

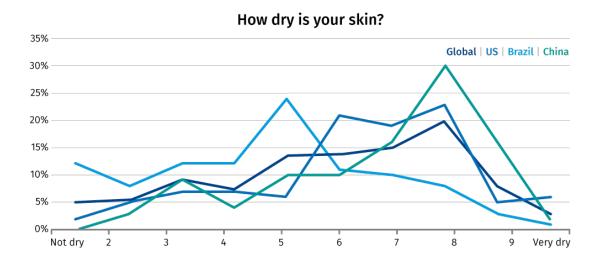


#### Chinese women claim to have the driest skin

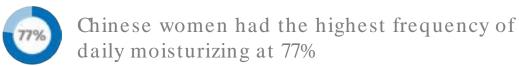


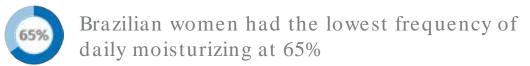






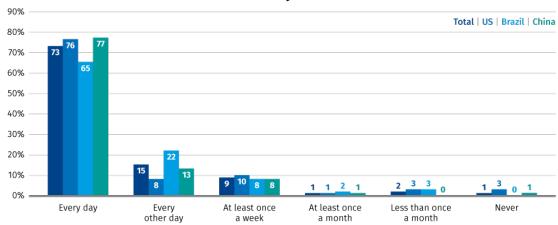
# 73% of women in all markets use a moisturizer





BUT they also claim to have less dry skin than the other markets

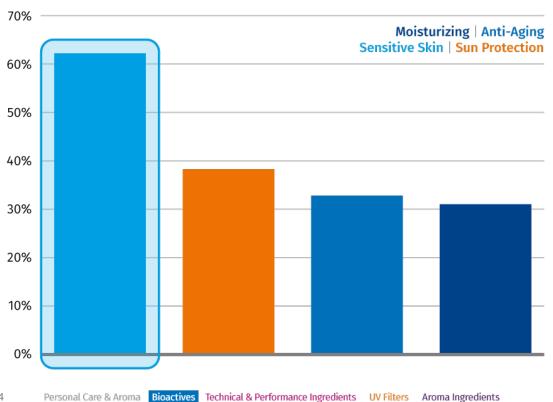
#### How often do you moisturise?



DSM survey 2014 \*Global Total- N= 468 US- N= 155 Brazil N= 156 China- N= 157

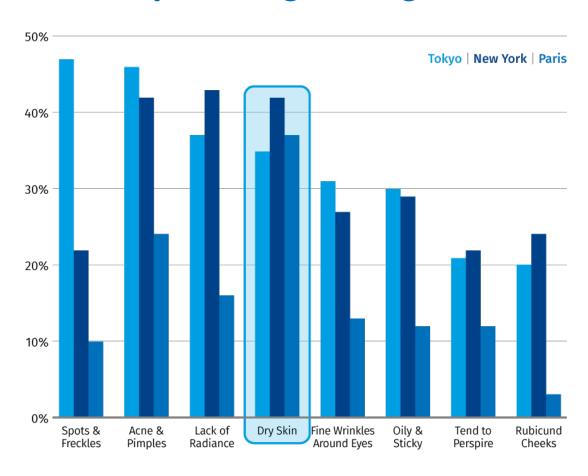


#### Moisturizing is the most desired product feature by 60+ year old consumers Especially in the Western world the population is aging rapidly





## Dry skin is the major problem in young women (20-30 y) living in big cities





## Urban living affects skin hydration!



#### **MEXICO CITY**

(urban environment: more exposed to pollution)

- Reduced skin hydration
- Barrier function alteration
- Higher frequency of atopy
- No gender difference

#### **CUERNAVACA**

(non-urban environment: less exposed to pollution)



<sup>\*</sup> International Journal of Cosmetic Science, 2015, 37, 595605

## Chinese urban skin looks dry!



#### **CHONG MING**

(non-urban environment: less exposed to pollution)

#### SHANGHAI CENTER

(urban environment: more exposed to pollution)

- Skin look worse, dryer and more sensitive
- "Skin excessively dry," related to indoor working conditions

