



*Dermatite atopica: come correggere la
funzione barriera della cute*

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Agenda

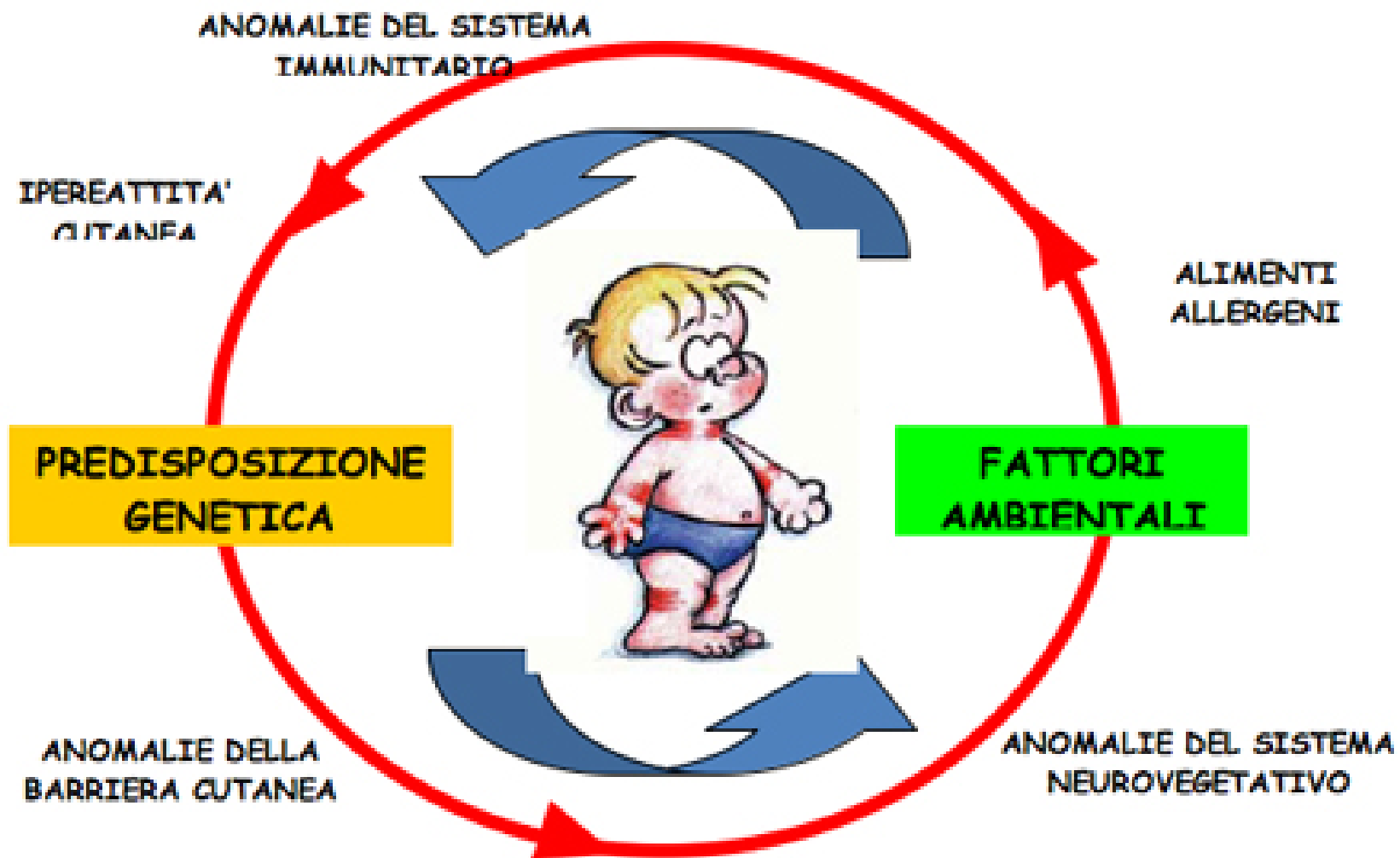
- Xerosis and Atopic Dermatitis
- Pathogenesis of AD
- Clinical manifestations and Treatment
- Study design
- Clinical cases
- Results
- To conclude.....

Xerosis

- The term **xerosis** is used to describe dryness in the epidermal layers of the skin.
- **Common condition**, which can result in scaling, flaking and itching.
- **Risk factors for xerosis** include sunlight, friction, low humidity, and use of soaps.
- Xerosis also presents **as a symptom** of cutaneous conditions such as psoriasis, atopic dermatitis and ichthyosis.

Atopic Dermatitis

- **Atopic dermatitis (AD)**, or atopic eczema, is a chronic skin disorder with a high prevalence in children.
- AD tends to resolve by 2 years of age, but in 60% of them some symptoms will continue into adulthood.
- AD has a **complex pathogenesis** but there is increased evidence that a genetically impaired skin barrier plays a primary role in its development.



