EPIBIOME BEAUTY™

THE NEW LEVEL OF SKIN WELL-BEING

April 2019
THE SKIN MICROBIOTA: A WHOLE NEW WORLD

50% of cells in our body are bacterial cells

YOU - 50%*
BACTERIA - 50%

*not an insult
THE SKIN MICROBIOTA REPRESENTS A NEW DIMENSION IN SKIN HEALTH AND BEAUTY

Science says it will lead to important skin health enhancement.

It addresses the problem at its root rather than the symptoms.

Scientific publications around microbiome and ‘good bacteria’ trends up.
WHAT IS KNOWN: INCREASINGLY MORE LINKS BETWEEN THE SKIN MICROBIOTA AND KNOWN SKIN CONDITIONS

**ACNE VULGARIS**
Clinical studies confirm association of certain strains of *Cutibacterium acnes* with acne

**ROSACEA**
Increased Corynebacteria on the skin

**ATOPIC DERMATITIS**
Reduced diversity and stability of the skin microbiome during acute phases of atopic dermatitis

**DANDRUFF**
Disequilibrium between *Staphylococcus* and *Cutibacterium acnes* species in the dandruff affected skin

**AGEING**
Bacterial population shifts in ageing
UNDERSTANDING THE HUMAN SKIN MICROBIOME

The Skin Microbiome is the invisible community of microorganisms found at the skin surface.

The external surface of the skin harbours 200-300 bacterial species.

Each individual has an unique set of bacterial skin composition.

Different skin sites harbour distinct microbial communities.
BACTERIA ARE WORKING FOR YOU, NOT AGAINST YOU!

PROTECT OUR SKIN
- Prevent development of hostile bacteria
- Maintain optimum pH

IMMUNITY SYSTEM BOOSTER
- Stimulate of immunocompetent cells
- Control pro-inflammatory cytokines

DEFENSE
- Cell metabolism involvement

INVOLVED IN NUTRIENT SYNTHESIS
- B-vitamins
WHAT IMPACTS THE SKIN MICROBIOME?

**HOST PHYSIOLOGY**
Age, Gender, Ethnicity, Health status

**ENVIRONMENT**
Climate, Temperature variations: seasonal changes, Air conditioning, Pollution, Geographical location

**LIFE-STYLE**
Nutrition, Hygiene & Household chemicals, Medication

**IMMUNE SYSTEM**
Inflammation
WHAT ARE THE DIFFERENT APPROACHES

TRADITIONAL APPROACH

BIOME-FRIENDLY
= no impact on microbiome

KILL / REDUCE BACTERIA

INNOVATIVE APPROACH

PREBIOTIC
= feed bacteria

PROBIOTIC
= add bacteria

POSTBIOTIC
= use bacterial compounds
COSMETIC BRANDS ARE FOCUSING MAINLY ON PRE- AND POSTBIOTIC SKINCARE

Healthy skin is defined as moisturised, clear, smooth, and glow, and **PREBIOTIC** and **POSTBIOTIC SKINCARE** is ideally placed to satisfy these requirements.

**PREBIOTIC SKINCARE**
- Help to create a healthy environment for the skin microbiome.
- Carbohydrates can stimulate selectively the activity of beneficial skin microbiota.

**POSTBIOTIC SKINCARE**
- Focus on natural ingredients that “nourish” the skin
- Consists of metabolic by-products of beneficial microbes e.g. Yeast Saccharomyces lysate
PREBIOTIC AND POSTBIOTIC COMMUNICATIONS: HOLISTIC LIFESTYLE FOCUSED ON HEALTHY SKIN

**PROMOTE ENRICHMENT OF GOOD BACTERIA**

Moisturizes and refreshes skin with Saccharide Isomerate

**FEED THE SKIN’S GOOD BACTERIA**

Tones, soothes & brightens with Saccharide Isomerate

**PROTECTS THE SKIN AGAINST HOSTILE BACTERIA AND FUNGI**

Reinforces the skin’s immune system

**MAINTAIN A GOOD SKIN FLORA**

Helps to reduce redness and balance oil levels
SKIN MICROBIOME IS DIRECTLY LINKED WITH THE EPIDERMIS

- **THE EPIDERMIS** provides the medium for microbes, its healthy condition is essential for the right balance of microbes.