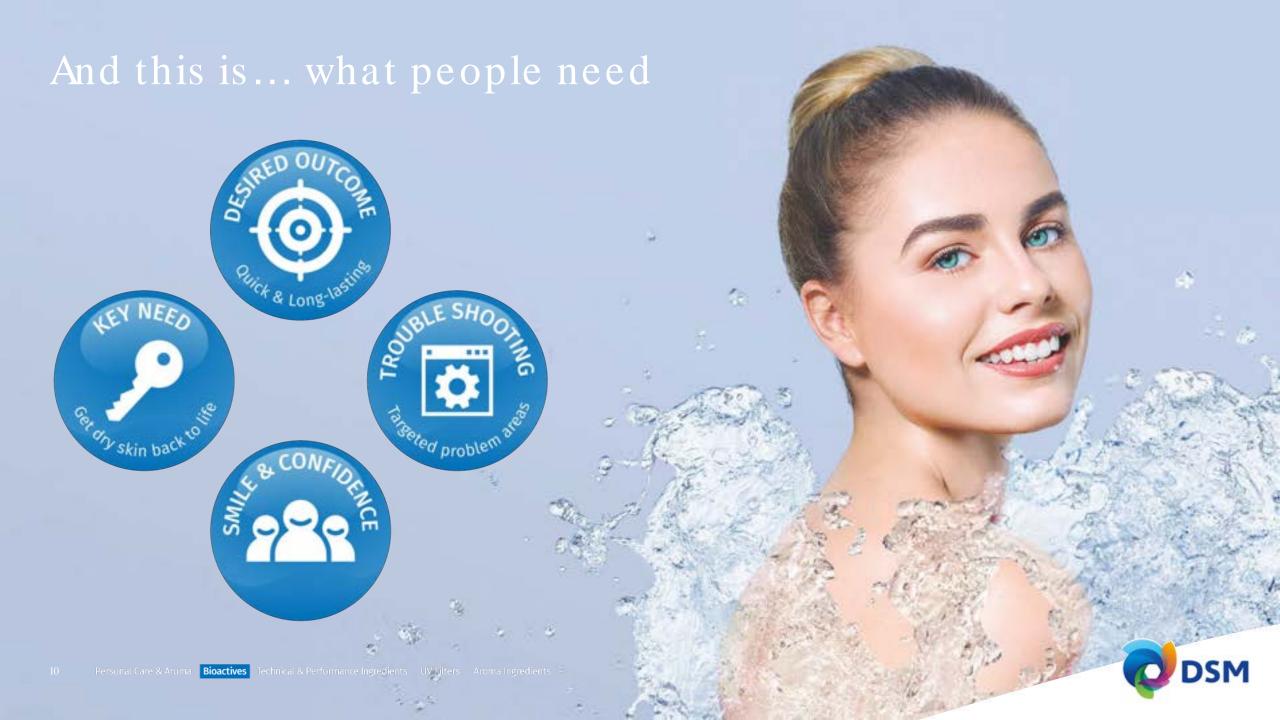


<sup>\*</sup> International Journal of Cosmetic Science, 2016 38, 21-223



## And this is... what people talk about





## Novel facial color mapping technology makes hydration visible Invented by DSM Researchers

International Journal of Council: Science, 2015, 37, 595-605

doi: 10.1111/lex.12265

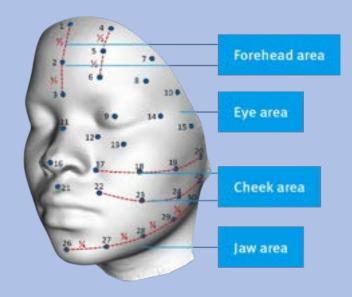
A novel continuous colour mapping approach for visualization of facial skin hydration and transepidermal water loss for four ethnic groups

R. Voegeli\*, A. V. Rawlings\*, P. Seroul\* and B. Summers\*

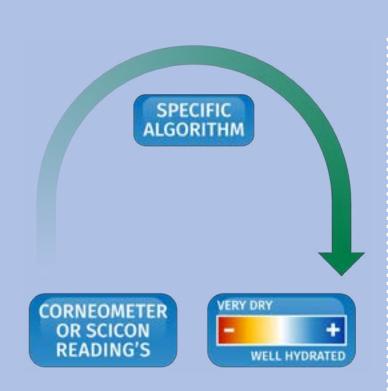




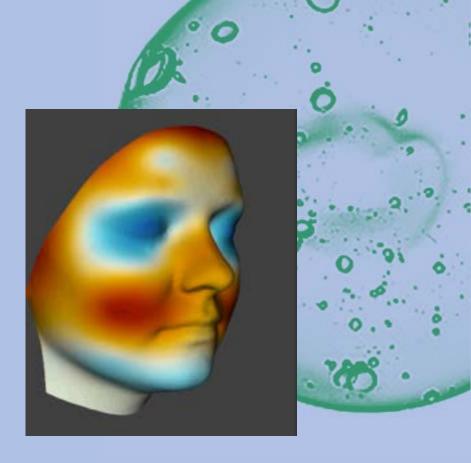
#### The method...



30 measurings sites on the face are selected



Skin hydration level is visualized with color scales (from red to blue) based on CORNEOMETER or SCICON readings



**Facial Color Hydration Mapping** 



#### Facial Color Hydration Mapping of different ethnic groups DSM DISCOVERY\*



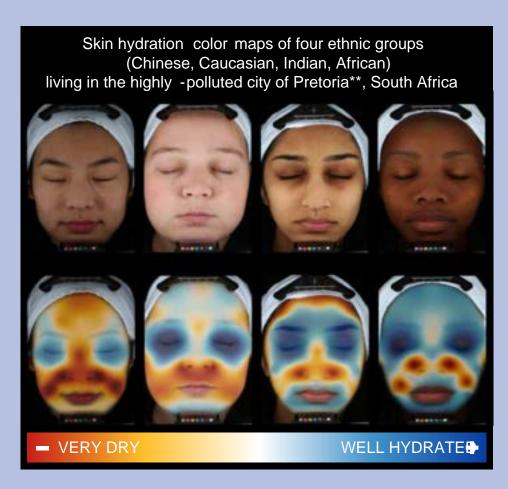
Facial hydration is much more complex than generally described.



Remarkable differences exist within short distances and between different ethnic groups.



Very dry skin around the nasobial fold area in all four ethnic groups.

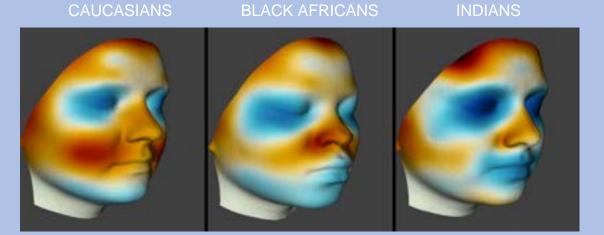




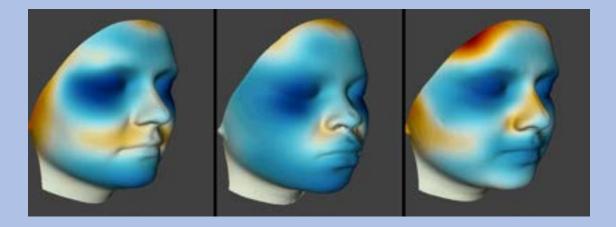
<sup>\*</sup> R. Voegeli et al: International Journal of Cosmetic Science, 2015, 37, 59505