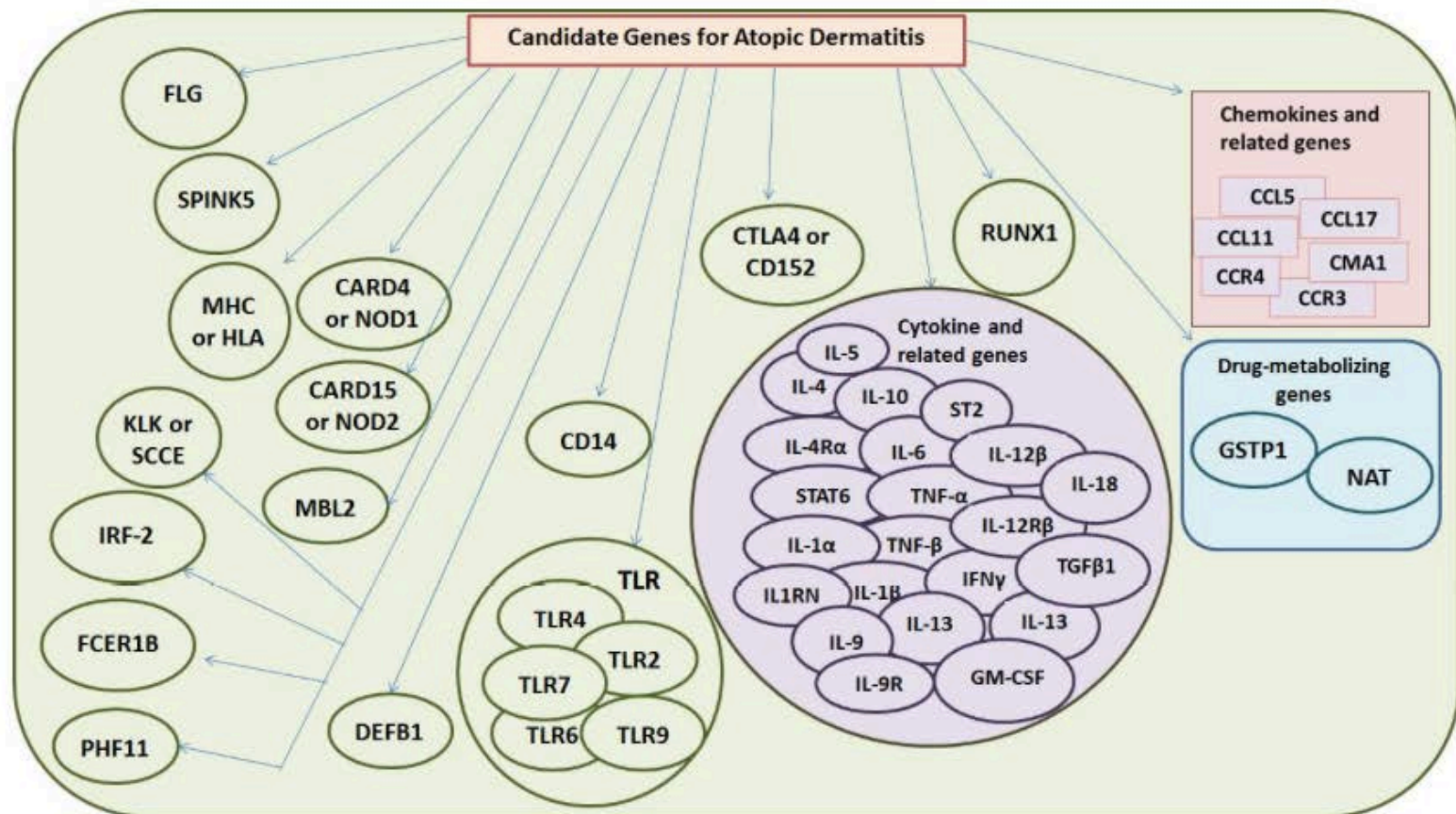
Pathogenesis

- Mutations in the **filaggrin gene** are strongly associated with AD (42% of FLG heterozygotes develop the disease)
- The protein filaggrin is important for the correct formation of the **stratum corneum barrier** and filaggrin deficiency produces increased barrier permeability and other stratum corneum abnormalities.
- A reduced **content of ceramides** in the stratum corneum has also been shown in both lesional and nonlesional skin.

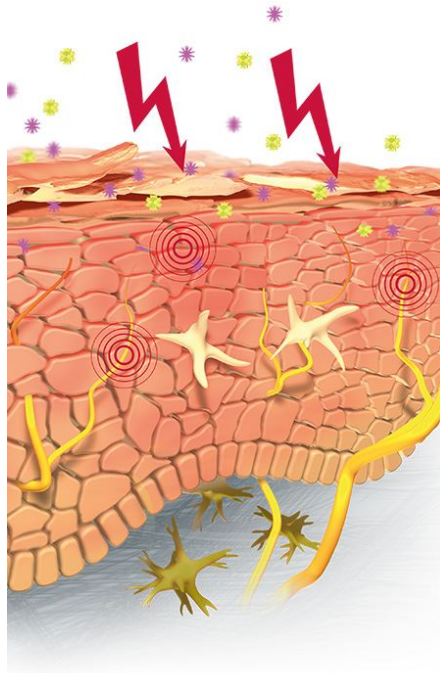
Identified candidate genes in Atopic dermatitis

