMMUNICATION AND PRODUCTS

- 4 x blogger interviews to explore the themes identified further
- 8 x brands selected for in-depth brand analysis and market mapping

# Our Bloggers



**Name:** Liz

**Country:** Luxemburg

**Website:** Smellslikeagreenspirit.com

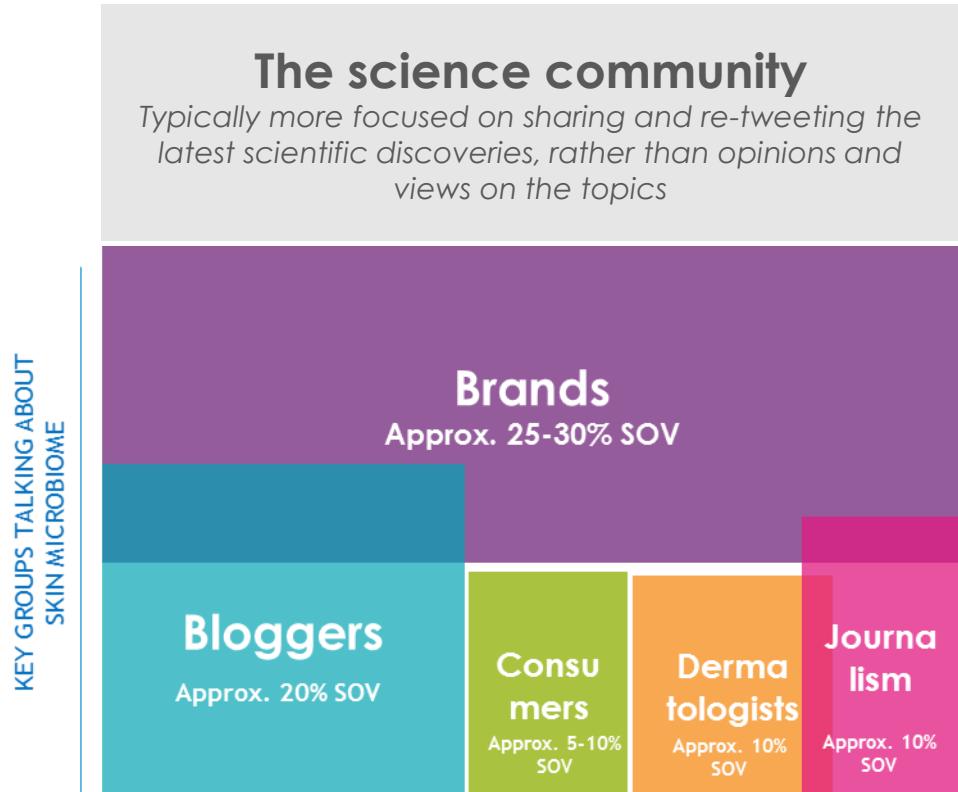
Passionate about well-being and holistic approaches, hunting down green beauty and wellness products and seeking a healthier and happier life. Relishing in uncovering green gems from all over the globe and decoding the ingredients



# The Skin Microbiome is an emerging topic on which the scientific community and brands are leading conversations

The 'regular consumers' haven't yet engaged with the topic fully, but brands, dermatologists and skincare bloggers are.

The last 3 months have started to see some more comments among consumers trialing new skincare ranges and sharing articles on the topic more proactively.



Based on a qualitative analysis of a sample of 400 posts from October - December 2017.

# Making sense of it all - four key approaches

REMOVING BACTERIA	PREBIOTICS	PROBIOTICS	POST-BIOTICS
<p>TRADITIONAL / NOT NEW</p> <p>Typically found in most mainstream cleansers and spot treatments</p> <p>Often in products aimed at teenagers or those with acne prone skin</p> <p>Natural antibacterial ingredients include honey and tea tree oil</p>	<p>FEEDING "GOOD BACTERIA"</p> <p>Typically used in product formats such as cleansers (non 'leave in')</p> <p>Fits into the gentle, natural care narrative of brands</p> <p>Seen as less new and differentiated by beauty bloggers (vs probiotics) – need to be unique to stand out</p>	<p>ADDING "GOOD BACTERIA"</p> <p>Heroed by microbiome-focused brands</p> <p>Seen as a new and different story by bloggers</p> <p>Live bacteria cues effectiveness and results</p> <p>A simple story to tell consumers – easy to understand</p>	<p>ADDING BY-PRODUCTS OF BACTERIA</p> <p>Typically included as part of a mix (e.g. pre, pro and post)</p> <p>Many already known and celebrated in their own right (e.g. lactic or hyaluronic acid) – can be positioned as powerful ingredients</p> <p>the idea of post-biotics a complex story to tell consumers</p>

- Most solutions today are Pre-biotics
- Brands and Ingredient Manufacturers can offer a combination of these effects

# The Skin Microbiome fits with broader, modern views on skin and beauty

## “WITH YOUR SKIN NOT AGAINST IT”

Instead of trying to cosmetically alter your skin for the better, brands are working with your skin to improve its health and therefore appearance

### Brands are:

- Positioning and talking about skin as a living thing and an ecosystem that needs to be worked with
- Celebrating consumers' natural skin Brands are not looking to fundamentally change the appearance of skin using harsh chemicals, instead promising to help consumers make the best of what they already have
- Some brands are aggressive towards skincare brands of the past, blaming them for issues consumers have with their skin and products having worked 'against' the skin in the past



Orveda - With your skin, not against it

*“I love how it's not adding or taking away anything - it's just working with your skin to keep it at its best”*

Priscilla, Blogger

# What Dermatologists say

“The studies reviewed suggest that topical prebiotics, probiotics and bacterial cell lysates do provide demonstrable skin benefits.”