## 3D Facial Color Hydration Mapping

draws attention to skin areas with special hydration needs



Before treatment

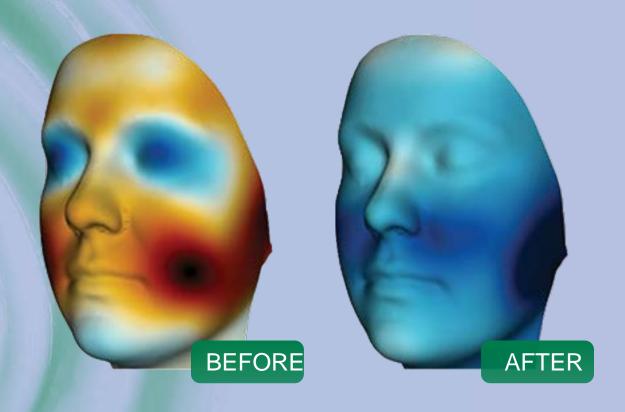


After 4 weeks treatment with a moisturizer containing PENTAVITIN(3%) and NIACINAMIDE PC (5%)



## Facial Color Mapping Technology

Proven to take skin from dry to hydrated with just 1 use!



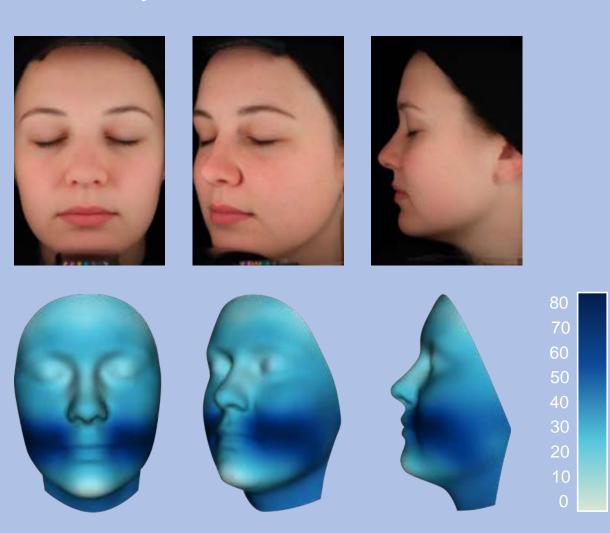
VERY DRY

WELL HYDRATE

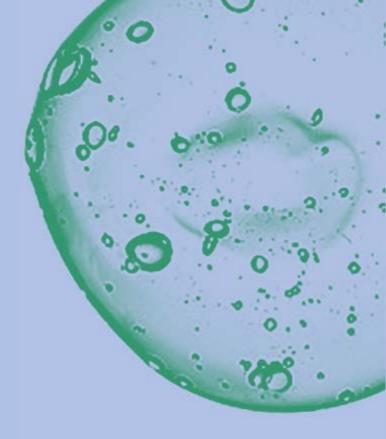




## Facial Color Mapping Technology Instant Hydration after 3 hours!









## More than 30 years of PENTAVITIN®

Keep your skin looking and feeling at its best!

# OLDIES but GOLDIES





## PENTA

VITIN

#### 5 BENEFITS

Skin becomes <u>visibly</u> smoother and healthier. Less flakiness, tightness and stinging.

## **VITAL KERATIN**

PENTAVITIN® binds to keratin as magnet power and gives back vitality to your skin and scalp.



## PENTAVITIN® The true hydration artist!

#### **ORIGIN**

- 100% natural origin (ISO 16128).
- Derived from edible vegetable maize kernels.

#### **COMPOSITION**

- INCI name (active): Saccharide Isomerate
- Skin identical carbohydrae complex
- No preservative

#### SUSTAINABLE PROCESS

 Produced from maize kernel derived sugar and water Results from isomerization reaction

#### RECOMMENDED DOSAGE

• 0.2 - 5%



## PENTAVITIN® Sustainability Highlights





#### Addresses Universal Beauty



China listed



Quasi Drug Additive Japan



Halal certified

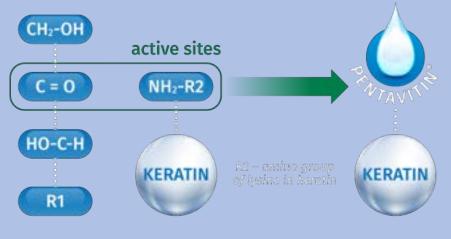


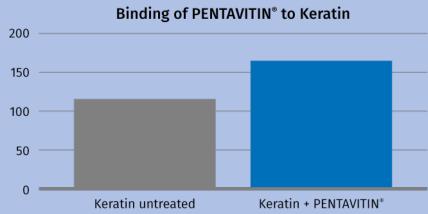
TGA\* Australia listed PENTAVITINcan be used in sunscreens with SPF > 15