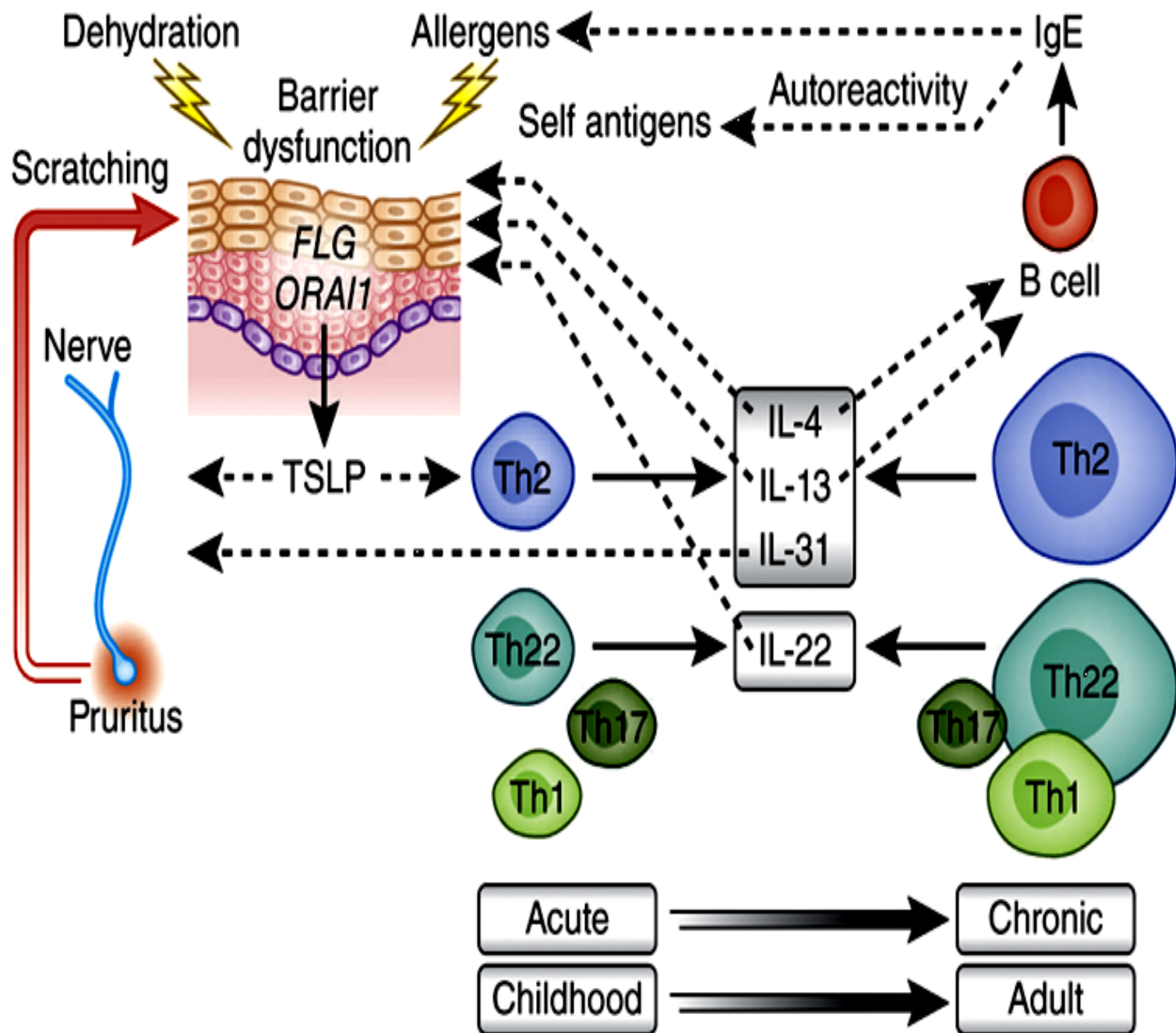
Hani A. Al-Shobaili et al

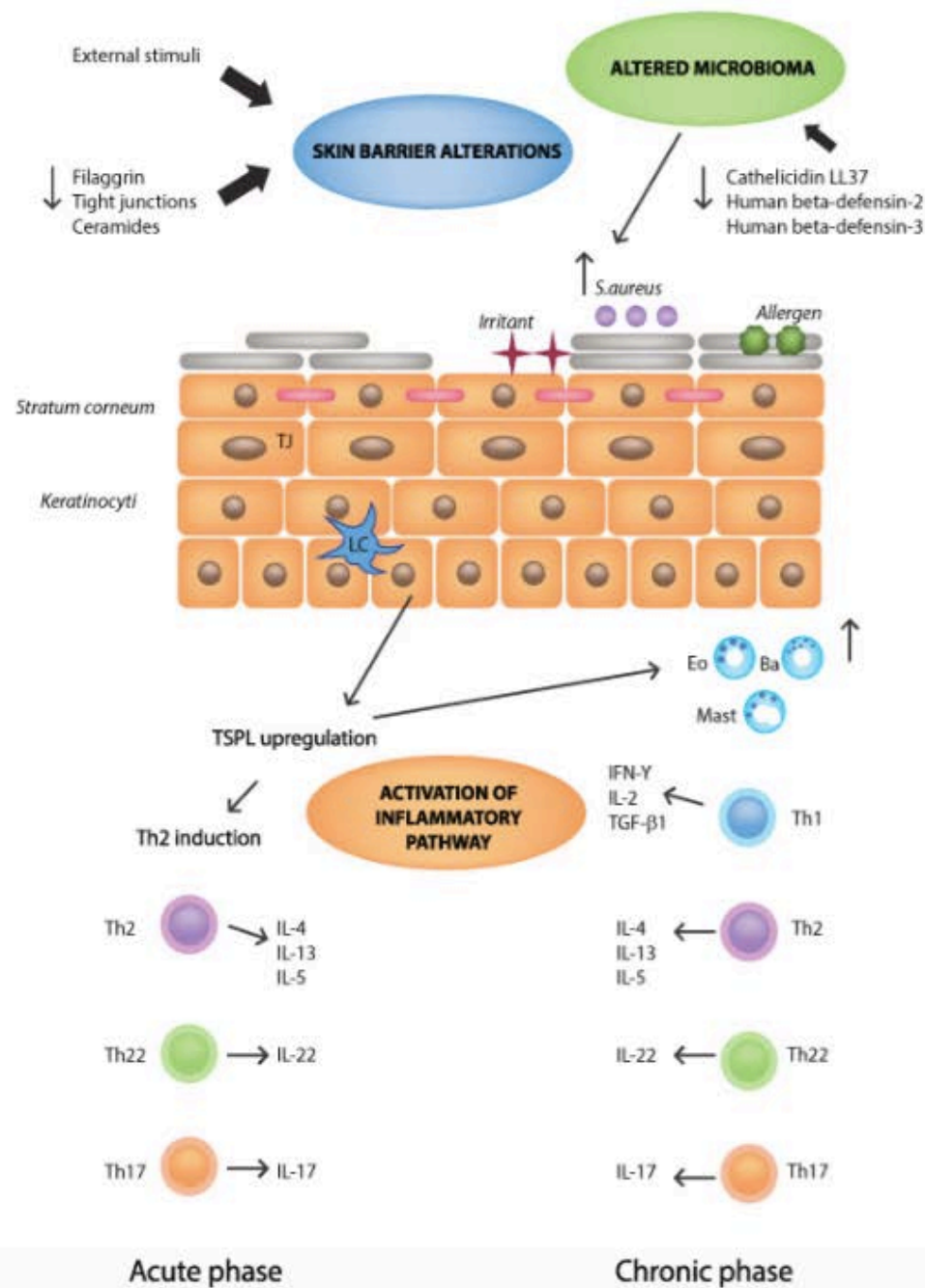
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- The defective barrier allows penetration of irritants and antigens, which lead to the release of cytokines, causing secondary skin inflammation.
- Skin inflammation can also derive in part from decrease stratum corneum hydration, xerosis.







