

Folates, what about availability in Skin ?

Local application as a cream

Martin Ulmann / Gerd Wiesler

August 2021

Aprofol AG

Folate Deficiencies, harmful for the Skin



With a prevalence of 2-5% (in children and young adults approximately 10%), atopic eczema is one of the most commonly seen dermatoses.

World Allergy Organization, Eczema Pathophysiology, 2013

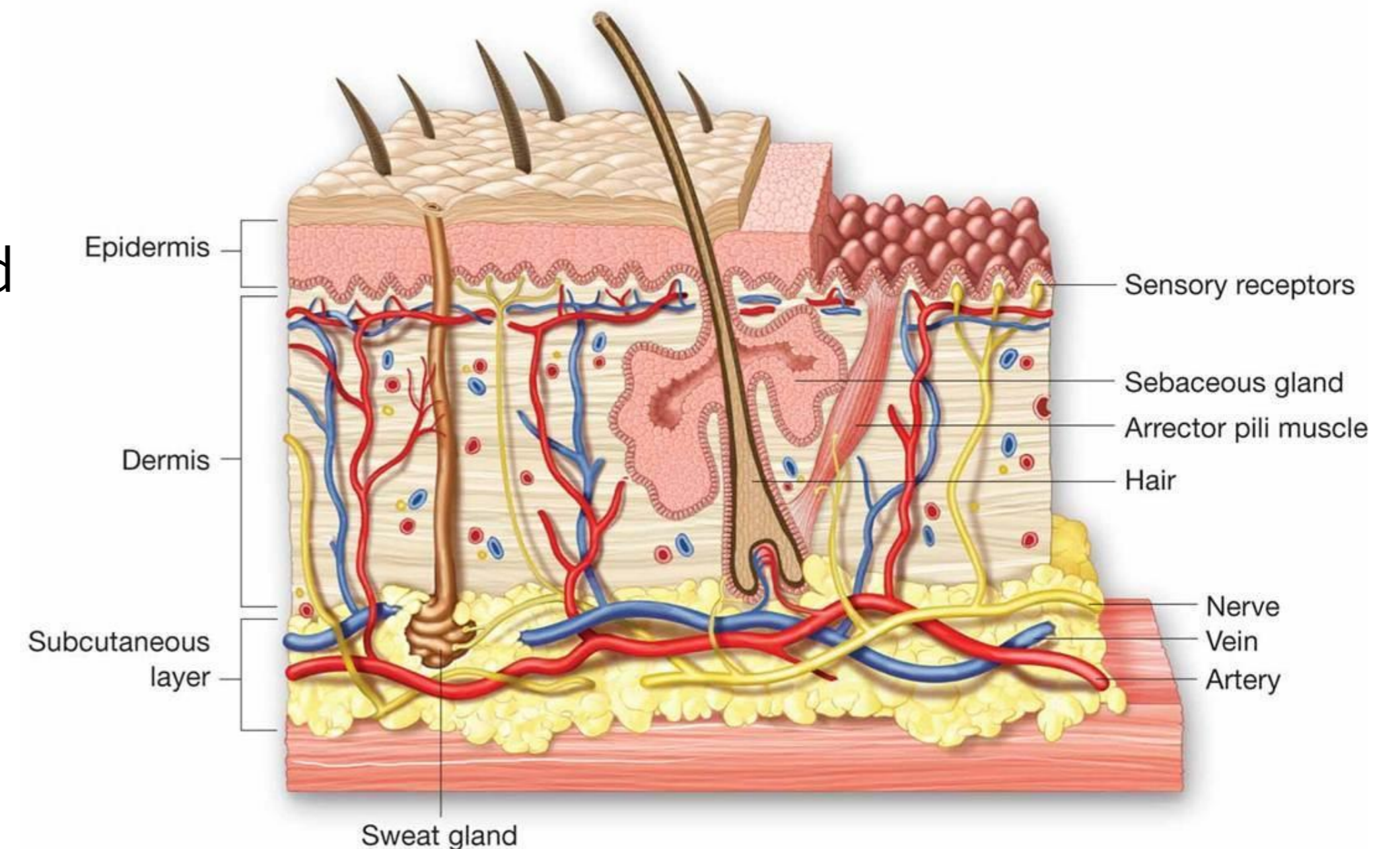
125 million people worldwide—2 to 3 percent of the total population—have psoriasis, according to the World Psoriasis Day consortium.

National Psoriasis Foundation, 2020

There are potential links between folate deficiency and skin diseases, e.g. psoriasis.

Folate supply to the skin is incompletely understood.

What about a systemic and a local treatment approach?