## PENTAVITIN® Binds to keratin as magnet power!







Binds to keratin as magnet power



Perfectly connects with the skin's top layers



Gives back vitality to your skin and scalp

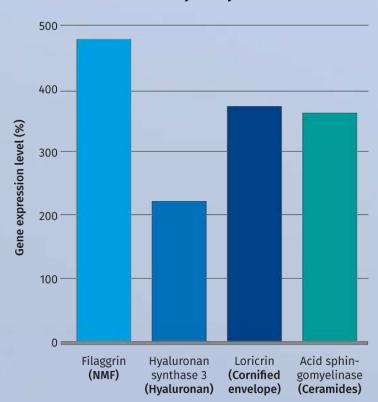


Not washed off



## PENTAVITIN® Biological Concepts!

#### Induction of gene expression in human keratinocytes by 0.3% PENTAVITIN®





Natural water boost by boosting filaggrin



Protects urban skin by boosting loricrin



Aqua soothing by boosting hyaluronase 3



Strengthens skin's barrier by boosting acid sphingomyelinase



## DSM's look at Dry Skin & PENTAVITIN<sup>®</sup> in an Urban Environment

#### Facial Color Mapping Hydration Study Beijing/China

Data collection:	April-May 2017
Study population:	<ul> <li>94 Chinese women, 35.0 ± 0.9 years old</li> <li>Three age and count matched groups</li> <li>Subjects living in Beijing for &gt;3 years</li> </ul>
Type of study:	Randomized, double-blind, placebo-controlled study.
Test products:	Placebo, Vehicle with 1% PENTAVITIN*, Vehicle with 3% PENTAVITIN*.
Conditioning phase:	3 days
Application*:	Test products (0.8 – 1g) were applied twice daily (morning and evening) onto the face.
	Tourised tool  Tourised  T

Test site:	Left side of the face, 30 predefined sites.
Test parameter:	Continuous skin hydration level is visualized with color scales based on SKICON-200 EX* readings.
Time points:	Baseline, 3 hours, 28 days





## Facial Color Mapping Hydration Study Beijing/China

#### Our discovery

Chinese women have excessively dry skin particularly in the lower part of the face















### FACIAL COLOR MAPPING TECHNOLOGY Makes PENTAVITIN® benefits visible



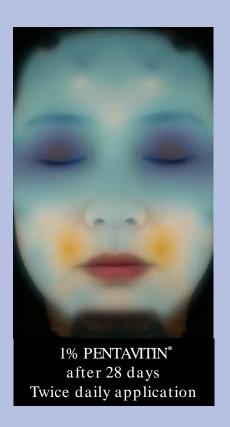
3-HOUR after single application of 1% PENTAVITIN® dry cheek



Used for 28-DAYS, 1% PENTAVITIN® brings tired, dry skin back to life.









## PENTAVITIN® (3%)

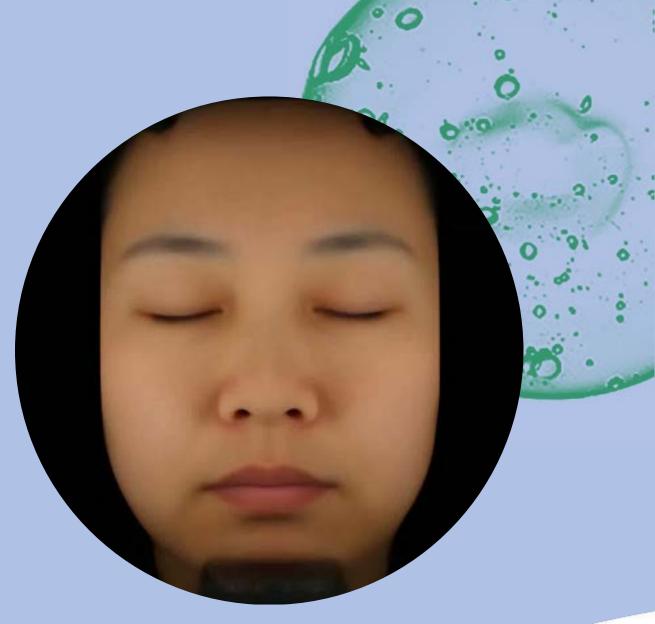
The true hydration artist!



3-HOUR hydration boost to excessively dry skin areas



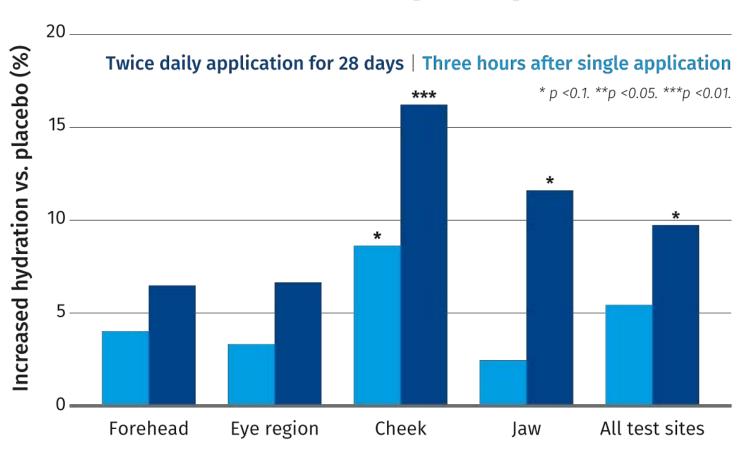
28-DAYS true hydration power to all facial areas





# Significant hydration with 1% PENTAVITIN® short- and long-term

1% DSM PENTAVITIN® compared to placebo



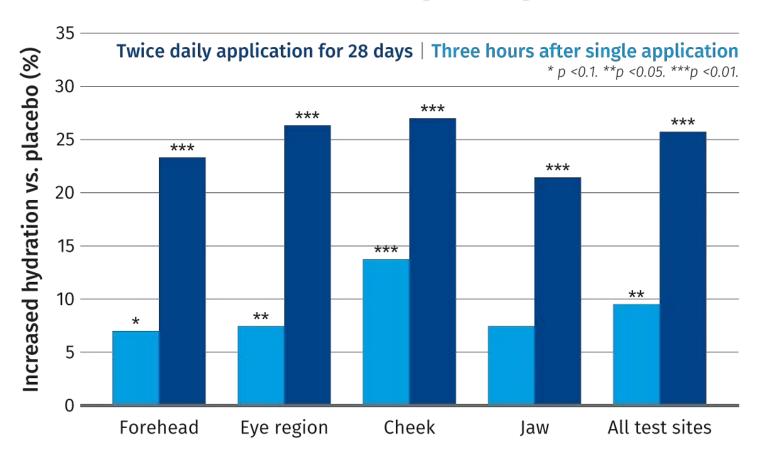
Three hours after single application of 1% PENTAVITIN® excessively dry cheek area is already significantly more hydrated.