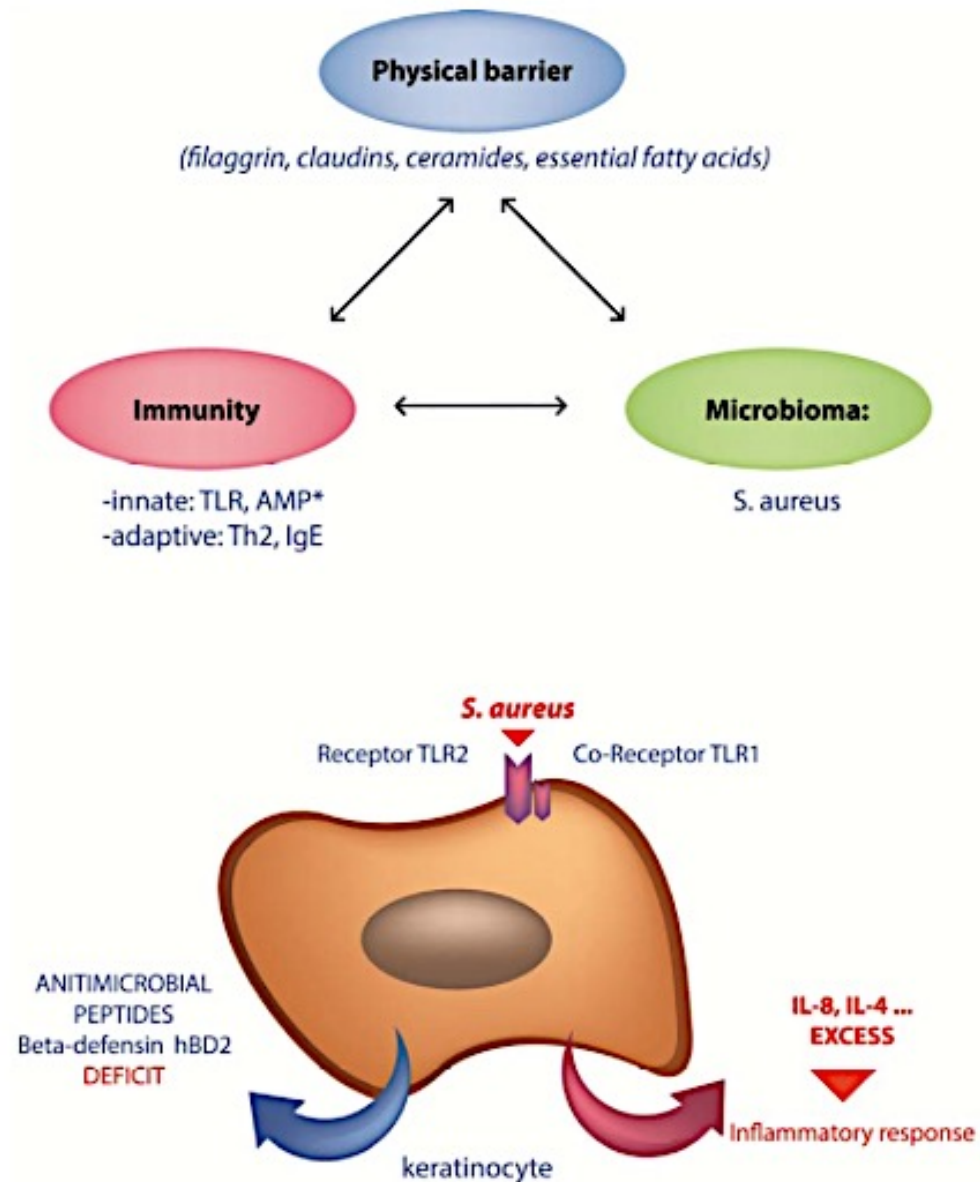
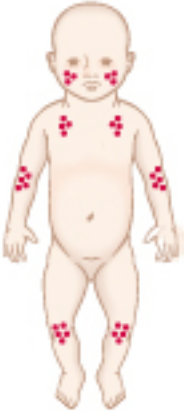
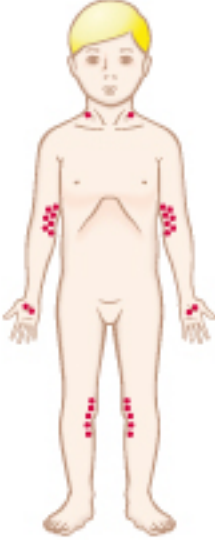
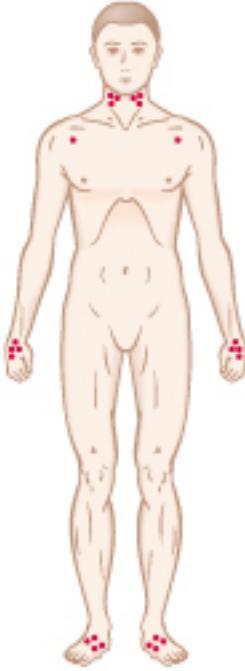


Figure 2. Main pathogenetic mechanisms and Toll Like Receptor2 (TLR2) activation

Clinical manifestation

Prima fase Infantile	Seconda fase Infantile	Fase dell'adulto
		



Treatment

- The goal of AD management is to improve the skin's health by restoring skin barrier function
- Consensus Conference on Pediatric Atopic Dermatitis suggested that emollients (ointments and creams in particular) can be used as **first line** agents in the management of AD and can be steroid sparing.
- Colloidal oatmeal is approved by FDA as a skin protectant drug for over the counter (OTC)

Anti-Inflammatory Activities of Colloidal Oatmeal (*Avena sativa*) Contribute to the Effectiveness of Oats in Treatment of Itch Associated With Dry, Irritated Skin

Kurt A. Reynertson PhD, Michelle Garay MS, Judith Nebus MBA, Suhyoun Chon PhD, Simarna Kaur PhD, Khalid Mahmood PhD, Menas Kizoulis BA, Michael D. Southall PhD

Johnson and Johnson Consumer Products Company, Inc., Skillman, NJ

JULY 2012

804

VOLUME 11 • ISSUE 7

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ORIGINAL ARTICLES

JOURNAL OF DRUGS IN DERMATOLOGY

SPECIAL TOPIC

Colloidal Oatmeal Formulations as Adjunct Treatments in Atopic Dermatitis

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DOI: 10.1111/exd.12658

www.wileyonlinelibrary.com/journal/EXD

Original Article

Keratinocyte differentiation and upregulation of ceramide synthesis induced by an oat lipid extract via the activation of PPAR pathways

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AVENA

proprietà e benefici

Fonte di carboidrati a lenta digestione.
Non provoca picchi glicemici, **formando al nostro organismo energia a lungo termine.**

L'elevato contenuto di fibre garantisce il corretto funzionamento del nostro intestino e **aiuta la digestione.** La crusca che ricopre i suoi semi ha **proprietà diuretiche e depurative.**

Ricco di proteine e acidi grassi essenziali, come l'acido linoleico.

Ha proprietà antinfiammatorie grazie alla presenza di particolari composti fenolici azotati, gli avenantramidi.

Contiene un tipo di fibra solubile, il betaglucano, che funziona come una spugna: quando si deposita nell'intestino **intrappola il colesterolo cattivo** in un gel appiccicoso non assorbibile dall'organismo.

Con il suo elevato contenuto di fibre dona un immediato senso di sazietà. Risulta quindi un **ottimo alleato in caso di dieta o fame nervosa.**



OATMEAL



- Colloidal oatmeal is produced as a fine powder from the grinding and processing of whole oat grains and it contains various dermatological active compounds:
 - ✓ moisturizing
 - ✓ protective
 - ✓ anti-inflammatory
 - ✓ antioxidant
 - ✓ soothing
 - ✓ buffering
 - ✓ cleansing properties
- The small particles of colloidal oatmeal, dispersed in water, form an occlusive barrier, **protecting the skin against external agents.**



Anti-inflammatory activity of oat extracts

- This activity seems to be linked to the high content in **antioxidants** (avenanthramides, vitamin E, ferulic acid, etc).
- Avenanthramides, in particular, are **phenolic compounds** with potent anti-inflammatory activity.
- Decrease inflammation through inhibition of nuclear factor (NF)- κ B in keratinocytes and inhibition of the release of the pro-inflammatory cytokine IL-8.