Dermatology Times

**Skin health and ecosystem**  
Impact of bacteria on skin ecosystem & barrier

**Ageing**  
Impact of skin microbiome on ageing and anti-ageing solutions

**Evidence and scientific research / conferences, papers**  
Showing they are up to speed with latest thinking and studies

**New holistic approaches to skincare**  
e.g. less is more, nourishing microbiome

**The complexity of leveraging microbiome**

## Dermatologists



Dr.SandySkotnicki @DrSkotnicki · 1 Dec 2017

Using skin bacteria to fight aging? Is not far off @MB\_Insights @FindlayLabs  
New research provides insights into the **skin** microbiome [eurekalert.org/e/83y9](http://eurekalert.org/e/83y9)  
via @EurekAlert #beyondsoap



Steve Barton  
@Skin\_Thinking

Follow

@DrBrockway very eloquent on the complexities and pitfalls of #Thinking #skin #microbiome is a straightforward topic easily capitalised by #cosmetics



Dr.SandySkotnicki  
@DrSkotnicki

Follow

Using bacteria to fight skin disease and other conditions is here and is part of the future of medicine #motherdirtskincare  
#skinmicrobiome Bacteria-Infused Beauty Products to Restore Your Skin's Microbiome

# What Bloggers say

**Natural & organic**  
Natural skincare, no Make-up looks, naturally glowing skin

**Experimentation**  
Excitement over trialing a new regime

**Education**  
Have you heard?  
Why it's relevant?

## Bloggers

**zodle** 🦸 #wednesdaywisdom  
If #probiotics are as good for your #skin as they are for your gut then this fab #beautyhaul 🎉 courtesy of @motherdirt should have my #visage feeling super #happy 😊 in no time 💋 #watchthisspace -

**Health & fitness**  
Pre- and probiotic skincare as part of healthy living

**Avoid disruption**  
Sharing advice on how to avoid disrupting skin microbiome

Today however I embark upon something a little different. It is a new regime I am trailing of living bacterial skin tonic, moisturisers, shampoos and face mists for the next month which contain billions of cultivated ammonia-oxidizing bacteria (AOB) most commonly found in dirt!

Most cleansers contain surfactants that dry your skin and antimicrobials that disrupt microfloral balance because they're indiscriminate in their action — they kill off the good bacteria right along with the bad bacteria. This is a huge problem because it's the good bacteria that are keeping the pathogens in check. When you wipe them out, you have no defense against the pathogens taking over. It's all about the balance.

# What Bloggers say

Bloggers associate the **Skin Microbiome** trend with specific broader **Beauty Trends**



## HEALTHY IS THE NEW SEXY

This trend ties into the growing global consciousness of wellness; of health being your greatest wealth and status, with brands focusing on skin *health* rather than just skin *appearance*.

#health #wellbeing  
#fitness #wellness

*“Beauty from within is a huge trend, and probiotics are a big part of that already. There is a more holistic approach to wellbeing now.”*

Liz, green beauty blogger

# What Bloggers say

Bloggers associate the **Skin Microbiome** trend with specific broader **Beauty Trends**

## SELF ACCEPTANCE AND ACTUALISATION

Being connected with yourself, making progress and focusing on self-actualisation, not changing yourself.

*“I love that it’s not about transforming your skin, but making the most of what you have now.”*

Priscilla, beauty & lifestyle blogger

#selfconfidence  
#loveyourself  
#positivity



# What Consumers say



dedejohnson3 • Follow

Why?! Because your #gut aka your #microbiome is your second brain. If your gut is out of whack, EVERYTHING else will be out of whack too. It's called #dysbiosis and #leakygut which leads to systemic (all over/inside/outside the body) #inflammation. Research it yourself.

👉 #itsokay #iwouldtoo

**Nutrition**  
Gut microbiome impact on skin

**Product finds & loves**  
Excitement over trialing a new regime



Amber Cunningham 🌱  
@amberlouisecunningham )

Absolutely in love with my goodies from @we.are.cultured #getcultured #culturedsquad #love #health #probiotics #vegan #vegetarian #skin #balance #beautyblog #justablogaboutbeauty #bblogger#vegan #vegetarian #health #skin #culturedsquad #balance #love #bblogger #getcultured #probiotics #justablogaboutbeauty #beautyblog

## Consumers

**Skin issues / problem-solving**  
Questions, especially acne related

**Q** “Has anyone noticed a correlation between kombucha and acne?”

**A** “Well there are some research showing a correlation between gut health and skin health. So probably the probiotics in kombucha are healing your gut, thus improving the condition of your skin.”