After twice daily application for 28 days of 1% PENTAVITIN®, there is much better significant hydration to all facial areas.



# Significant hydration with 3% PENTAVITIN® short- and long-term

3% DSM PENTAVITIN® compared to placebo



Three hours after single application of 3% PENTAVITIN° significant hydration boost of forehead, eye region and cheek area.

After twice daily application for 28 days of 3% PENTAVITIN®, there is highly significant hydration power to all facial areas.



#### Reverse the 5 symptoms of dehydrated skin: roughness, dullness, flakiness, tightness, redness





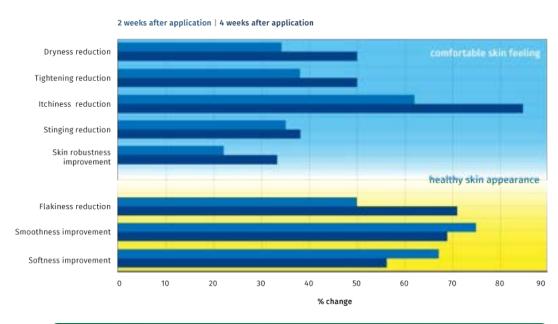


After 4 weeks

Photographs demonstrated a significant improvement in skin appearance after four weeks of application with 1% aqueous PENTAVITIN®

#### Visibly smoother and healthier

#### Consumer panel testing confirms the benefits of PENTAVITIN® (1%)

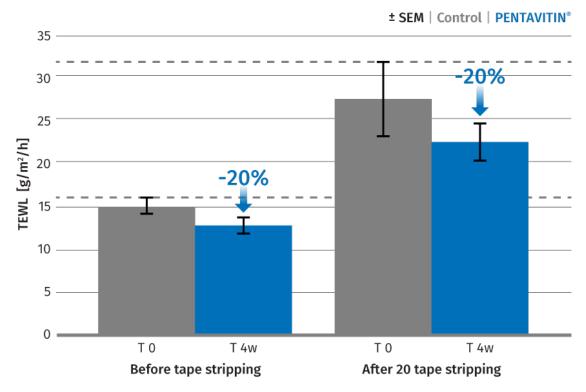


Reduced flakiness, tightness and stinging



#### Strengthens skin's barrier function for long-term benefits

Tested on 12 female subjects, 40±1 y, evaluated skin area: calf; twice daily application of 1% aqueous PENTAVITIN, measurements before and after 4w treatment phase, barrier disruption induced by 20 tape strippings; assessment of barrier repair by TEWL

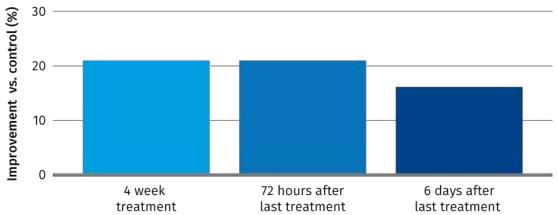




#### Long-lasting deep hydration

Tested on 12 female subjects, 40±1 y, evaluated skin area: calf; 4w and twice daily treatment of 1% aqueous PENTAVITIN, measurements 72 hours & 6 days after last treatment, assessment by clinical grading according to Kligman scale

#### Improvement in the signs of dry skin according to Kligman's clinical grading





72 HOURS longlasting deep hydration



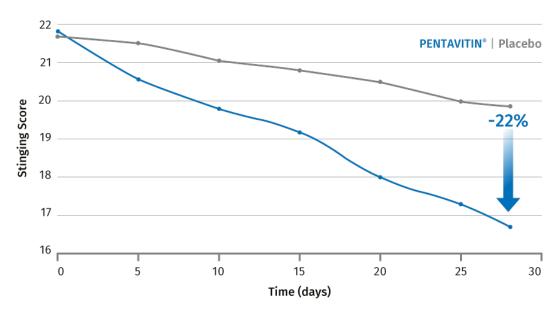
Prolongs skin hydration up to 6 DAYS after last treatment



#### Good for AHA formulations\* in vivo

#### Lactic acid stinging test

Tested on 12 female subjects, 40-60 y, evaluated skin area: face; 5% lactic acid cream/pH: 3.0 with and without 5% PENTAVITIN, 4 weeks twice daily application, assessment by clinical grading



Effective against irritation caused by Alpha Hydroxy Acids (AHA's)

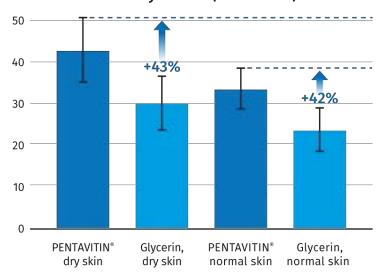


<sup>\*</sup> W.Smith, SÖFW-Journal, 121:14/95

#### Outperforms glycerin

Tested on 6 female subjects, age 35-55y, evaluated skin areas: volar forearm (normal skin) and calf (dry skin); twice daily application of 5% PENTAVITIN cream vs 5% glycerin cream, measurements before and after 14 days treatment phase, assessment of skin hydration by NOVA Meter

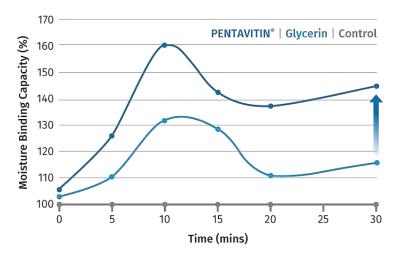
#### Skin hydration (% increase)