TABLE 1.**Summary of Colloidal Oat Extracts**

Extraction solvent	Abbreviation	Expected Phytochemistry	IL-8 Production	NF-κB Promoter	ROS Production	IL-8 Transcription
Hexanes	HCO	Oils and lipophilic compounds	Decrease	n/a	n/a	Decrease
80% Acetone	ACO	Mid-polar phenolics	n/a	Decrease	Decrease	Decrease
80% MeOH	MCO	Phenolics	Decrease	n/a	n/a	Decrease
Water	WCO	Proteins and carbohydrates	Decrease	n/a	n/a	n/a

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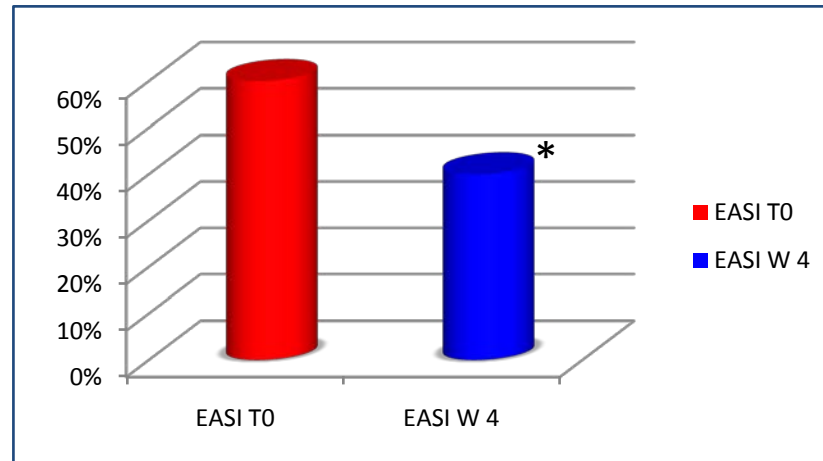
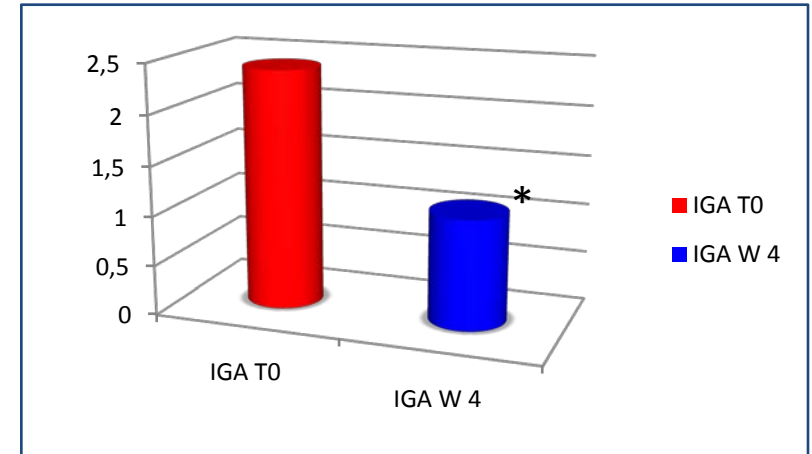
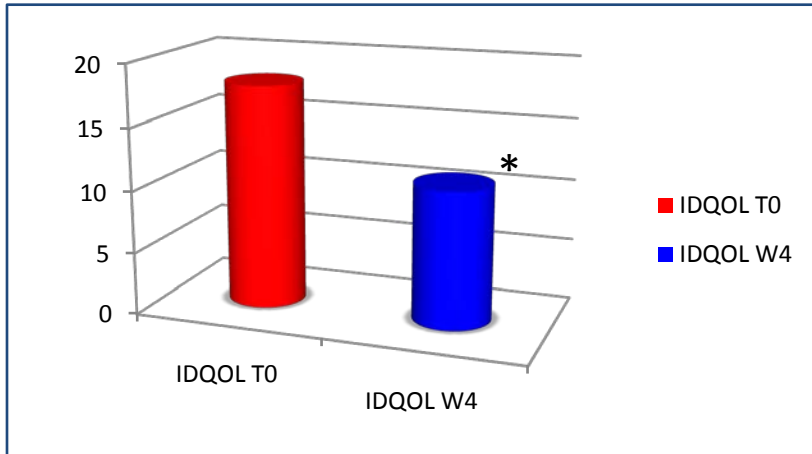
STUDY DESIGN

Demographic characteristics

Tot pts	30	Colloidal oatmeal daily use as cream/body wash
Age	mean age 9 years (3-17)	
Sex	18 F, 12 M	
AD	8 pts	”
Xerosis	17 pts (1 PsO pt)	” (1 PsO pt+ Adalimumab)
AD + Xerosis	5 pts	”

- Investigators' Global Assessment (**IGA**) (0=clear, 5=very severe)
- Eczema Area and Severity Index (**EASI**) score, including 24 Itch severity (0=none, 4=severe)
- Infants' Dermatitis Quality of Life Index (**IDQoL**): questionnaire completed by parents to assess the impact of atopic dermatitis on the quality of life of infants (at weeks 0, and 4 weeks)
- Reflectance Confocal Microscopy (**RCM**) performed at Wk 0 and after therapy, Wks 4

RESULTS



* $p < 0.05$

	CRITERI VALUTATI ALLA RCM	
Grado di idratazione cutanea	Presenza di cheratinociti “blurred” (sfocati)	
Ipercheratosi pilare	Follicoli occupati da materiale iper riflettente	
Acantosi epidermica	Aumento spessore dell’epidermide	Conteggio del numero degli stack necessari per raggiungere il derma a partire dallo strato granuloso

