

Panthenol for Personal Care Pro-Vitamin B5

NUTRITION · HEALTH · SUSTAINABLE LIVING

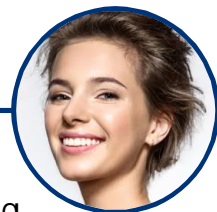


DSM

BRIGHT SCIENCE. BRIGHTER LIVING.

Panthenol in cosmetics: amazing properties

SKIN CARE



- Improves skin hydration
- Rejuvenates the skin by promoting cell stemness
- Soothes irritated skin reducing itching, redness and inflammation
- Promotes wound healing, stimulates epithelization

SUN CARE



- Keeps skin hydration after UV stress

HAIR CARE



- Long lasting moisturization
- Prevents hair damage
- Strengthens the hair
- Gives shine

BODY CARE



- Softens body skin (moisturizing effect)
- Brings relief and regenerates damaged skin (burns, scars)

NAILS CARE



- Improves hydration
- Imparts flexibility
- Protects against harmful effects of polishes and external factors

DSM cosmetic grades of Pro-Vitamin B5

Pro-Vitamin B5	Halal & Kosher		China	Vegan Friendly*	Product Code	Appearance	Application	Solubility
								
D-Panthenol D-Panthenol USP	X	X	X	X	0413852	Very viscous liquid	Skin care Body care	Water, freely ethanol, slightly glycol and insoluble fats and oil
D-Panthenol 75L D-Panthenol (min 75%) and water Stabilized with 1% D-Pantolactone	X	X	X	X	0416118	Viscous liquid	Skin care Body care	
DL-Panthenol 50L DL-Panthenol (min 50%) and water Stabilized with citric acid	X	X	X	X	0480746	Liquid	Skin care Body care Hair care Nail care	
Ethyl Panthenol D- and L- Ethyl Panthenol	X	-	X	X	0483575	Viscous liquid	Hair Care Nail Care	
Calcium D-Pantothenate D-pantothenic acid calcium salt (No cosmetic Technical Dossier available)	X	X	X		0412678	White powder		

DSM in the Sustainable Panthenol Journey

Our promise



Panthenol is produced with the highest standards

All Panthenol is produced in Scotland since 1994, a world-class DSM-owned facility

- Over 50 years of production experience of products fit for the Personal Care, Food and Pharma market
- Only dedicated equipment to Panthenol production, eliminating the potential for cross contamination
- High transparency: all our manufacturing sites are successfully audited by customers and authorities many times every year
- Continuous improvement of process and plant and full implementation of zoning concept
- Own energy production, surplus is supplied to the local grid (30'000 homes powered). 90% of waste is recycled.
- Continuous recognition: CEFIC environment responsible care award in 2015, Ethical trade social audit SMETA from Sedex completed in 2018, VIBES award (Scottish environment business awards) in 2018, Grants of 1M£ by Scottish Enterprise & visit of Energy minister in 2019



Our new DSM Science-based Targets



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Validated on march, 13th 2019

30%

**Emissions
reduction from
operations**

In **absolute** terms
by 2030 vs. 2016

28%

**Value chain
emissions
reduction**

Per ton of product
by 2030 vs. 2016

In addition

75%

**PURCHASED
RENEWABLE
ELECTRICITY**

by 2030

Leading the transition towards a low-carbon economy

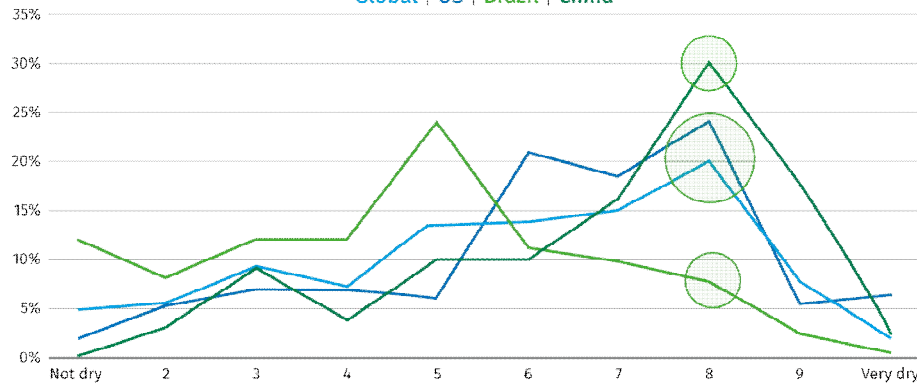
Consumer & Customer Insight



Dry skin is an unmet consumer need worldwide

How dry is your skin?