PENTAVITINis up to 43% better than glycerin on dry and normal skin in vivo

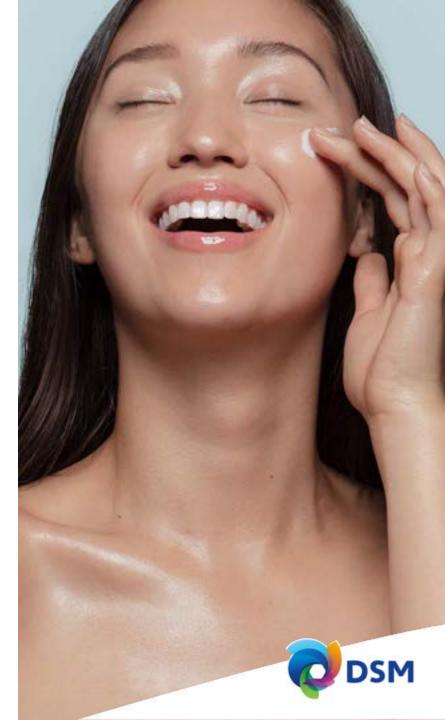
#### Sorption – Desorption Test (SDT)

A test site on the forearm inner side was covered for 5 minutes with a gauze saturated with water which brought the skin surface to maximal hydration (sorption). The gauze was then removed and the water evaporation (desorption) and moisture -binding capacity, respectively, recorded over a period of 30 minutes. The lower the desorption, the higher the moisture -binding capacity. Assessment of moisture -binding capacity by NOVA Meter





PENTAVITINbinds 2.8 times more moisture in the skin than glycerin after 30 minutes in vivo



Intense Hydration Power for RINSE OFF







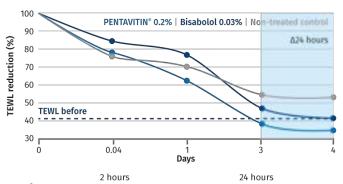
Rebalances scalp



# PENTAVITIN® (0.2%)

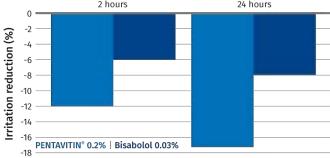
### Tested under rinse-off and stressed (tape stripping) conditions in vivo

18 subjects, age 3246, skin type II/III, 14 days treatment of 0.2% aqueous PENTAVITINsolution and 0.03% Bisabolol under rinse -off conditions at the forearm. Skin irritation and barrier disruption induced by tape stripping, Assessment of barrier repair by TEWL (Tewameter TM 300°) and irritation by Skin Colorimetric Measurement (Colorimeter CL400°, a-value)





Repairs stressed skin barrier faster than Bisabolol





24-HOUR soothing better than Bisabol

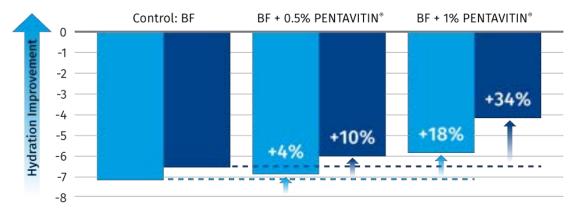


# PENTAVITIN® (0.5%, 1%)

### Intense hydration in a shower gel in vivo

One week efficacy study of rinse -off products (shower gel), 31 Caucasian female volunteers, tested on volare forearm, assessment of skin hydration by corneometer

#### Corneometer measurements after 60 minutes and after 7 days compared to T0





60-MIN after single application up to 18% more hydration

7-DAYS twice daily application up to 34% more hydration



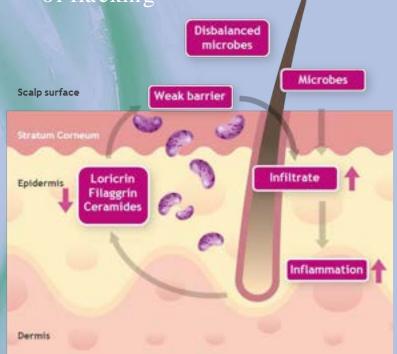




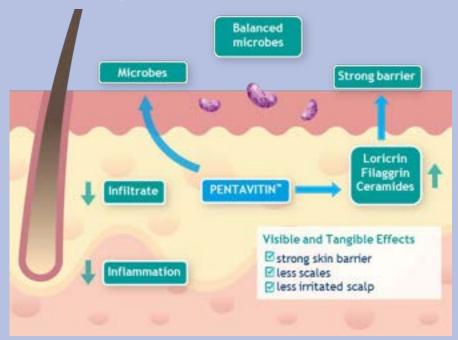
## Disbalanced microbiome:

#### Microbial infiltration leads to:

- inflammation
- decrease of barrier building blocks
- and finally to increased level of flacking

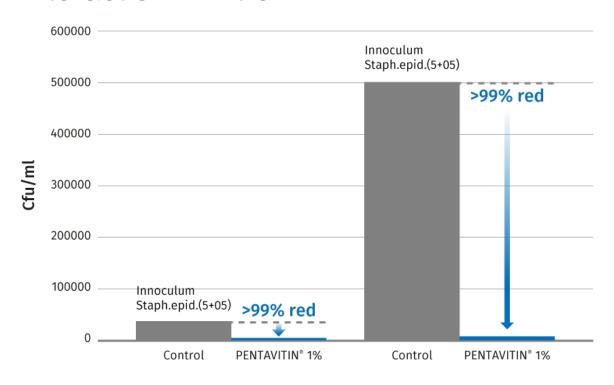


# PENTAVITIN® For a well balanced scalp microbiome interaction





### Rebalances scalp microbiome interaction in vitro



PENTAVITINhelps to control microbial species equilibrium of Malassezia furfur and Staphylococus epidermidis