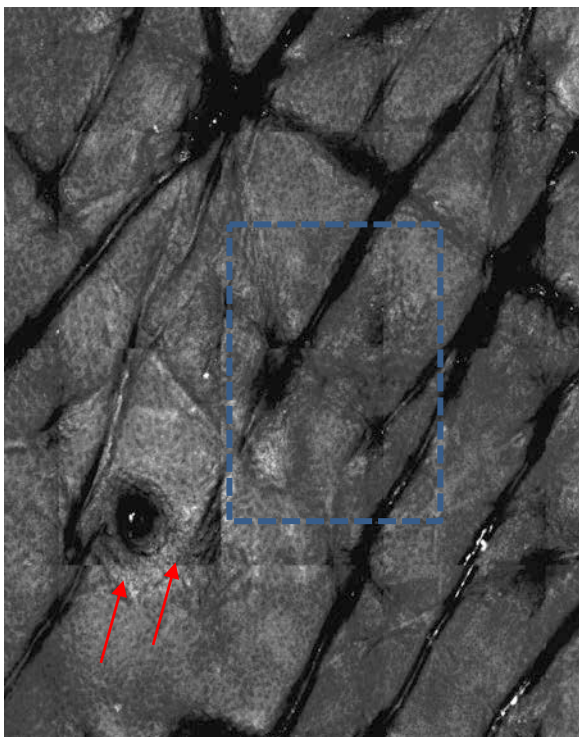
Protocollo RCM:

3 block a livello dello strato corneo

1 stack al centro della lesione esaminata

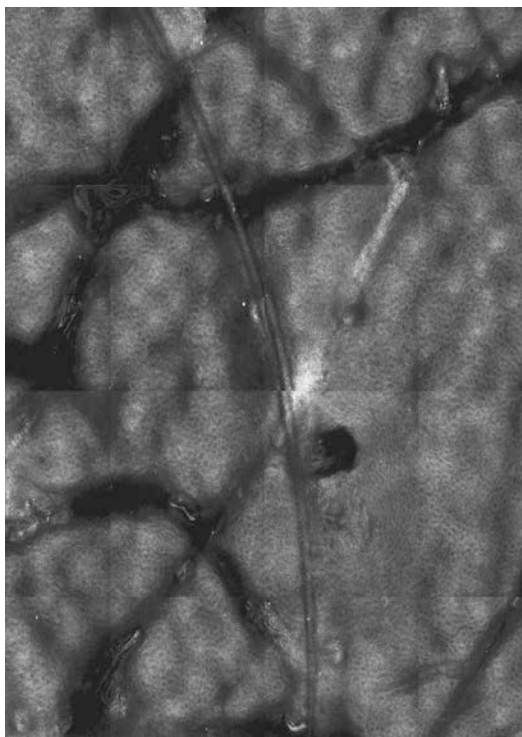
PAZIENTE N. 1

INIZIO
TERAPIA



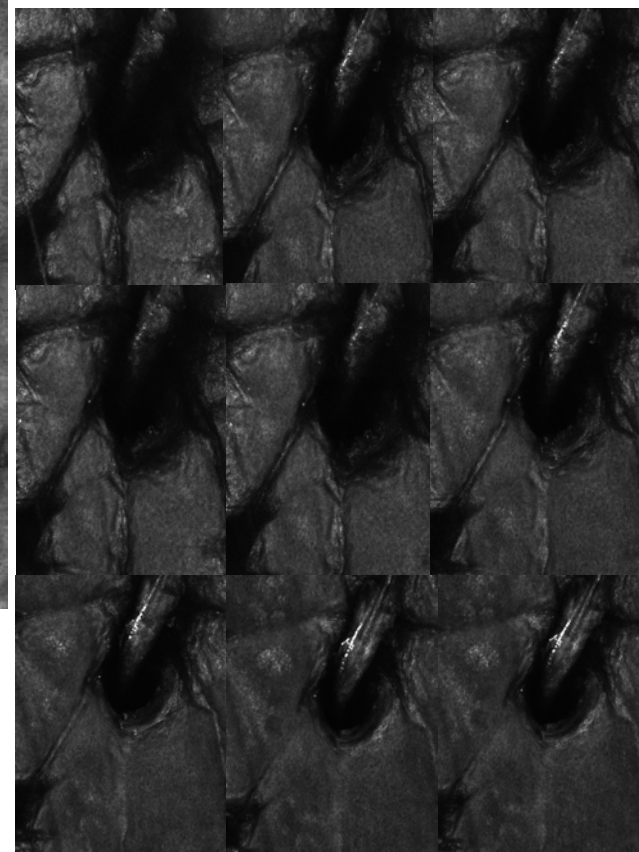
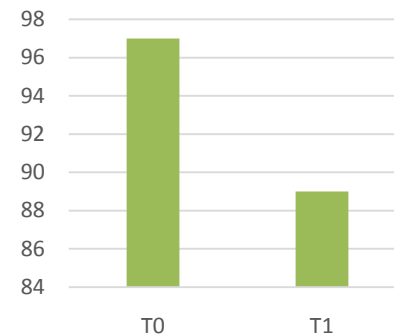
Cheratinociti blurred
Paracheratosi