- **THE SKIN MICROBIOME** is directly linked with the skin barrier functions and play a role in both healthy and disturbed skin conditions.

- **UNDERSTANDING THE COMPLEX RELATIONSHIP** between normal, dry and oily skin barrier function and the SKIN MICROBIOME is critical for the rational development of new skin care products.
EPIBIOME BEAUTY™ (EPIDERMAL MICROBIOME) COMBINES OUR EXPERTISE IN CORNEOCARE® WITH THE SKIN MICROBIOME

MICROBIOME RESEARCH is deeply embedded in DSM’s innovation culture

CORNEOCARE™ – BUILDING A STRONG EPIDERMAL BARRIER to create ultimate skin appearance and sensation

We now combine our expertise and knowledge to create new innovative solutions:

EPIBIOME BEAUTY™ THE NEW LEVEL OF SKIN WELL-BEING!
DSM PRESENTS:

FIRST TIME IN ONE CLINICAL STUDY:
Correlate changes in the microbiome composition with changes of physiological parameters

EVALUATE TANGIBLE CONSUMER BENEFITS
- Focus on most common skin conditions
  - Oily skin
  - Dry skin
  - Normal skin

EVALUATE CHANGES IN SKIN MICROBIOME
- Focus on most common bacteria
- Focus on distribution of bacteria

FOCUS ON 3 SELECTED INGREDIENTS
- ALPAFLOR® ALP®-SEBUM
- SYN-UP®
- OXY 229 PF
DSM PRESENTS:
FIRST TIME CLINICAL STUDY

STUDY DESIGN

- 3 groups with 6 Caucasian subjects each
- Application: Test products were applied twice daily onto face
- Test products:
  - ALPAFLOR® ALP®-SEBUM (3%) in gelled water
  - SYN-UP® (1%) in gelled water
  - OXY 229 PF (3%) in gelled water
- Time points: day 0, 7 days, 28 days
- Skin physiology parameters:
  - TEWL level (Tewameter® TM 300)
  - Sebum level (Sebumeter SM 815)
- Microbiome profiling:
  - 16S rRNA gene sequence analysis
3 KEY BACTERIA GENUS IDENTIFIED:
CUTIBACTERIUM, CORYNEBACTERIUM AND STAPHYLOCOCCUS

**OILY SKIN**
Bacterial genus distribution on oily skin before treatment
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

Bacterial genus distribution on oily skin after treatment (ALPAFLOR® ALP*-SEBUM)
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

**DRY SKIN**
Bacterial genus distribution on dry skin before treatment
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

Bacterial genus distribution on dry skin after treatment (SYN-UP®)
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

**NORMAL SKIN**
Bacterial genus distribution on normal skin before treatment
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

Bacterial genus distribution on normal skin after treatment (OXY 229 PF)
- Cutibacterium
- Corynebacterium
- Staphylococcus
- Streptococcus
- Mikroccocus
- Actinomyces

DIFFERENT DISTRIBUTION OF CUTIBACTERIUM, CORYNEBACTERIA AND STAPHYLOCOCCUS BACTERIA ON NORMAL, OILY AND DRY SKIN CONDITIONS BEFORE AND AFTER TREATMENT
Focus on *Cutibacterium Acnes*, *Corynebacterium Kroppenstedtii*, and *Staphylococcus Epidermidis*

**Oily Skin**
- Species distribution on oily skin before treatment:
  - *Cutibacterium Acnes*
  - *Staphylococcus Epidermidis*
  - *Corynebacterium Kroppenstedtii*
- Species distribution on oily skin after treatment (ALPAFLOR^® ALP^-SEBUM^®):
  - *Cutibacterium Acnes* decreased
  - *Staphylococcus Epidermidis* unchanged
  - *Corynebacterium Kroppenstedtii* unchanged

**Dry Skin**
- Species distribution on dry skin before treatment:
  - *Cutibacterium Acnes*
  - *Staphylococcus Epidermidis*
  - *Corynebacterium Kroppenstedtii*
- Species distribution on dry skin after treatment (SYN-UP^®):
  - *Cutibacterium Acnes* increased
  - *Staphylococcus Epidermidis* decreased
  - *Corynebacterium Kroppenstedtii* decreased