Global | US | Brazil | China



Chinese women claim to have the driest skin



65% of
Chinese
women

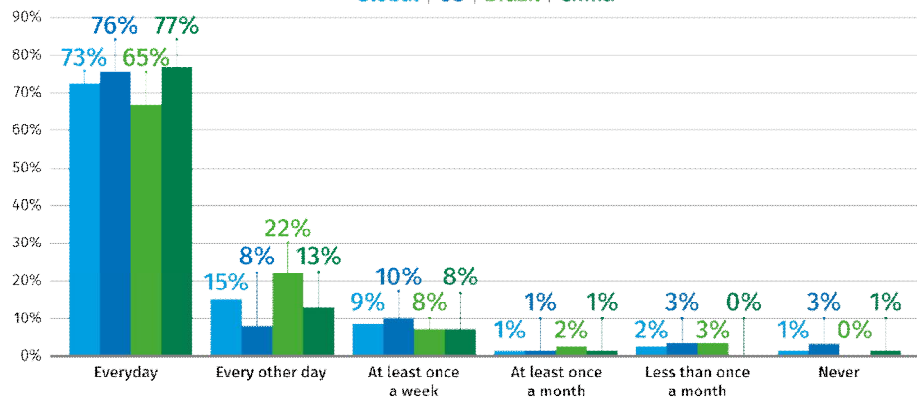


53% of
American
women

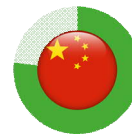
scored between 7-10 on the dry skin scale

How often do you moisturise?

Global | US | Brazil | China



73% of women in all markets use a moisturizer



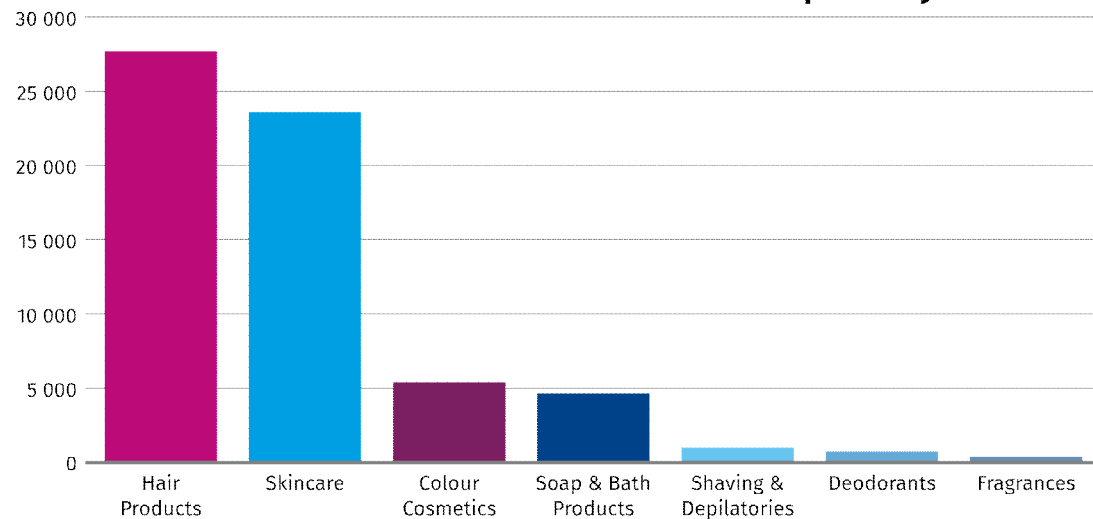
Chinese women had the
highest frequency of
daily moisturizing at 77%