FINE
TERAPIA



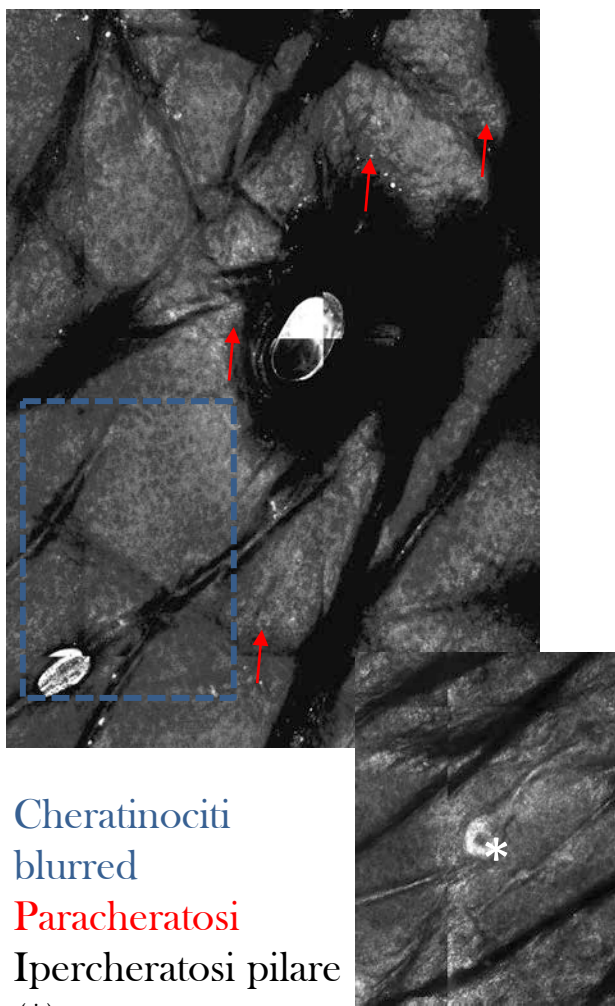
Normalizzazione
strato corneo

SPESSORE
EPIDERMIDE



PAZIENTE N. 2

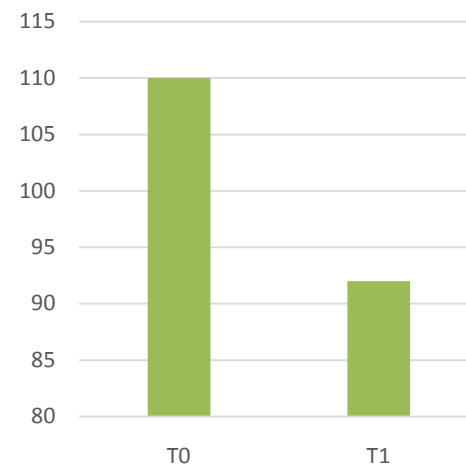
INIZIO
TERAPIA



FINE
TERAPIA

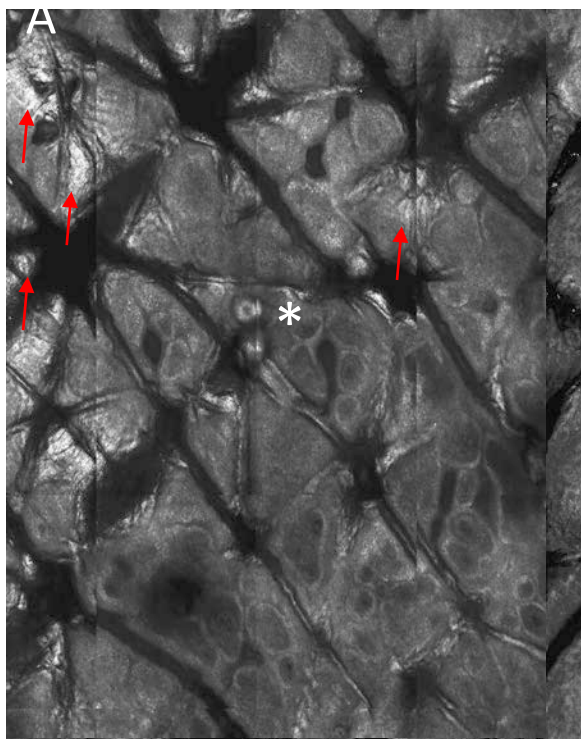


SPESSORE EPIDERMIDE



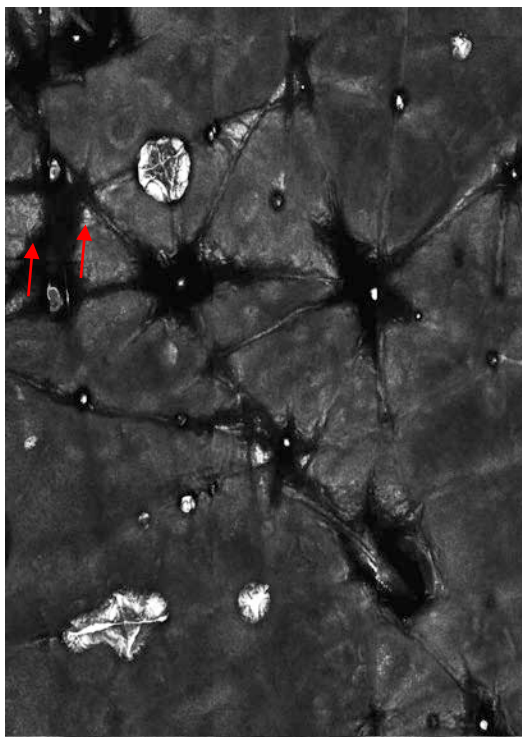
PAZIENTE N. 3

INIZIO
TERAPIA



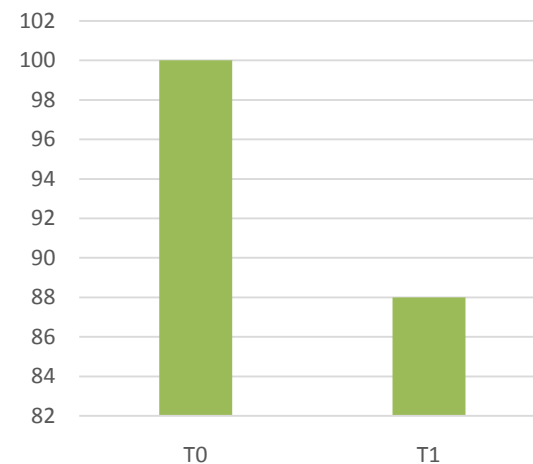
Cheratinociti blurred
Iper-paracheratosi
Ipercheratosi pilare (*)