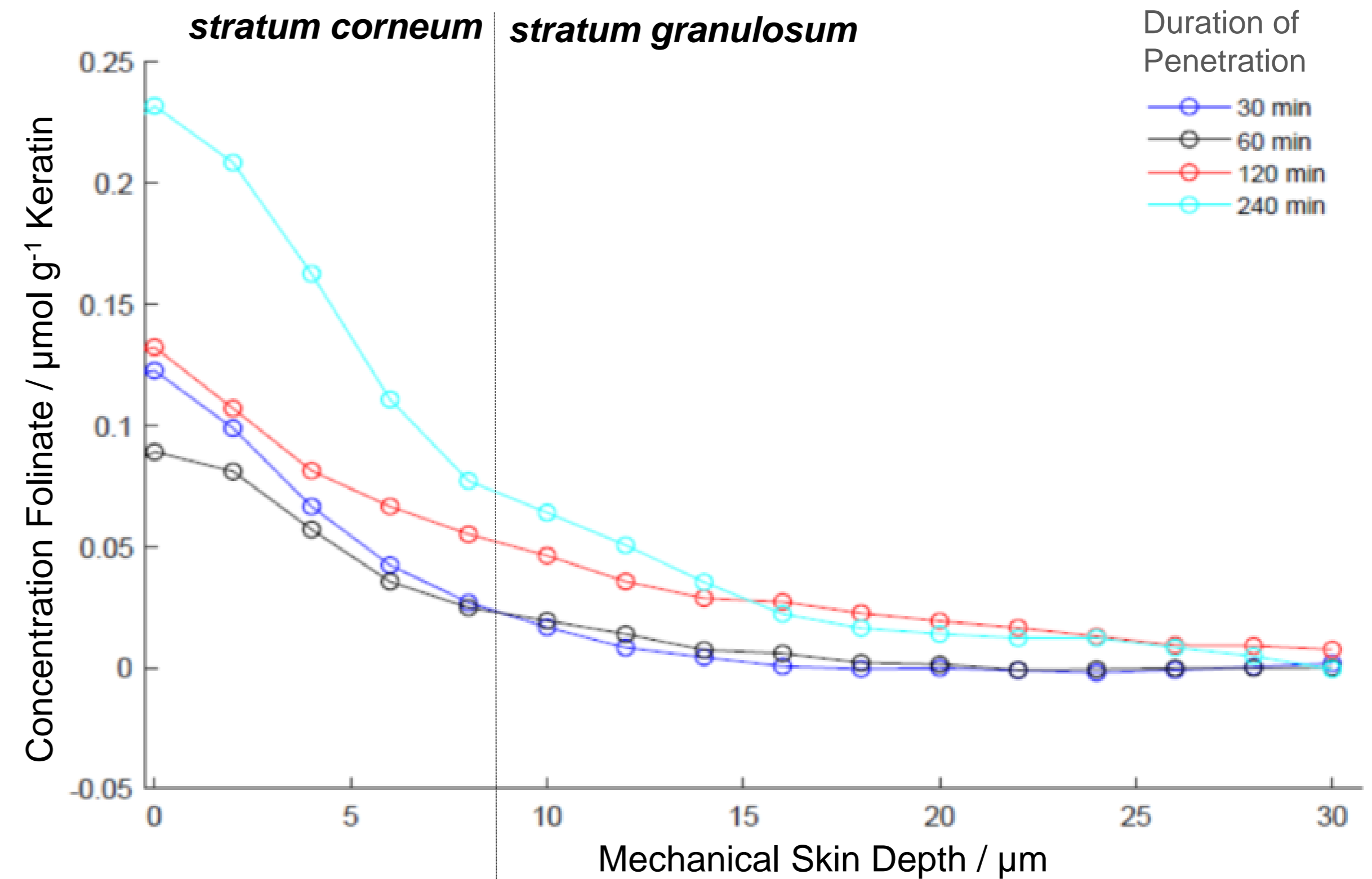


Proof of Concept

Skin penetration by Raman Spectroscopy



- For skin penetration of reduced folate solution
- Main barrier is the stratum corneum
- Penetration into stratum granulosum allows distribution in the body
- Distribution beyond stratum granulosum can not be monitored by Raman