Panthenol is primarily found in hair care then in skin care

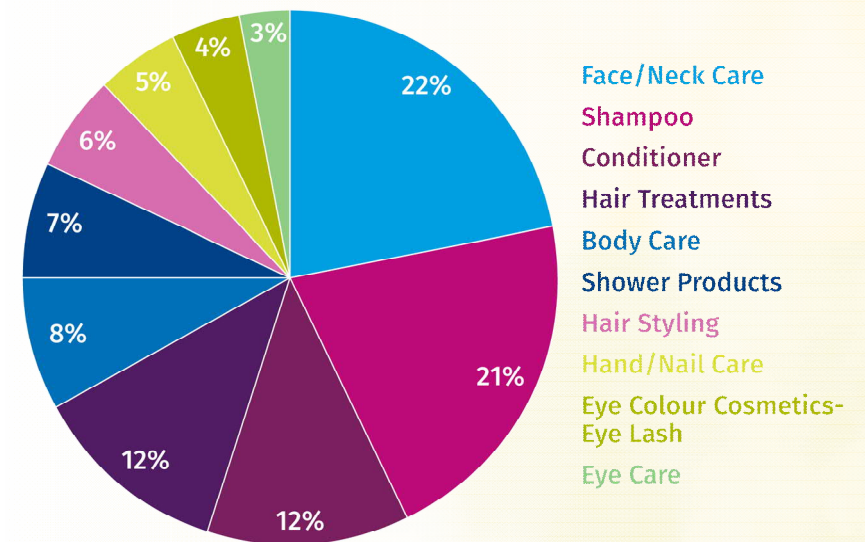
Shampoos (21%), Conditioners (12%) and Hair treatments (12%)

Face care products (22%), Body care products (8%)

Top categories of products where Panthenol has been launched over the past 5 years



Distribution (%) of launches with Panthenol over the past 5 years by sub-categories



Scientific Evidence – Panthenol

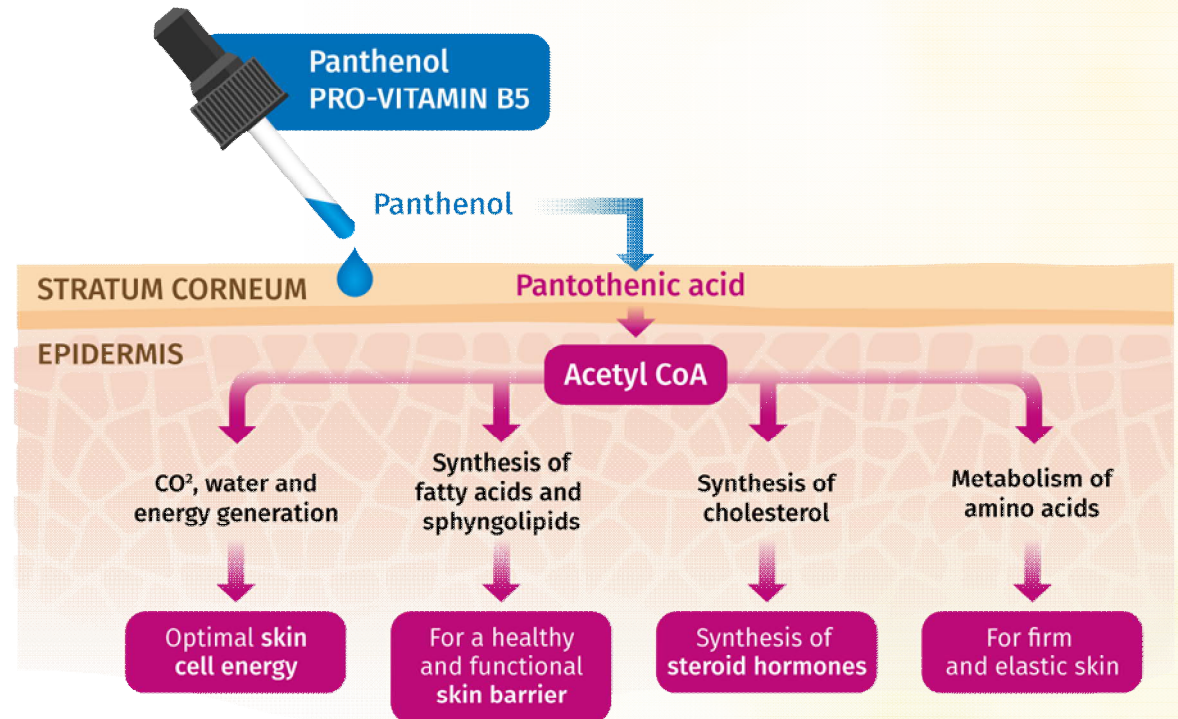
Mode of action & efficacy



Panthenol is essential precursor in key cellular pathways

Panthenol is the pro-vitamin B5

- Panthenol is well absorbed into the skin and quickly converted into Pantothenic acid by oxidation
- Pantothenic acid is distributed into the cells and is converted to Acetyl Coenzyme-A (Acetyl CoA) in the cells of the epidermis
- Human beings require Vitamin B5 to synthesize Acetyl CoA which is an essential mediator to many biochemical reactions that sustain life (maintenance and repair of all cells):
 - breaks down fats, carbohydrates and proteins for carbon dioxide, water, and energy generation
 - synthesis of fatty acids and sphingolipids, for stratum corneum lipid layers and cell membrane integrity & fluidity
 - produces cholesterol for synthesis of skin steroids (sex and stress hormones)



