

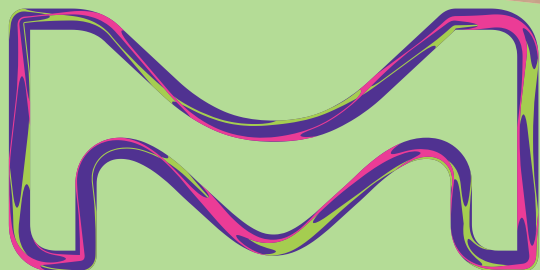


 **ADE TO INVIGORATE**

RonaCare® Biotin Plus

The „Beauty Vitamin“

Performance Materials
Surface Solutions – Cosmetic Actives



INTERNAL INFORMATION – DO NOT DISTRIBUTE

MERCK

RonaCare® Biotin Plus

Benefits at a glance



**Power of
vitamins to
improve skin,
hair and nail
conditions**

**RonaCare®
Biotin Plus**
for
cosmetic
applications

**Improved
solubility
of biotin**

**70-fold
increased
solubility**

**Improved
bioavailability
of biotin**

**Stable
and easy
to handle**

**Penetration
into Stratum
Corneum
increased**

What is RonaCare® Biotin Plus?

Technical details

RONACARE® BIOTIN PLUS – A special synergistic combination consisting of biotin as well as a buffer system and penetration enhancer – **optimized for topical applications**

| | |
|--------------------------------|---|
| INCI: | Urea, Disodium Phosphate, Biotin, Citric Acid |
| Active: | D(+)-Biotin: ~ 11.5 % |
| Appearance: | White crystalline powder |
| Function: | Skin & hair conditioning |
| Recommended use level: | 0.5 - 2 % |
| Formulation guidelines: | Solubility: water soluble (12 % at 25 °C) Can be directly added to the aqueous phase and heated as required. |



RonaCare® Biotin Plus

Known benefits of biotin

Biotin is a water-soluble B vitamin known as Vitamin B7 or **Vitamin H**

biotin for hair care

- Enhancement of hair quality
- Decrease of split ends and “fly-away” hair”
- Promotion of hair growth, diminished hair loss

biotin for skin care

- Topical treatment of thin, sallow, dry and scaly skin
- Anti-age properties: anti-wrinkle effect

biotin for nail care

- Improves TEWL of fingernails, thickens nails
- Works against brittle fingernails



Source: Mintel
„biotin“ as ingredient

Market
products



Jan 2013 – Jun 2018
4466
new product launches

Market analysis – Products with „biotin“

Main applications

TOP 3

Shampoo

Face care

Hair treatments

6.6 %

skin
36.1 %

Hair
53.8 %

color cosmetics

Nail lacquers 2 %

Eye lash 1 %

Foundations 1 %



skin care

Face care 18 %

Hand & Nail care 7 %

Eye care 4 %



hair products

Shampoo 23 %

Hair treatments 14 %

Conditioner 13 %





Hair & scalp applications

MERCK

Market analysis – „biotin“ in **HAIR CARE**

Main claims & Top 10 companies and countries

1 Claims

Highlight: Vitamin

| Claims in skin care products containing biotin | % products |
|--|------------|
| Vitamin/Mineral Fortified | 64.8 % |
| Moisturising / Hydrating | 36.5 % |
| Damaged Hair | 33.4 % |
| Anti-Hairloss | 13.2 % |

2 Companies

Main player: Unilever

| Company | Nb |
|------------------------|-----|
| Unilever | 306 |
| Schwarzkopf & Henkel | 177 |
| High Ridge Brands | 105 |
| Marc Anthony Cosmetics | 93 |
| Laboratorios Recamier | 57 |
| Vogue International | 52 |
| Henkel | 40 |
| L'Oréal | 33 |
| Beccair | 33 |
| Natura Siberica | 32 |

3 Countries

Main market: USA

| Country | Nb |
|----------|-----|
| USA | 321 |
| Brazil | 222 |
| UK | 111 |
| France | 102 |
| Canada | 99 |
| Colombia | 95 |
| Mexico | 92 |
| Thailand | 77 |
| Peru | 70 |
| Germany | 62 |

RonaCare® Biotin Plus

HAIR CARE products examples

Shampoo

Colombia



Belleza Express – Ultra Nutrit Complex BiotinMax Shampoo

- features a formula with a **Vitamin complex***, designed specially to **stimulate hair growth and strengthen weak, brittle hair**. ...it makes hair more elastic and resistant; the root stronger and healthier; and helps to avoid hair fall.