# How it is being played out today



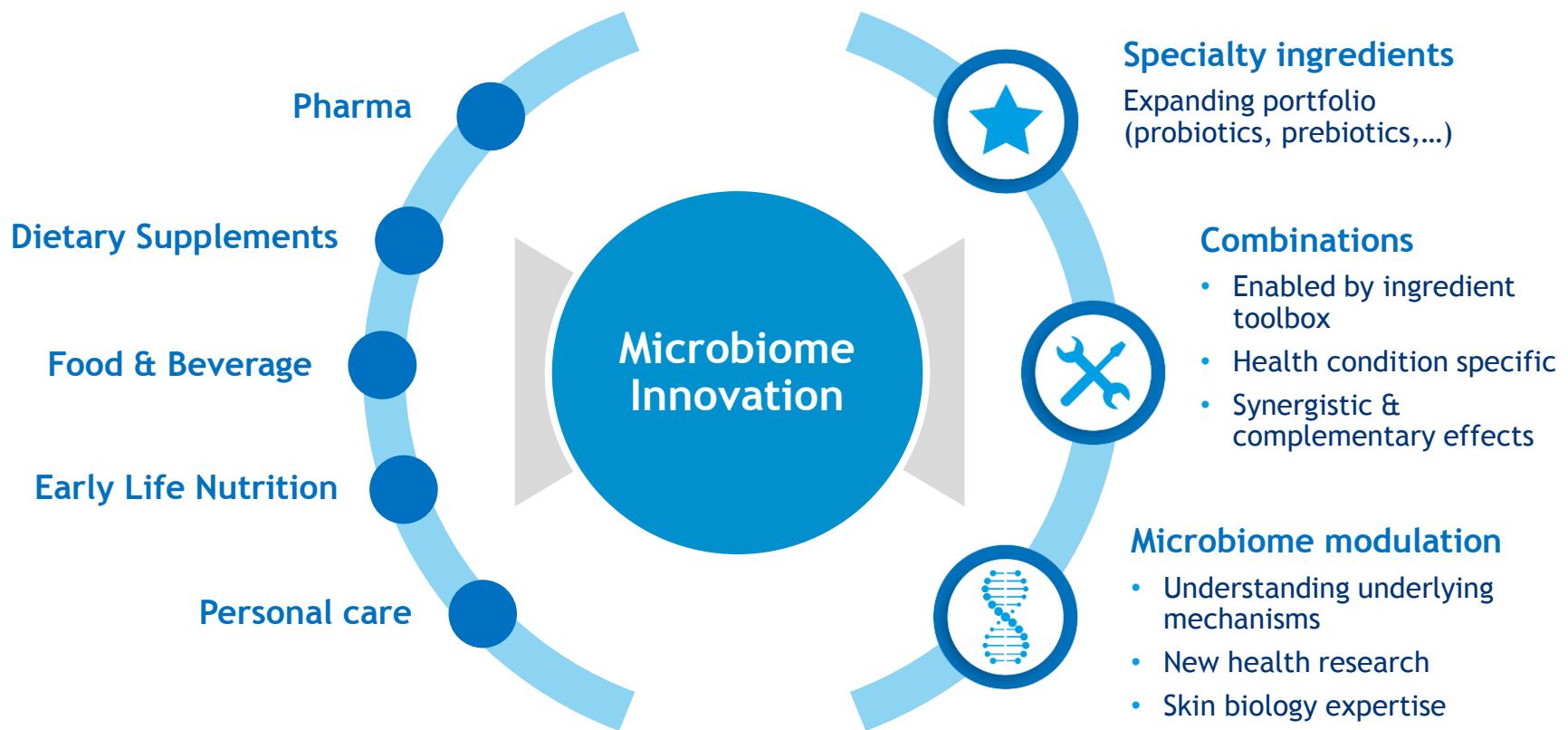
# How it is being played out today





# THE BROADER DSM EXPERIENCE IN MICROBIOME

# DSM Nutrition has developed solution platforms across multiple product industries that focus on the Microbiome



# Combining expertise in Skin Care with the Skin Microbiome to create new solutions

## OUR RATIONALE:

- Microbiome research is deeply embedded in DSMs innovation culture
- DSM is an established leader for epidermal bioactives with a fundamental understanding of skin science
- We now combine our expertise and knowledge to create new innovative solutions

## OUR OBJECTIVES:

- Short term: Create innovative bioactive-driven solutions in the field of skin microbiome that solve consumers' everyday skin needs
- Long term: Create novel approaches and innovative products related to the skin microbiome, e.g. probiotic ingredients



# DSM Personal care is a recognized leader in Skin Care



- Unique track record in bringing new molecules and solutions to the market
- More than 25 publications and posters and several awards in 2017

- Strong peptide platform with rational design
- Natural platform including Biotechnology & Fermentation
- Leader in epidermal science with CORNEOCARE™
- Product substantiation using outstanding visualization tools

- Innovative new claims and concepts based on market insights (in-vitro, ex-vivo, and in-vivo studies).
- Identify new targets for the next generation of actives
- Customer centric innovation & collaborations



# Bacteria like certain conditions

The epidermis provides the medium for microbes, its healthy condition is essential for the right balance of microbes

At the same time the epidermis is also the barrier that protects the body against infiltration from microbes