# PENTAVITIN® (0.2%)

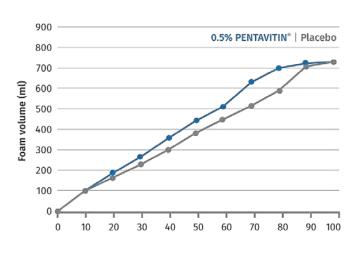
Impressive foam volume boosting effect in soap bar





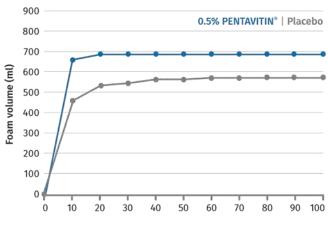
# **PENTAVITIN**® (0.5%)

## Foam volume boosting effect





PENTAVITIN(0.5%) boosts foam volume of a vegetable oil based soap bar





PENTAVITIN(0.5%) boosts foam volume of a soap based cream cleanser



## Easy to use



Soluble in water at all ratios



Compatible with up to 50% ethanol



Can be added during the manufacturing process at any time (< 60°C) to the aqueous phase of a formulation



It is recommended to add it below 40 °C to avoid unnecessary heating of the active and to use amine -free formulation



Recommended dosage 0.2-5%



#### Smoothie facial cream

#### Provides true skin hydration and restores the skin's natural glow

INGREDIENTS	INCI NAME	% W / W
Water dem.	Aqua	82,43
Cetiol C5	Coco-caprylate	4,00
Xiameter PMX-200 50cs	Dimethicone	4,00
PENTAVITIÑ	Saccharide Isomerate, Aqua, Citric Acid, Sodium Citrate	3,00
Dow Corning 9041 Silicone Elastomer Blend	Dimethicone , Dimethicone Crosspolymer	3,00
Hostapon CLG	Sodium Lauroyl Glutamate, Aqua, Sodium Chloride	0,20
Lanette 18	Stearyl Alcohol	0,90
Tego Care 450	Polyglyceryl-3 Methylglucose Distearate	0,90
Dekaben CP	Chlorphenesin	0,10
Pemulen TR-1	Acrylates/C10-30 Alkyl Acrylate Copolymer	0,40
Euxyl PE 9010	Phenoxyethanol, Ethylhexylglycerin	0,80
Natriumhydroxid 30%	Aqua, Sodiumhydroxide	0.27

SK-E-10120615



#### Intense Restorative Hand Cream

PENTAVITIN(1%), STIMUTEX AS (3%), VALVAN@ETouch 210 (1%) and Mixed Tocopherols 95 (0.15%)

Brings relief to dry, rough and stressed skin leaving hands feeling calm, smooth, soft and full of moisture.

INDREDIENTS	INCI NAME	% W/ W
WATER DEM.	Aqua	61.61
Edeta BD	Disodium EDTA	0.10
Euxyl PE 9010	Phenoxyethanol, Ethylhexylglycerin	1.00
Dekaben CP	Chlorphenesin	0.20
CremerGLYC Refined 99.5% Kosher	Glycerin	6.00
Olivem 1000	Cetearyl Olivate, Sorbitan Olivate	3.00
Lanette O	Cetearyl Alcohol	2.00
PALMERA A9819	Stearic Acid	1.00
Myritol 318	Caprylic/ Capric Triglyceride	12.00
Cetiol C5	Coco-caprylate	5.00
Dow Corning 200 Fluid 100 CST	Dimethicone	2.00
Mixed Tocopherols 95	Tocopherol	0.15
STIMU-TEX® AS	Argania Spinosa Kernel Oil, Tocopherol, Butyrospermum, Parkii Butter Extract, Spent Grain Wax	3.00
VALVANCE™ Touch 210	Silica	1.00
Sepinov EMT 10	Hydroxyethyl Acrylate / Sodium Acryloydimethyl Taurate Copolymer	0.80
PENTAVITIN*	Saccaride Isomerate, Aqua, Citric Acid, Sodium Citrate	1.00
Frag 49424902 CHLOE	Parfum	0.10
Natriumhydroxid 30 Losung	Aqua, Sodium Hydroxide	0.04

SK-E-101250-4





### Saccharide Isomerate From Head to Toe

Best Sellers 2018

Cracked Heel Cream



Body Wash



72-hour hydrator



Shower Gel



Moisturizing cool gel cream



Purfying Peel



Hydro Pen



Moisture Essence



Hand Therapy









Sustainable process due to the use of a sugar extracted from harvested kernel corn

Benefits of kernel corn



The fruits of corn



Used in cooking as a vegetable



The most popular cereal grains in the world.



Contain high amount of sugars



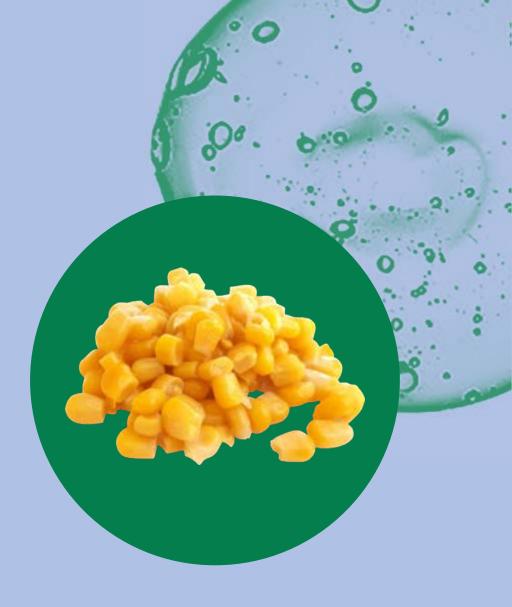
Used in breakfast cereals in the Western world as corn flakes