*Panthenol, Niacinamide, Biotin

Anti-hairloss

Poland



Delia Cosmetics – Cameleo SOS for Hair Intensive Treatment Ampoules Against Hair Loss

- The innovative formula is based on the synergy of three active ingredients: arginine, to improve scalps' microcirculation...; **biotin to improve hair's overall condition, increase its elasticity, strengthen structure and reduce hair loss**; and Capixyl....

Conditioner

Thailand



Unilever – TRESemmé Expert Selection Smooth & Shine Smooth & Nourish Conditioner

- **Enriched with vitamin H** and silk proteins, this formula is claimed to **intensely moisturise hair to smooth flyaways**, for hair that feels soft, smooth and silky.

Biotin efficacy for **HAIR & SCALP**

Topical use – data

Hair quality

- A **topical biotin** lotion (0.003% and 0.01%) could **enhance the quality of scalp hair** in panelists with thin and brittle hair:
 - significant increase of tensile strength,
 - decrease of shed hair, split ends and fly-away hair

(Noser & Bimczok, 1996: 6 month study, 60 volunteers)



Expected overall benefits of biotin leveraged by improved bioavailability of biotin in RonaCare® Biotin Plus

Barrier function

- **RonaCare® Biotin Plus** (1%) significantly **reduced the transepidermal water loss TEWL** on forearms after 2 and 4 weeks treatment

(Merck study: 22 volunteers)



Skin barrier benefits expected to be transferrable to scalp



skin care applications

MERCK

Market analysis – „biotin“ in SKIN CARE

Main claims & Top 10 companies and countries

1 Claims

Highlight: Moisturizing

| Claims in skin care products containing biotin | % products |
|--|------------|
| Moisturising / Hydrating | 71.2 % |
| Time/Speed | 53.7 % |
| Vitamin/Mineral Fortified | 48.3 % |
| Anti-Ageing | 41.5 % |

2 Companies

Main player: Bath & Body Works

| Company | Nb |
|--------------------------|-----|
| Bath & Body Works | 206 |
| Laboratoires Filorga | 99 |
| Parfums Christian Dior | 49 |
| Clinique | 42 |
| Avon | 39 |
| Boots | 30 |
| Clarins | 29 |
| Laboratorios Genesse | 28 |
| Coty | 26 |
| Victoria's Secret Beauty | 26 |

3 Countries

Main market: USA

| Country | Nb |
|----------|-----|
| USA | 339 |
| France | 194 |
| UK | 183 |
| Japan | 121 |
| China | 115 |
| Germany | 107 |
| Canada | 55 |
| Thailand | 46 |
| Poland | 41 |
| Spain | 35 |

RonaCare® Biotin Plus

SKIN CARE products examples

Face

USA



Laboratoires Filorga – Hydra-Hyal Intensive Hydrating Plumping Concentrate

- The anti-aging range of products is formulated, a poly-revitalizing complex of active ingredients (vitamins, coenzymes, amino acids);....

Hand & Nail

Germany



CosTrade – Trosani Perfect Nails Super Nail Cream

- It is formulated with biotin, hyaluronic acid, and vitamins A and C, said to provide intensive and activating nail care.

Eye

Poland



Oceanic – Long 4 Lashes Two-Phase Conditioning Eye Make-Up Remover with Biotin

- The liquid formula features: biotin, to stimulate eyelash growth; hyaluronic acid, to intensively moisturise and elasticise; provitamin B5 and allantoin, to soothe sensitive skin in the eye contour area and relieve irritation;...

Biotin efficacy for **SKIN**

Topical use – data

skin penetration

- Several studies show that biotin is able to penetrate into human skin to some extent:
- Examples of investigated parameters:
 - Influence of **emulsion system** on biotin liberation into skin (Wagner et al, 1997)
 - Use of **modulators** for penetration enhancement into the living layers of the skin (Huschka, 1998)
 - Biotin penetration in **normal vs. dermatitis-affected skin** (Makino et al, 1998)
 - Biotin **transport** into human keratinocytes (Grafe et al, 2003)