A healthy well balanced microbiome starts with a healthy skin and scalp barrier

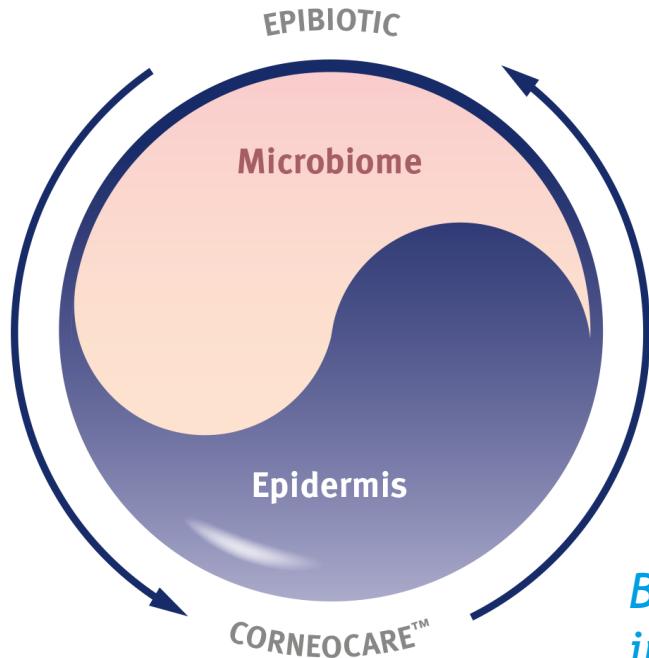


# DSM's Microbiome Beauty approach

The DSM microbiome beauty approach builds on two well establish actives:

**SYN-UP™** for a highly resistant healthy skin barrier

**PENTAVITIN®** for a strong scalp barrier



**CORNEOCARE™** - a holistic approach to create ultimate skin appearance and sensation via building a strong epidermal barrier

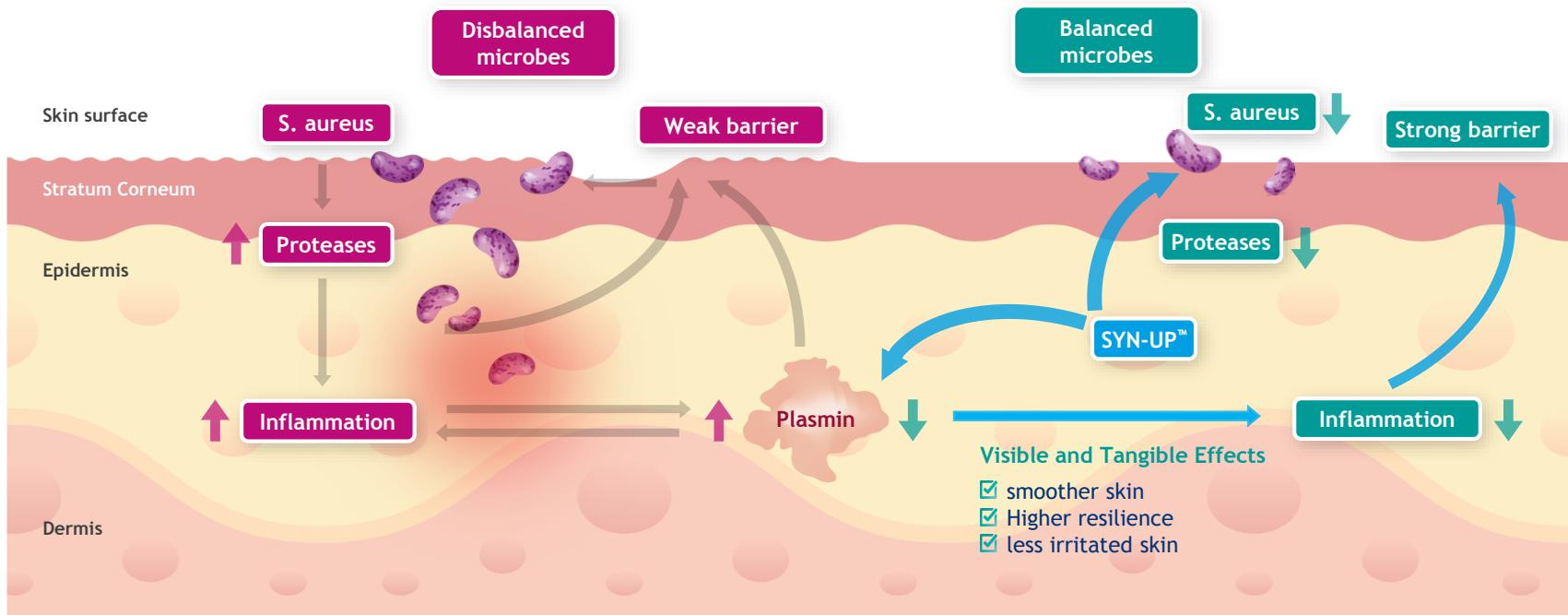
**EPIBIOTIC** - new ways to preserve, reinforce, and restore a healthy skin - microbiome interaction

*Both concept together integrate in-depth epidermal science for relevant consumer benefits*