**Normal Skin**
- Species distribution on normal skin before treatment:
  - *Cutibacterium Acnes*
  - *Staphylococcus Epidermidis*
  - *Corynebacterium Kroppenstedtii*
- Species distribution on normal skin after treatment (OXY 229 PF):
  - *Cutibacterium Acnes* decreased
  - *Staphylococcus Epidermidis* increased
  - *Corynebacterium Kroppenstedtii* increased

**Major Changes During the Treatment:**
- *Cutibacterium Acnes* is decreased on oily skin
- *Staphylococcus Epidermidis* is increased on dry skin
- *Corynebacterium Kroppenstedtii* is decreased on dry and normal skin
CUTIBACTERIUM ACNES "FRIEND OR FOE"

• Formerly known as propionibacterium acnes.

• A dominant (in majority) bacteria in the facial microbiome and therefore an important gatekeeper.

• Reveals a lipophilic, anaerobic lifestyle.

• Can influence sebum production.

• Certain strains associated with acne.
STAPHYLOCOCCUS EPIDERMIDIS
AN INFLUENTIAL KEYSTONE FOR
HEALTHY SKIN

• Participates in the maintenance of skin health.¹,²

• Metabolic products of Staphylococcus Epidermidis improve skin moisture retention and rough skin texture.

• Protection and anti-aging properties due to production of superoxide dismutase.

• Anti-inflammatory effect.

2) Science 363 issue 6424(2019), 227-228
**Corynebacterium Kroppenstedtii**

**A Novel Target for the Control of Skin Redness**

- A lipophilic (sebum-loving) bacteria and part of the normal skin microbiota.

- Increased levels are associated with age and skin redness\(^3\).

- Enriched in Rosacea.

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3) K. Malik, Amway Cinco De Mayo Study 2018
ALPAFLOR® ALP®-SEBUM CONTROLS OILINESS FOR BEAUTIFUL-LOOKING SKIN

UNIQUE PRODUCT FEATURES
• Rare Alpine plant, organically cultivated at high altitudes on an ancient alpine moraine
• Standardized; high Oenothein B and flavonoids content
• Significantly inhibits 5-α-reductase, the key enzyme in sebum formation
• Significantly decreases epidermal pro-inflammatory Interleukin-8 and Interleukin-1α

INCI NAME (ACTIVE)
Epilobium Fleischeri Flower/Leaf/Stem Extract

BENEFITS
• Visible sebum production reduction for beautiful-looking skin
• 91% of women perceived an improvement in skin appearance
• 18% of women experienced reduced pore size

COSMETIC APPLICATION
• Best for oily, irritated skin
• Products that target combination skin
• Suitable for prebiotic skincare

SUGGESTED CONCENTRATION
1-3%
ALPAFLOR® ALP®-SEBUM CONTROLS OILY SKIN BY DOWN-REGULATING SEBUM AND CUTIBACTERIUM ACNES LEVELS

EVOLUTION OF THE SEBUM LEVEL

Sebum reduction on forehead skin after 1 week

Sebum reduction on forehead skin after 28 days

Cutibacterium Acne reduction on forehead skin after 1 week

Cutibacterium Acne reduction on forehead skin after 28 days

ALPAFLOR ALP®-SEBUM
SEBUM VS CUTIBACTERIUM ACNES LEVEL

EPIBIOME BEAUTY™ FOR OILY SKIN

ALPAFLOR® ALP®-SEBUM
controls oiliness by down-regulating sebum- and Cutibacterium acnes - the gatekeeper that can influence sebum levels.
SYN-UP® FIGHTS AGAINST DRY SKIN CONDITIONS

UNIQUE PRODUCT FEATURES

• Sophisticated patented synthetic dipeptide derivative
• Significant inhibition of urokinase activity by up to 97%
• Significant inhibition of plasmin activity by up to 41%
• Significant reduction of MMP9 by up to 60%
• Strong reduction of CXCL5 and IL-8 – markers for skin sensitivity and inflammation
• Inhibits Staphylococcus Aureus levels in vitro

INCI NAME (ACTIVE)
Benzylsulfonyl-D-Seryl-Homophenylalanine Amidinobenzamide Acetate