Corresponding Skin Layers

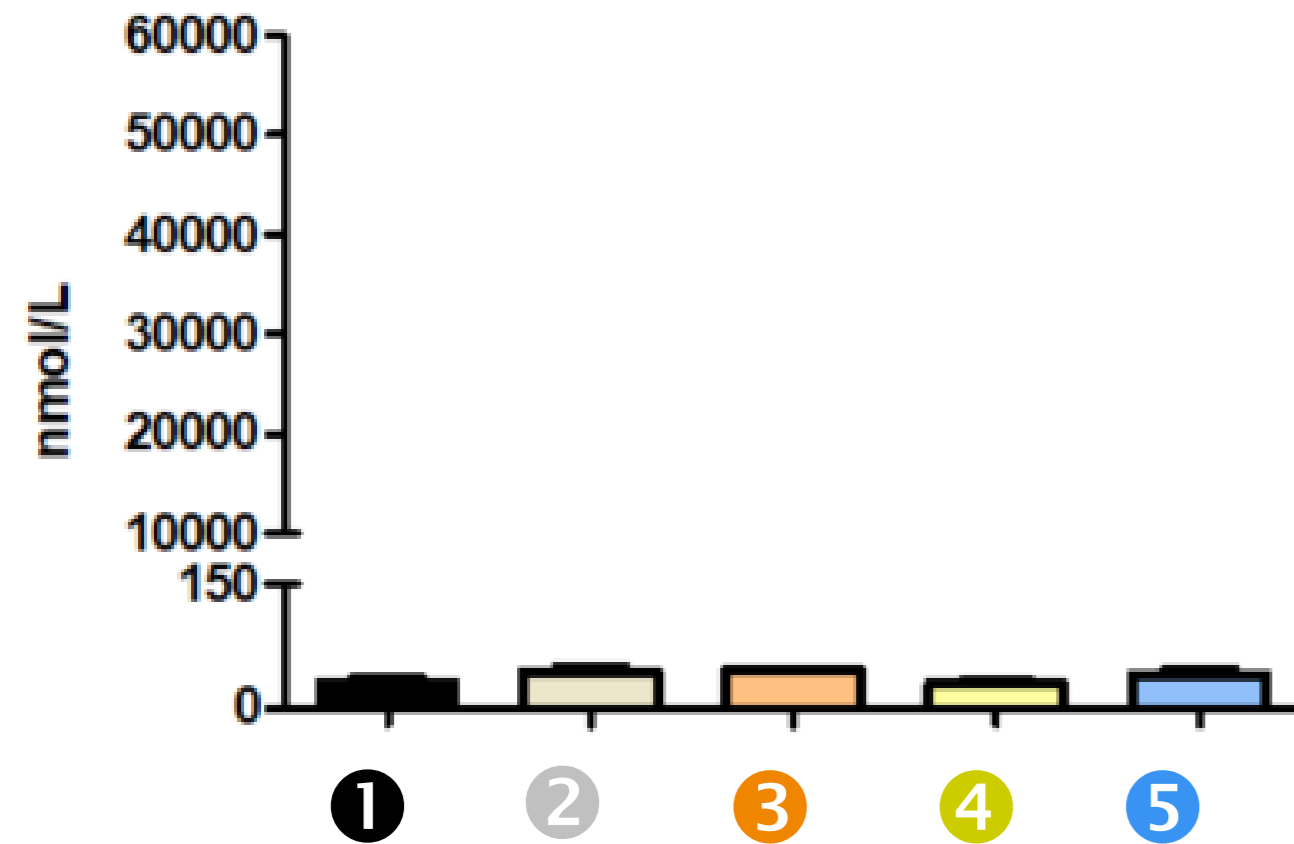
Proprietary reduced folate salts

Penetration in a reconstructed skin model

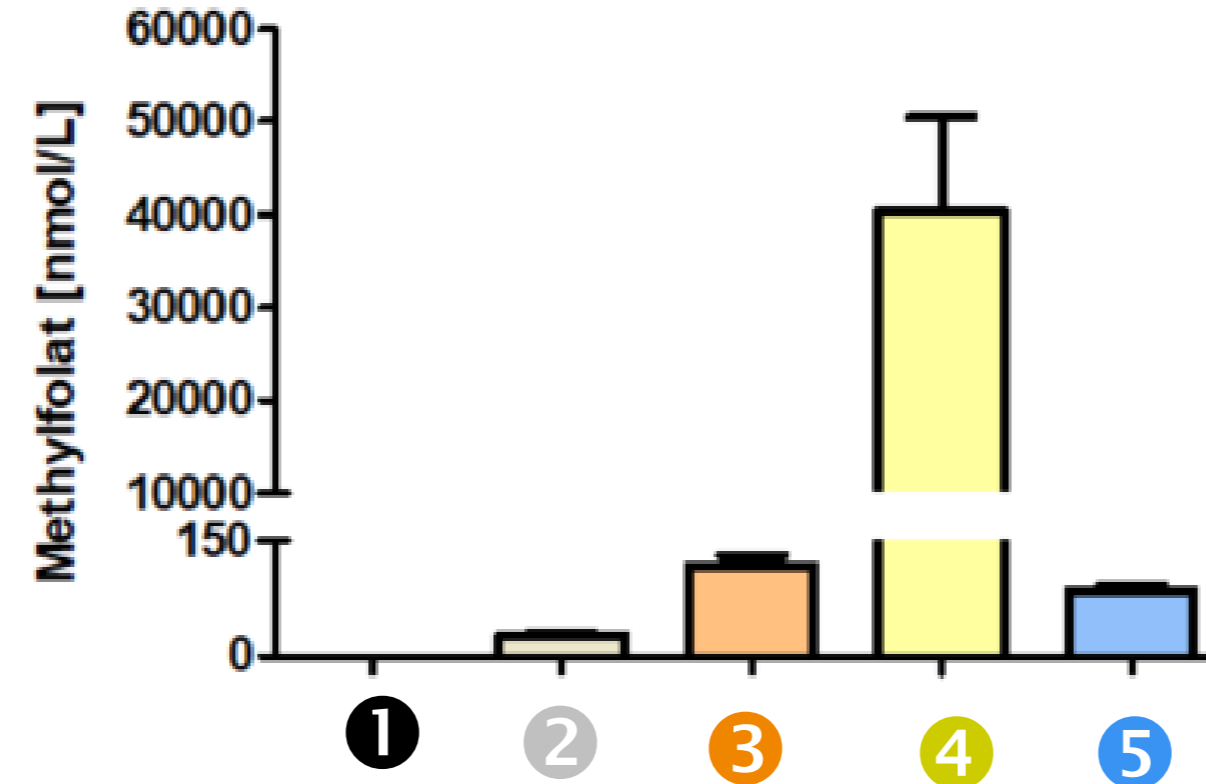


Bioavailability after 8 h, in nmol/l of penetrated substance

Folic acid determination

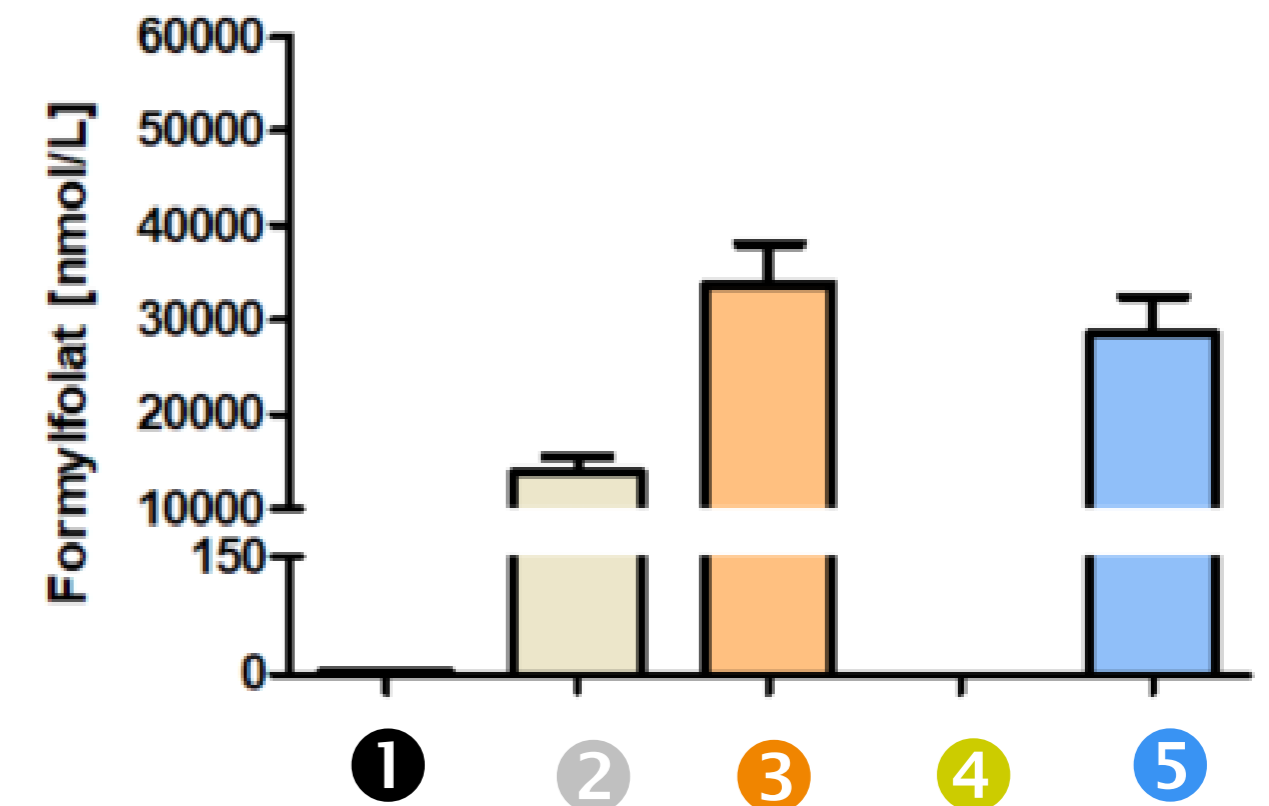


L-MTHF determination



Metabolic conversion
of L-FTHF to L-MTHF!

L-FTHF determination

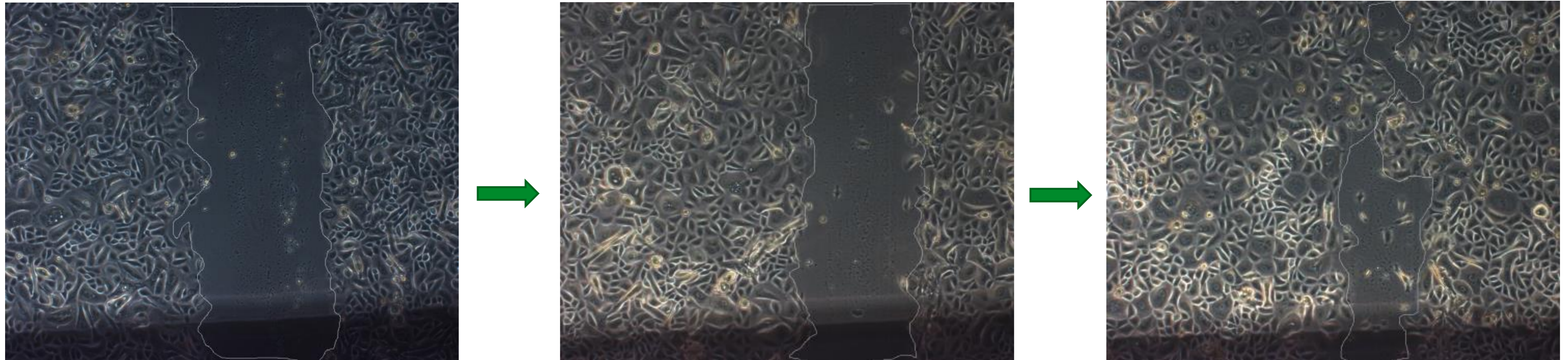


- Legend:
- 1 Control H₂O
 - 2 Folate Cream
 - 3 L-FTHF Ca solution
 - 4 L-MTHF di choline solution
 - 5 L-FTHF di arginine solution

Determination of each compartment
under the skin with HPLC-MS

L-5-MTHF di Choline

Wound Healing in a keratinocyte model



Scratch Assay: L-MTHF 0.1% from left to 0h, after 6h and after 24h. The drawn line marks the free wound area for the measuring program