**SYN-UP™**  
Boost the skin's  
resilience  
for great  
looking skin



# SYN-UP™ for a well balanced skin - microbiome interaction

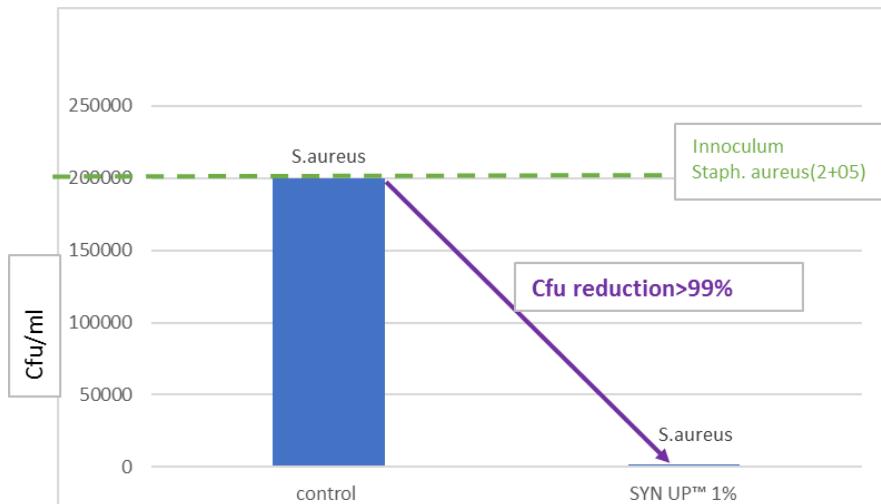


- Disbalanced microbiome: *S. aureus* affects skin barrier function via bacterial proteases, inflammation is triggered and plasmin is activated leading to a weak barrier and finally to a vicious circle.
- SYN-UP™ breaks this vicious circle by inhibiting plasmin activity, and by direct activity on *S. aureus*.

# SYN-UP™ *in vitro* substantiation

SYN-UP™ is an unique Plasmin and Urokinase inhibitor. SYN-UP™ contains 1000 ppm of a low molecular weight (612 g/mol) dipeptide derivative dissolved in glycerin/water

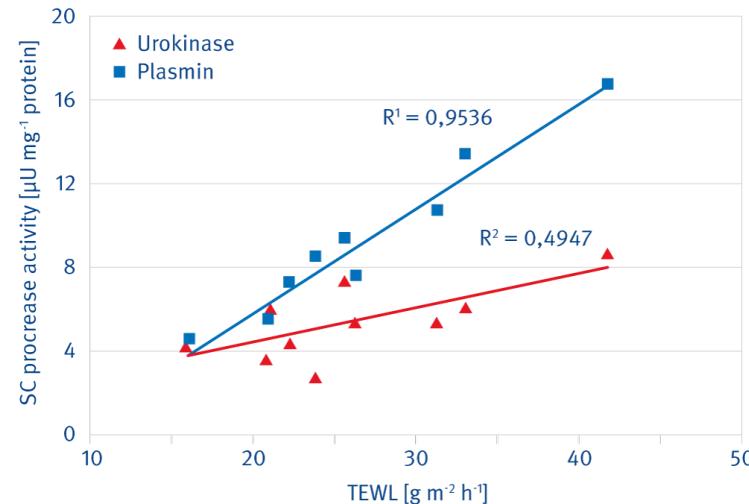
## SYN-UP™ inhibits *in vitro* *S. aureus*



*Micro-challenge test method NF EN ISO11930 in 2ml microplates after 24h incubation at 37°C*