Skin homeostasis – starts at the basal layer origin



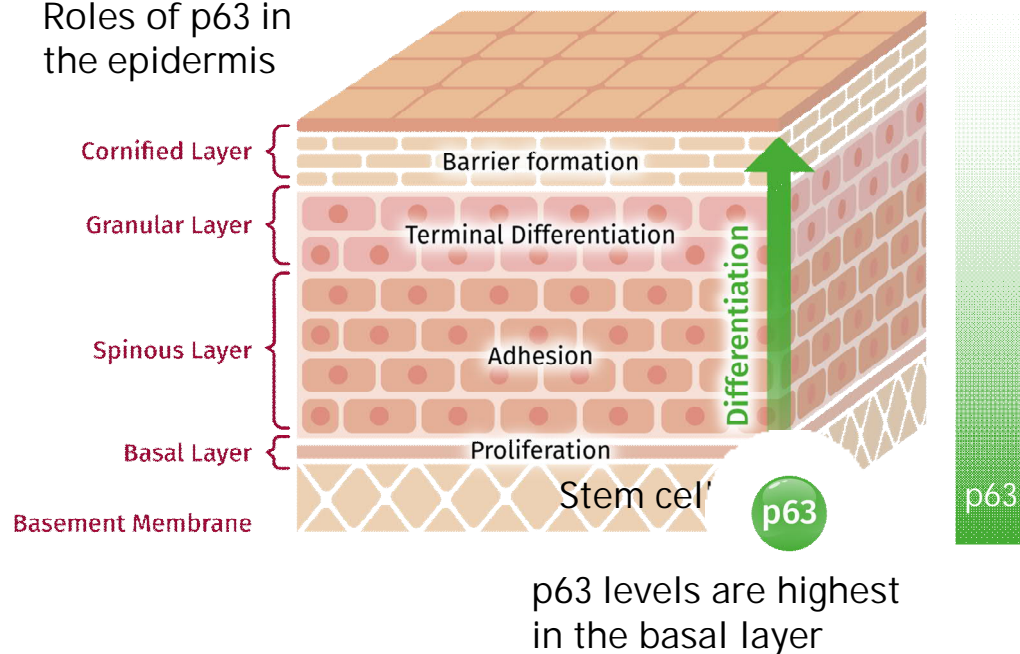
NEW

Protein p63, a key stem cell regulator of the epidermis, provides a vital basal layer, keeping healthy skin homeostasis

DSM Nutritional Products

own study

Roles of p63 in the epidermis



p63 preserves stem cell self renewal (stemness) and cell proliferation, and maintains the balance with cell differentiation for a healthy skin.
p63 decreased with age

State of the art genetic and epigenetic methods demonstrate that Panthenol promotes epidermal rejuvenation and prolongs ability to renew itself

Panthenol can do.... a myriad of things!!!



Skin homeostasis

- Regenerates healthy skin maintaining cell stemness



CORNEOCARE™: Moisturization, Skin barrier

- Improves hydration and reduces transepidermal water loss maintaining skin softness and elasticity



Sensitive skin

- Improvement symptoms of sensitive skin: dryness, roughness, redness, pruritus



Wound-Healing

- Accelerates wound healing (fibroblast proliferation and migration)