Action: Local Treatment with a Folate Cream

Topical treatment for people with inflammatory skin disorders

- The Hcy-value is especially elevated locally in the affected skin (Refsum³).
- The Folate-deficiency is therefore most severe in the diseased tissues.
- Without actions the inflammation goes on creating more ROS / RNS and chronic harm.
- **Local administration of Folates may correct the deficiency efficiently at «the right place».**
- **Case studies with skin-patients showed encouraging results. A treatment trial with patients with skin disorders is proposed.**

The topical approach



Corrects local deficiencies present in patients with skin disorders by scavenging ROS / RNS.

Our Results: Surprising Cases in Human Beings

Confirmed in skin models



Psoriasis

- 40 years chronic elbow inflammation, itchiness
- Improvement of the disease after few days of folate treatment
- No reoccurrence



Atopic dermatitis

- Child with growing dermatitis symptoms all over the body
- Cortison treatment with little impact
- Disease disappeared after 3 weeks of folate treatment



Folliculitis decalvans

- Ongoing open wound, hair loss, inflammation
- Improvement within days
- No reoccurrence!



UV-radiation damage

- 50 years handicap due to epidermis/dermis damage despite multiple treatment approaches
- Remarkable wound healing after applying folate cream



Further Information



If you are interested in the upcoming publication please let us know.

For further information please visit

www.aprofol.com

Aprofol AG

CH-9050 Appenzell

info@aprofol.com

or contact us



Martin Ulmann

Founder & CEO

martin.ulmann@aprofol.com



Gerd Wiesler

Head of Operations

gerd.wiesler@aprofol.com