\* CfU: Colony forming Unit

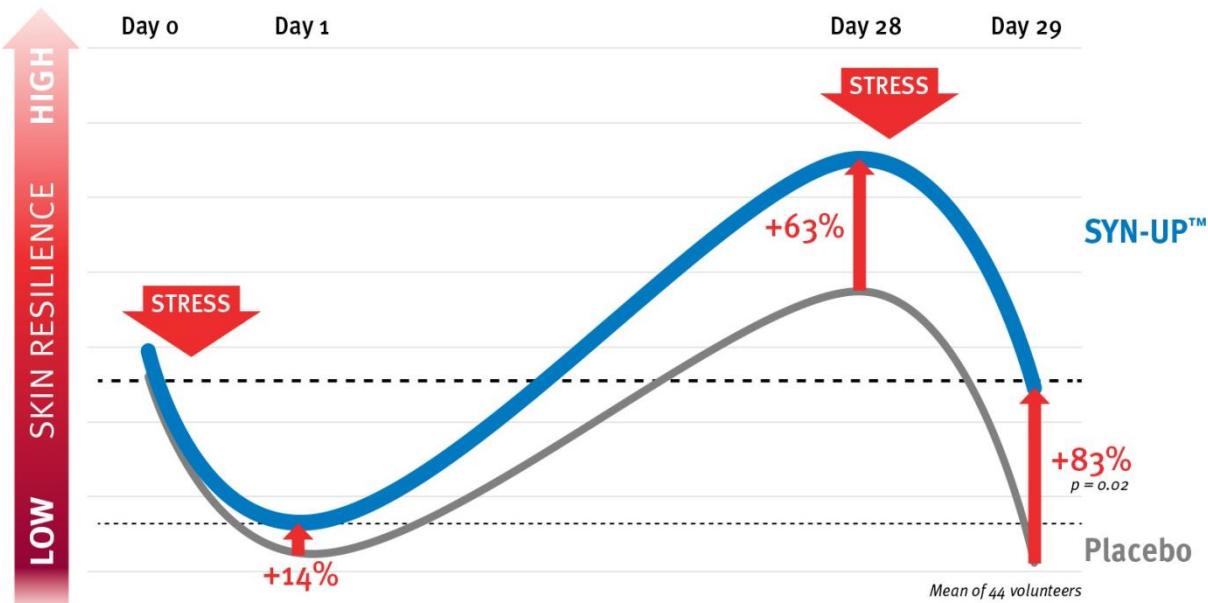
## Plasmin activity and TEWL



R Voegeli et al. IJCS 2008  
[Publication Award by SCS]

# SYN-UP™ improves skin barrier resilience *in vivo*

Skin resilience was evaluated by measuring the TEWL after stresses to the cheek stratum corneum from six consecutive tape strippings on day 0 and day 28. The higher the skin's resilience, the lower the TEWL



SYN-UP™ makes the skin more resilient day by day against stress attacks

After the 2nd stress, skin resilience almost matched the baseline value (significant), indicating stresses to the barrier preventable

# SYN-UP™ - Skin Care application

For experimental use  
only. Not for sale.

Formulation lot no.:

**SK-E-101305-1**

Production date: **04/2018**

Exp. date: **04/2020**

DSM Microbiome ingredient:

**SYN-UP™ (1%)**

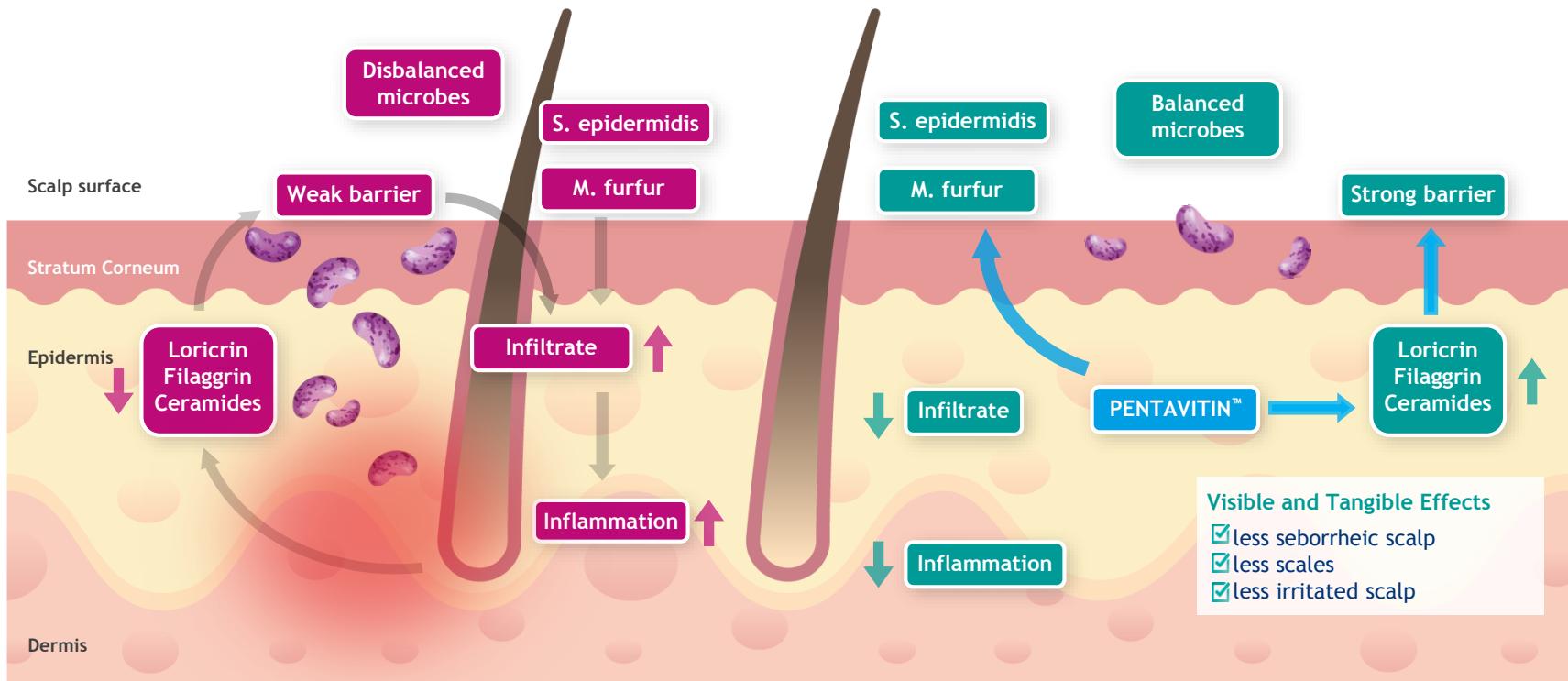
*See documentation  
for INCI information*