FINE
TERAPIA



Normalizzazione epidermide
Permanenza di lieve
ipercheratosi

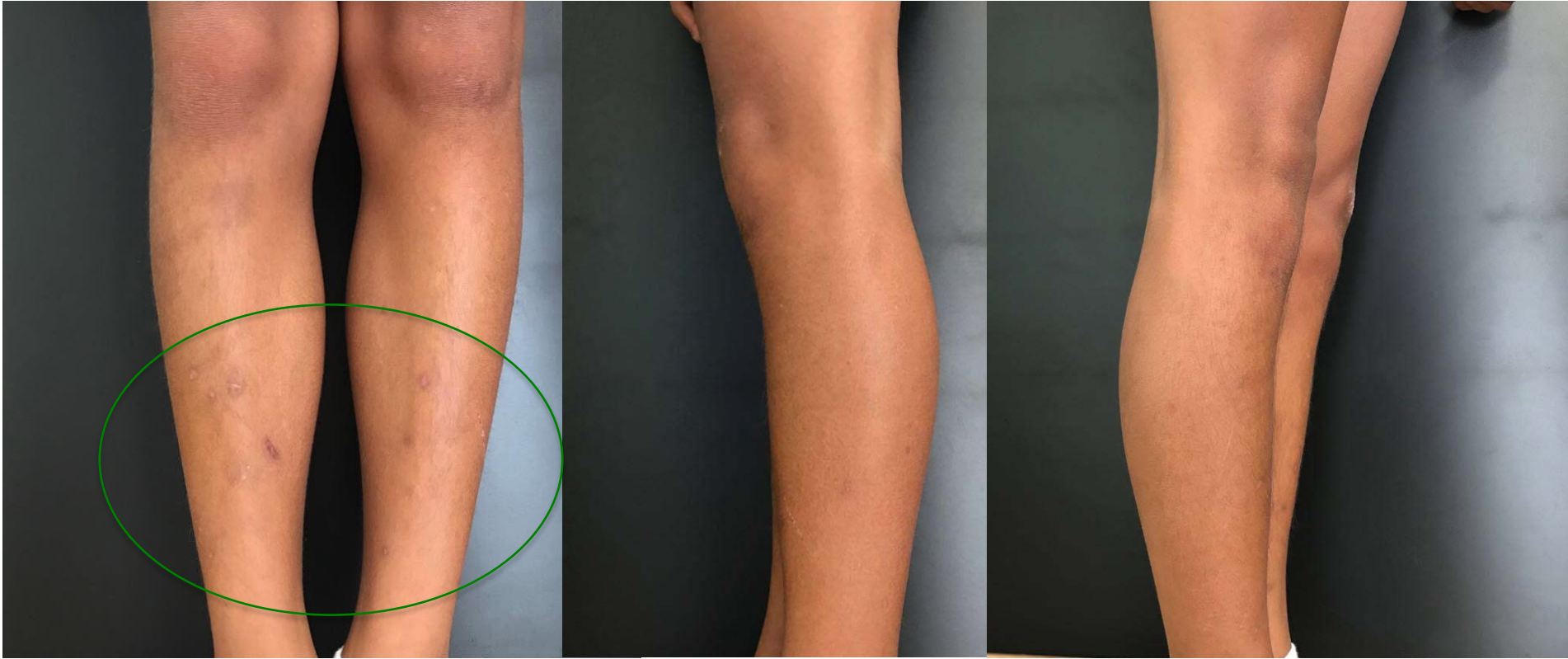
SPESSORE EPIDERMIDE



Luca 9 yrs, xerosis and
scatching injuries at the legs
BL



W4



David 7 yrs, BL support therapy
of biological treatment

W4



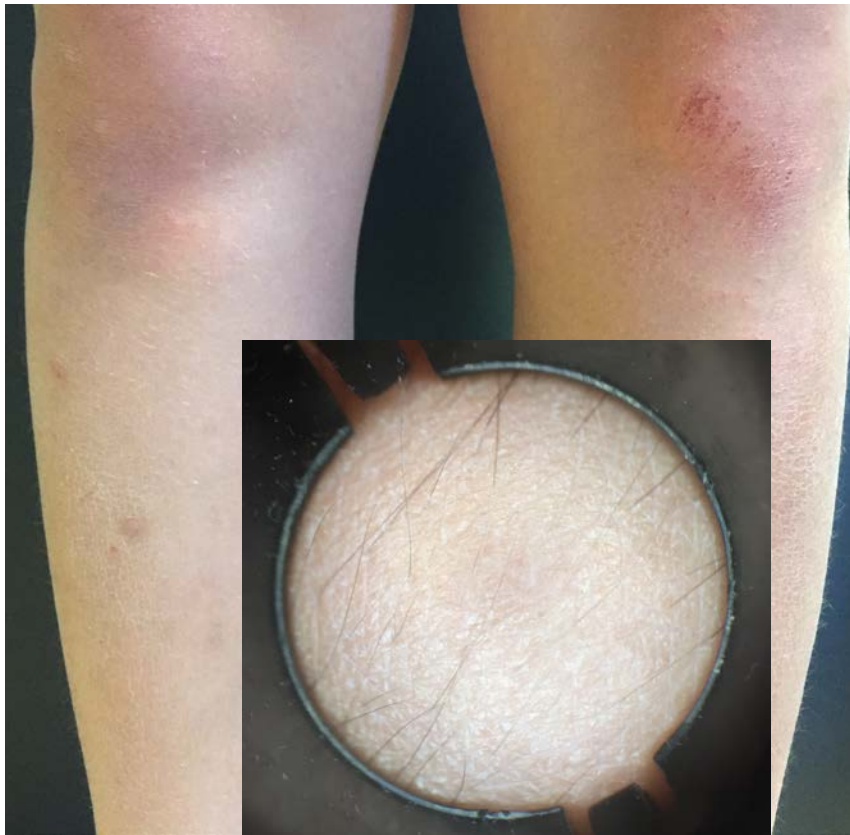
Manuel 5 yrs BL AD



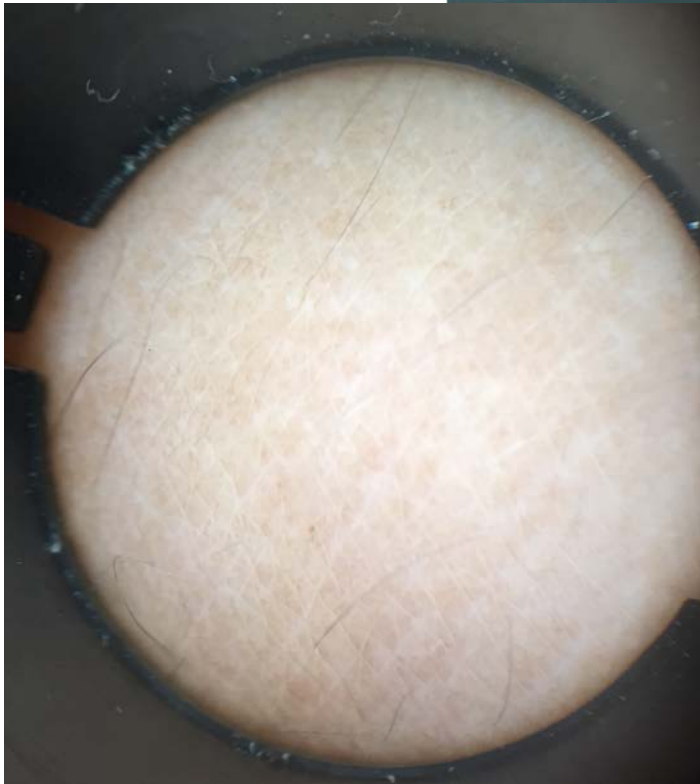
W4



Giacomo 10 yrs AD BL



W4





Carlotta 12 yrs keratosis pilaris BL



W4



Chantal 8 yrs pityriasis alba BL



W4

To conclude

- ✓ Colloidal oatmeal has been shown to safely reduce itching and irritation associated with AD and the severity of dry skin in statistically significant manner.
- ✓ These benefits, mediated by colloidal oatmeal's natural components, help to restore and maintain skin barrier function.
- ✓ Moisturizers can reduce the dependency on topical corticosteroids and their potential adverse effects.