Hair Care

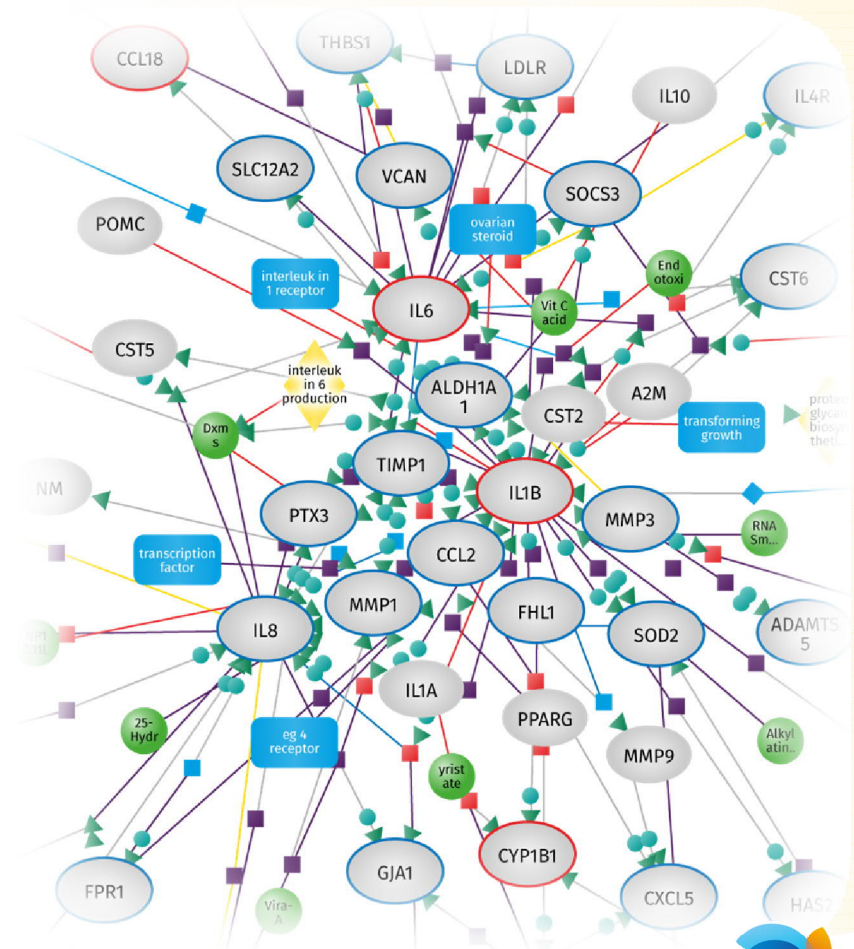
- Moisturizes hair, strengthens damaged hair and reduces split ends



Nail Care

- Reinforces the nails

Biological pathway of gene expression profiles modulated by D-Panthenol



Applications with Panthenol

One vitamin...many applications!

- Skin care formulations
 - also is added for improved percutaneous absorption of other active ingredients (carrier function)
- Cosmetics for sensitive skin & baby care
- Daily care of scar, burns, tattoos
- Cleansing products
- Sun and After-sun formulations
- Sports creams (for injuries and venous diseases)
- Hair care formulations (shampoo, conditioner,)
- Hair styling products (hair spray, gel, mousse)
- Nail & hand creams, nail polish



DISCLAIMER

Copyright © 2019 DSM Nutritional Products, 4002 Basel, Switzerland.

www.dsm.com/personal-care. All rights reserved.

Although DSM has used diligent care to ensure that the information provided herein is accurate and up to date, DSM makes no representation or warranty of the accuracy, reliability, or completeness of the information. This presentation only contains scientific and technical information for business to business use. Country- or region-specific information should also be considered when labeling or advertising to final consumers. This publication does not constitute or provide scientific or medical advice, diagnosis, or treatment and is distributed without warranty of any kind, either expressly or implied. In no event shall DSM be liable for any damages arising from the reader's reliance upon, or use of, these materials. The reader shall be solely responsible for any interpretation or use of the material contained herein. The content of this document is subject to change without further notice. Please contact your local DSM representative for more details. All trademarks listed in this brochure are either registered trademarks or trademarks of DSM in The Netherlands and/or other countries unless explicitly otherwise stated.

DISCLAIMER FORMULATION GUIDELINE

"This information is for illustration purposes only and based upon our current knowledge and experience at the time of printing. We do not make any representation or warranty of any kind, express or implied, including merchantability or fitness for a particular use, with respect to such information or its application. Use of this information is at your discretion and risk. Nothing herein relieves you from carrying out your own suitability determinations and tests. You are responsible for observing all laws and regulations relevant to your products, uses or processes. We do not assume any liability in connection with your product and its use. The foregoing information and suggestions are also provided without warranty of non-infringement as to the intellectual property rights of third parties, and shall not be construed as any inducement to infringe the rights of third parties.")