**PENTAVITIN® for a  
perfect scalp and  
body barrier**



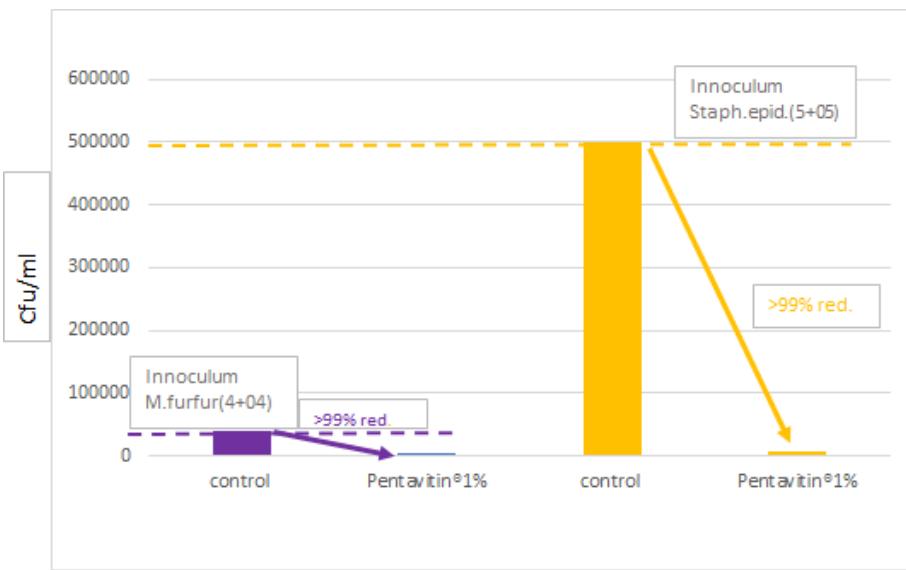
# PENTAVITIN® for a well balanced scalp - microbiome interaction



- Disbalanced microbiome: Microbial infiltration leads to inflammation, and decrease of barrier building blocks and finally to increased level of flaking.
- PENTAVITIN® breaks this vicious circle by rebalancing microbial activity, and stimulating the formation of epidermal building blocks.

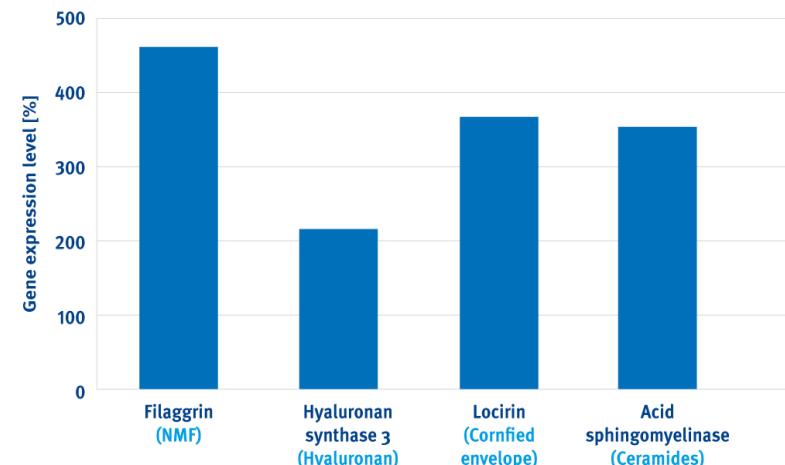
# PENTAVITIN® *in vitro* substantiation

## PENTAVITIN® impact on scalp microbiome



PENTAVITIN® is able to control microbial species equilibrium such as *Malassezia furfur* and *S. epidermidis*

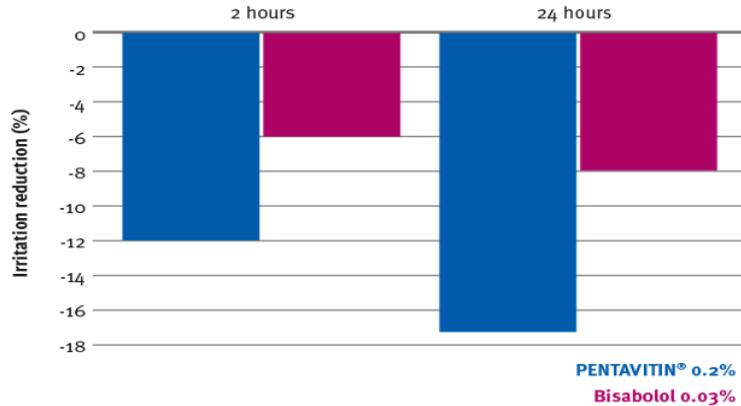
## PENTAVITIN® impact on skin barrier



0.3% PENTAVITIN® upregulates the filaggrin, loricrin, hyaluronan synthase-3 and acid sphingomyelinase gene expression