Anti-wrinkle

- A **topical application of biotin** (0.25% in w/o cream) could significantly **reduce the wrinkle score** in the skin of elderly persons (forearm and dorsal hand skin)
- The placebo control induced no significant changes
(Gilli & Floersheim, 1995: 12 week study, 30 volunteers, mean age 76.7 years)



Proven skin care benefits of topical biotin leveraged by improved bioavailability of biotin in RonaCare® Biotin Plus

RonaCare® Biotin Plus

Efficacy at a glance

Bioavailability

- **Biotin concentration** in the stratum corneum of human skin can be **highly increased** in the presence of urea
(Huschka: franz diffusion cell, dissertation 1998)



RonaCare® Biotin Plus represents a synergistic combination for improved bioavailability of biotin

Strengthen & Care

- **RonaCare® Biotin Plus** (0.5% and 1% in o/w emulsion)
 - reduced the **TEWL** (trans-epidermal water loss)
 - significantly reduced **skin roughness** after 2 and 4 weeks treatment on forearms
(Merck study: 22 volunteers)



Improved skin barrier integrity and skin smoothing properties

Anti-wrinkle

- **RonaCare® Biotin Plus** (1% in o/w emulsion) **reduced facial eye wrinkles by 11%** after 4 weeks treatment
(Merck study: 5 volunteers)



RonaCare® Biotin Plus shows anti-wrinkle efficacy at lower biotin effective use level

RonaCare® Biotin Plus

Cosmetic applications



Biotin & RonaCare® Biotin Plus – Mode of action and efficacy in cosmetics

Literature & study references

1

General

Skin penetration: Wagner, C. et al. (1997): Vehicle-Dependent Biotin Liberation and Penetration into Human Skin. *Skin Pharmacol* 10, 34–39; Huschka, C. (1998): Untersuchungen zur Wirkung von Biotin auf humane Keratinozyten und zur Modulation der Biotinpenetration in humane Haut. *Dissertation, Martin-Luther U, Halle*; Makino, Y. et al. (1999): Percutaneous Absorption of Biotin in Healthy Subjects and in Atopic Dermatitis Patients. *J Nutr Sci Vit* 45, 347-352; Grafe, F. et al. (2003): Transport of Biotin in Human Keratinocytes. *J Invest Dermatol* 120, 428-433

2

Hair

Hair structure: Noser, F. & Bimczok, R. (1996): Biotin (Vitamin H) – An active ingredient for improving the quality of hair keratin. *SOFW* 122, 511-515.

Hairloss: Floersheim, GL. (1992): An Examination of the Effect of Biotin on Alopecia and Hair Quality. *H+G* 67, 246-255; Ablon, G. (2012): A Double-blind, Placebo-controlled Study Evaluating the Efficacy of an Oral Supplement in Women with Self-perceived Thinning Hair. *J Clin Aesthet Dermatol.* 5, 8–34

3

Skin – Biotin

Anti-wrinkle: Gilli, L. & Floersheim, GL. (1995): Influence of topically applied biotin on fine wrinkles in the skin of elderly patients. *H+G* 70, 419-425.

Skin – RonaCare® Biotin Plus Merck studies

Anti-wrinkle: Reduction of eye wrinkle by 11% (4w treatment, 1% RonaCare® Biotin Plus)

Skin smoothing: Significant reduction of skin roughness (after 2w and 4w, with 0.5% & 1% RonaCare® Biotin Plus)

Improved barrier: Significant reduction of TEWL (2w and 4w treatment, 1% RonaCare® Biotin Plus)

4

Nails

Brittle nails: Colombo, V.E. et al. (1990): Treatment of brittle fingernails and onychoschizia with biotin: Scanning electron microscopy. *J Am Acad Dermatol.* 23, 1127–1132; Hochman LG. (1993): Brittle nails: response to daily biotin supplementation. *Cutis* 51, 303-305; Lipner, SR. (2018): Biotin for the treatment of nail disease: what is the evidence? *J Dermatol Treat* 29, 411-414.

RonaCare® Biotin Plus

The “Beauty Vitamin”



1

Broad application options for biotin and its improved bioavailable form **RonaCare® Biotin Plus**

2

SKIN CARE

Proven benefits: improved skin barrier integrity, skin smoothing, reduction of wrinkles

3

HAIR CARE

Wide use of biotin in hair products even though little topical efficacy data are available.
Vitamin claim is dominant!

Expected benefits leveraged by improved bioavailability of biotin in RonaCare® Biotin Plus

CONTACT DATA

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