BENEFITS

• Makes skin more resilient to stress attacks day-by-day
• Real, significant prevention of dry skin conditions
• Visible, improvement of dry skin conditions
• Impressive reduction of stinging sensations
• Significant promotion of great looking skin

COSMETIC APPLICATION

• Signature ingredient to fight against dry skin conditions
• Products with focus on daily environmental stress attacks
• Suitable for prebiotic skincare

SUGGESTED CONCENTRATION
1%
**SYN-UP® FIGHTS AGAINST DRY SKIN CONDITIONS BY BOOSTING STAPHYLOCOCCUS EPIDERMIDIS**

- **Skin barrier improvement on dry cheek after 1 week**
  - **16%**

- **Skin barrier improvement on dry cheek after 28 days**
  - **17%**

- **Staphylococcus Epidermidis on dry cheek after 1 week**
  - **+100%**

- **Staphylococcus Epidermidis on dry cheek after 28 days**
  - **+175%**

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**EPIBIOME BEAUTY™ FOR DRY SKIN**

SYN-UP® fights against dry skin conditions by boosting of Staphylococcus Epidermidis levels - the keystone for healthy skin
**SYN-UP® FIGHTS AGAINST RED SKIN CONDITIONS BY REDUCING CORYNEBACTERIUM KROPPENSTEDTII LEVELS**

**Skin barrier improvement on dry cheek**

- **-16%** after 1 week
- **+17%** after 28 days

**Corynebacterium Kroppenstedtii reduction on dry cheek**

- **-16%** after 1 week
- **-72%** after 28 days

**EPIBIOME BEAUTY™ FOR SKIN REDNESS**

SYN-UP® improves skin barrier and reduces high Corynebacterium Kroppenstedtii levels – a novel target for the control of skin redness.
OXY 229 PF REVIVES DULL-LOOKING SKIN

**UNIQUE PRODUCT FEATURES**
- 98% natural origin (ISO16128)
- Made from the extraordinary Baker’s yeast strain VdH2
- Contains powerful mitochondrial respiration activators
- Boosts oxygen uptake by up to 750%
- Induces cell viability by up to 10%
- Increases cell turnover activity by up to 25%

**INCI NAME (ACTIVE)**
Saccharomyces Lysate, Valine, Threonine, Glutamic acid, Glycine, Disodium Succinate

**BENEFITS**
- Revives dull-looking skin
- Makes skin feels smooth
- Keeps skin looking youthful
- Avoids facial redness

**COSMETIC APPLICATION**
- Products with a focus on skin freshness and redness
- Revitalizing treatments
- Suitable for postbiotic skincare

**SUGGESTED CONCENTRATION**
up to 5%
OXY 229 PF REDUCES SEBUM LEVELS AND MINIMIZES CORYNEBACTERIUM KROPPENSTEDTI LEVELS FOR PREVENTING FACIAL REDNESS

Sebum reduction on cheek skin after 1 week: 5%
Sebum reduction on cheek skin after 28 days: 7%
Corynebacterium Kroppenstedtii reduction on cheek skin after 1 week: 65%
Corynebacterium Kroppenstedtii reduction on cheek skin after 28 days: 62%

OXY 229 PF - SEBUM LEVELS VS CORYNEBACTERIUM KROPPENSTEDTI LEVELS

Evolution of the sebum level

Evolution of Corynebacterium Kroppenstedtii

EPIBIOME BEAUTY™ FOR NORMAL SKIN

OXY 229 PF reduces sebum and Corynebacterium Kroppenstedtii levels - a novel target to control skin redness
OUR MICROBIOME CARE

FOR NORMAL SKIN
with OXY 229 PF 3%
SK E 101306 12
Whipped Cream nourishes your skin while leaving a silky, fresh after-feel.

FOR DRY SKIN
with SYN-UP® (1%)
SK E 101305 2
Beauty cream is an easy to spread glow emulsion which will bring power to your skin to fight dryness.

FOR OILY SKIN
with ALP®-SEBUM (3%)
SK E 101366 6
Optimizing Toner aims to control excess oil, which leave skin feeling fresh and revived.
EPIBIOME BEAUTY™

SYN-UP®, ALPAFLOR® ALP®-SEBUM and OXY 229 PF FOR A NEW LEVEL OF SKIN WELL-BEING!
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