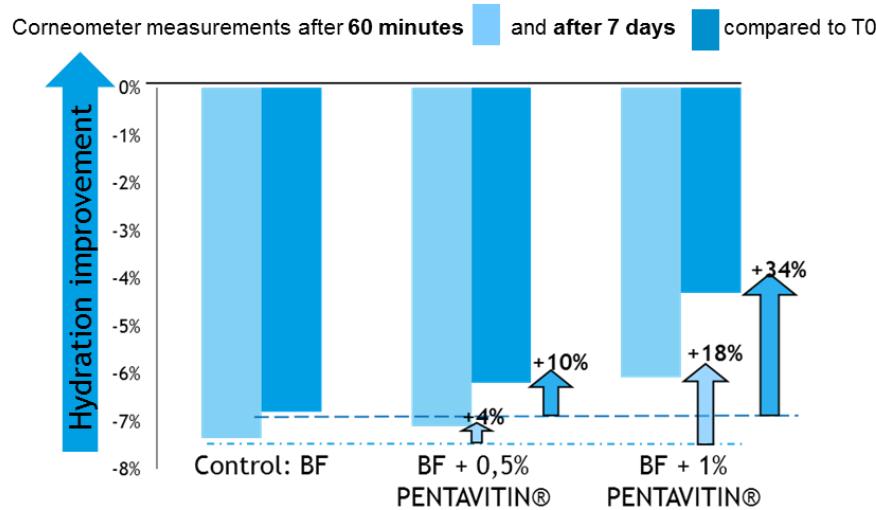
# PENTAVITIN® rinse-off *in vivo* efficacy

## Study 1: First Rinse-off Soothing for Deep Hydration



- 0.2% PENTAVITIN® reduces irritation by 12% and 17% after 2h and 24 h
- PENTAVITIN is outperforming current market benchmark Bisabolol

## Study 2: Intense hydration in a shower gel *in vivo*



- Short term: after 60 min single application up to 18% more hydration
- Mid-term: after 7 days twice daily application up to 34% more hydration

# PENTAVITIN® - shampoo application

For experimental use  
only. Not for sale.

Formulation lot no.:

HC-E-100347-20

Production date: 03/2018

Exp. date: 03/2020

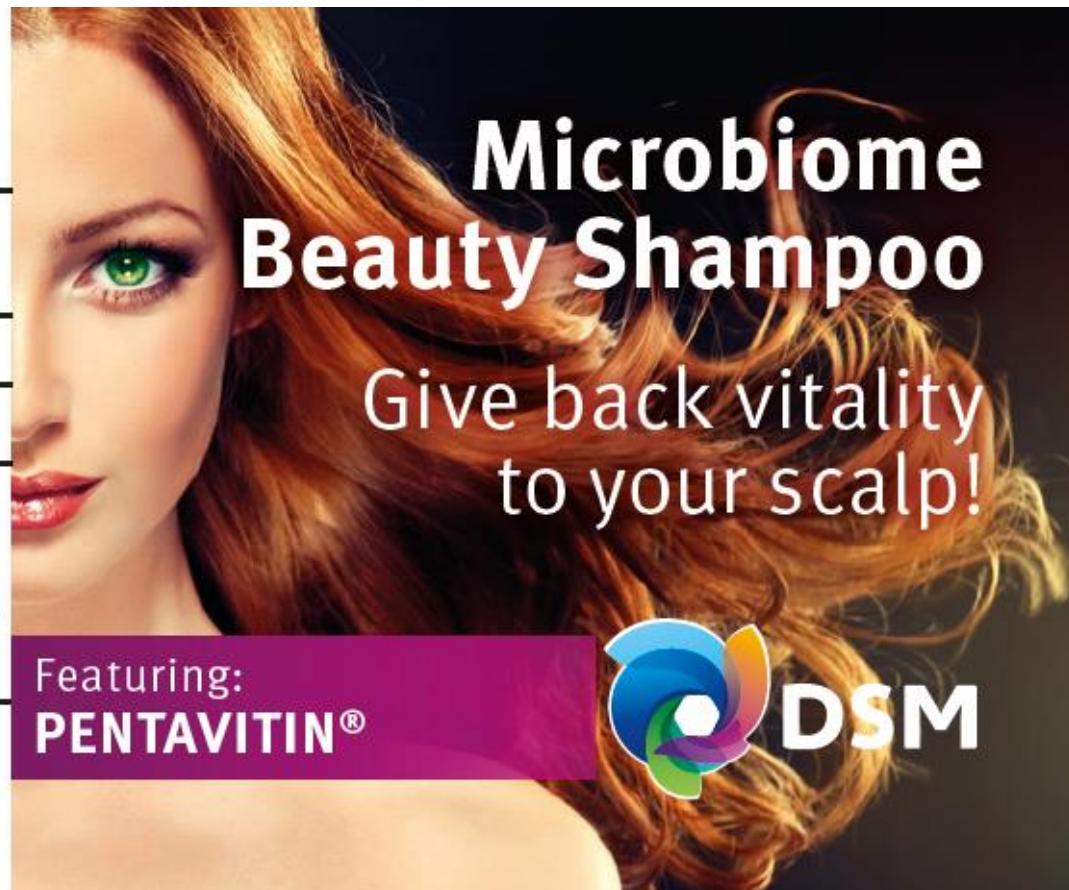
DSM Ingredients:

**PENTAVITIN® (0.5%)**

**TILAMAR® Quat 2240 (1.5%)**

**PARSOL® Guard (0.1%)**

*See documentation  
for INCI information*



# Disclaimer

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The background features a series of overlapping, wavy layers in various shades of blue and green, creating a sense of depth and motion.

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