Gives short-term and long-term energy



Used to make pop-corn





# PENTAVITIN<sup>®</sup> (1%) le ave-on *in vivo* Study design

#### 2 WEEKS

#### Wash out phase

- 12 female subjects, 40±1 y
- Evaluated skin area: calf
- No application of cosmetics
- Standardized shower gel

#### 4 WEEKS

#### Treatment phase

- 1% aqueous PENTAVITIN
- Twice daily application
- Measurements before and after 4w treatment phase:
  - 1. Clinical grading according to Kligman scale
  - 2. Barrier disruption induced by tape stripping repair by TEWL
  - 3. Macrophotographs
  - 4. Questionnaire before and after 2 weeks & 4 weeks treatment phase

#### 6 DAYS

### Regression phase

#### No application of PENTAVITIN

 Measurements and clinical grading 72 hours & 6 days



# PENTAVITIN® (0.2%) rinse-off in vivo Study design

- 18 subjects, age 32-46, skin type II/III, 13 female and 5 male (performed by Laboratoire DERMSCAN)
- Ingredient concentrations: 0.2% PENTAVITINand 0.03% Bisabolol as leading benchmark both solved in water
- 14 days treatment with ingredient solutions at the forearm
- Skin irritation and barrier disruption induced by tape stripping
- Assessment of barrier repair by TEWL (Tewameter™ 300°) and irritation by Skin Colorimetric Measurement (Colorimeter CL400°, a-value: green-to-red spectrum)
- Measurement after 2 hours, 1, 3 and 4 days and statistical analysis



# PENTAVITIN® (0.2%) rinse-off in vivo Application method

- Standardized application (2µl/cm²) of products
- Humidify the application area with a water atomizer (to mimic showering) (1 spray every 10 seconds)
- Apply products with soft circular massage using a fingerstall for 3 minutes simulating the washing with a shampoo for example
- Standardized **rinsing** for 1 minute by using three water soaked cotton pad
- Finally a standardized drying by tapping with a paper tissue and constant pressure (3 passages)



# PENTAVITIN<sup>®</sup> (0.5%, 1%) shower gel in vivo Study design

- 4 zones of application (2/ volar forearm):
  - Baseline: no application
  - Control: base formula (BF shower gel)
  - BF\* (shower gel) + 0,5% PENTAVITIN®
  - BF\* (shower gel) + 1% PENTAVITIN®
- Application twice daily & randomized

#### Measurements:

- Skin moisture: Corneometer CM 825 (t0, 60min, 7days)
- (visible dryness, fulfilled by the subjects after 7 days)
- performance (fulfilled by the subjects after 7 days)



# PENTAVITIN<sup>®</sup> (0.5%, 1%) shower gel in vivo Study design

#### 1 WEEK

#### 1 WEEK

Regression phase

#### Wash out phase



- Volunteers apply Base formula (BF): twice daily on each volar forearm during 7 days before study start
- Base formula (BF) contains ~12% surfactants
- No application of cosmetics



twice daily during 7 days

**T0:** Baseline before first application.

T1:60 minutes after the 1st application

**T2:**7 days after regular applications



# PENTAVITIN® foam boosting in vitro

### Cream Cleanser with 0.5% **PENTAVITIN**

INGREDIENTS	INCI NAME	% W/W
WATER DEM.	Aqua	23,78
Edeta BD	Disodium Edta	0,05
Glycerin 99.5%	Glycerin	25,00
Palmera A9914	Myristic Acid	25,00
PALMAC 7018	Stearic Acid	5,50
Arlacel 165	Glyceryl Stearate, Peg-100 Stearate	3,00
PEG 1500	Peg-150	5,00
Potassium Hydroxide	Potassium Hydroxide	5,17
MIRAPOL 550 SB	Polyqaternium -7	2,00
Dehypon PK 45	Cocamidopropyl Betaine	3,00
Viatenza Olive PE8	Olive Oil Peg-8 Esters	2,00
PENTAVITIN	Saccharide Isomerate, Aqua, Citric Acid, Sodium Citrate	0,50



## 72 hours deep hydration cream with 3% PENTAVITIN®

INGREDIENTS	INCI NAME	% W/ W
AMPHISOL®K	Potassium Cetyl Phosphate	1
Cetiol SN	Cetearyl Isononanoate	3
Carbopol Ultrez 21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer	0.3
Lanette O	Cetearyl Alcohol	2
Estol 3609	Triethylhexanoin	2
Myritol 318	Caprylic/ Capric Triglyceride	3
Lipocire Na 10 Pastill	Hydrogenated Coco-Glycerides	3.5
Keltrol CG-T	Xanthan Gum	0.1
Water	Aqua dem.	ad 100
Preservative		q.s.
PENTAVITIN®	Saccharide Isomerate	3



### Rescue Calm Shampoo with 0.2% PENTAVITIN®

INGREDIENTS	INCI NAME	% W/ W
Water dem.	Aqua	ad 100
TILAMAR® Quat 2240	Polyquaternium-22	1.5
Parfum		q.s.
PARSOL® Guard	Octocrylene & Homosalate & Butyl Methoxydibenzoylmethane & Tocopherol	0.1
Texapon NSO-BZ	Sodium Laureth Sulfate	27
Miranol Ultra C32	Sodium Cocoamphoacetate	8
Purox S	Sodium Benzoate	q.s.
PENTAVITIN®	Saccharide Isomerate	0.2
Citric Acid, Anhydrous	Citric Acid	0.5
FD&C Bleu No 1W92 (0.1% Lsg)	CI 42090	0.2
Natriumchlorid	Sodium Chloride	2





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