

# Canola oil and hempseed oil for atopic dermatitis skin treatment

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# Atopic dermatitis (AD)

- **Atopic dermatitis** is a chronic skin disease caused by complex of genetic, immunological and environmental interactions.
- The development of eczematous skin lesions in AD is closely connected with disorder of the structure and function of skin barrier.
- The management of AD requires to combine many different elements:  
avoidance of trigger factors, control of inflammation with topical corticosteroids and calcineurin inhibitors, minimizing infections and finally repair and maintenance of the skin barrier by correct use of emollients.

# Atopic dermatitis (AD)

The application of moisturizers and emollients is the essential element of treatment and prevention of xerosis, which is the manifestation of skin barrier disorder, leading to development of eczema lesions.

**Characteristics of the main emollients.** ( Galli et al. Italian Journal of Pediatrics (2016)42:26)

	Product	Action
1st-generation emollients	Vaseline, parafin oil, fatty alcohols, hydrophilic polymers ( hyaluronic acid, chitosan, collagen, polysaccharides gelling )	Hygroscopic and occlusive
2nd-generation emollients	Glycerol, sorbitol, substitutes NMF,urea (5-10%), lactic acid, ammonium lactate	Restoring hydratation and barrier function
3rd-generation emollients	Physiological lipids: ceramides, cholesterol, polyunsaturated fatty acids	Barrier repair therapy



# Emollients – canola oil and hemp seed oil

- **CANNABIS SATIVA (HEMP) SEED OIL** - It is extremely rich in essential fatty acids (EFAs) and saturated fatty acids which form a barrier to protect the skin against environmental aggressors and water loss. It also contains vitamins A, D, E, and minerals. It is recommended for **dry, allergic, sensitive, atopic dermatitis and psoriasis-affected skin**
- **CANOLA OIL** - is obtained from plants in the Brassica family. Due to the high content of natural sterols, it is used in the pharmaceutical and cosmetics industries. It is particularly rich in natural vitamin E. **The soothing and anti-inflammatory properties of canola oil are comparable to those of steroids (1% of hydrocortisone).**

# The safety and anti-inflammatory properties of emollient products with hemp seed and canola oils.

The purpose of this study was to evaluate safety and anti-inflammatory properties of emollient products containing canola and hemp seed oils dedicated for skin with atopic dermatitis.



# The safety and anti-inflammatory properties of emollient products with hemp seed and canola oils.

## Materials and methods:

- Safety of emollient products were assessed by *in vitro* MTT cytotoxicity tests on L929 cells (according to ISO 10993-5:2009) and by skin irritation on EpiDerm model test (according to OECD test guideline 439).
- Clinical study was conducted on 85 children with AD (mild to moderate, also a few with severe AD) and on healthy 150 new-borns, as well as 205 adult patients with AD
- Skin condition was assessed in 10 point analogue scale
- Instrumental measurements were performed using Corneometer, Sebumeter and Tewameter

# The safety and anti-inflammatory properties of emollient products with hemp seed and canola oils.

## Safety on 3D skin model

Tissue viability  $\leq 50\%$  - irritant  
Tissue viability  $\geq 50\%$  - non-irritant

Tested product	Bath oil 16910	Washing gel 16911	Body and face balm 16912	Body balm 16913	Body balm 16914	Body and face balm 16915	Body balm 3 in 1 16916	Reference irritant
Viability in %	123%	96%	135%	98%	143%	113%	69%	32%

## Safety on L929 cells

Viability  $> 70\%$  of control is equal to non-cytotoxic potential

Viability in % (Concentration of product where viability is > 70% of control)	80% (20%)	97% (0,01%)	82% (0,1%)	106% (0,01%)	77% (0,1%)	103% (0,1%)	125% (0,01%)	10%
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## Clinical assessment

Clinical evaluation of skin condition in children in 10-point analogue scale	Improvement [in %]						
	Bath oil 16910	Washing gel 16912	Body and face balm 16912	Body balm 16913	Body balm 16914	Body and face balm 16915	Body balm 3 in 1 16916
Skin dryness	- 39%	- 23%	- 61%	- 56%	- 32%	- 43%	- 58%
Skin anointment	55%	41%	61%	83%	81%	56%	49%
Elasticity	30%	21%	15%	51%	13%	35%	22%
Smoothness	55%	55%	31%	92%	17%	70%	33%
Lichen visibility	- 49%	- 36%	- 86%	- 56%	- 26%	- 43%	- 65%

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## Instrumental measurements

N=10	Improvement [in %]			
	Body and face balm 16912	Body balm 16913	Body balm 16914	Body balm 3 in 1 16916
Skin moisturization	+ 94%	+96%	+30%	+86%
Skin anointment	+50%	+400%	-	+74%
TEWL	-	-40%	-	-

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## Results of the study

- Emollients were assessed as safe in *in vitro* methods
- Clinical study showed that tested products induced no skin irritation or allergic reaction in healthy subjects as well as subjects affected by AD in different stages of severity and different age.
- Instrumental measurements displayed reduction of TEWL and increase in nutrition and moisturization of the skin.
- Products are helping to minimize erythema in new-born children.
- The products can be used in broad recommendations

# The recommendations for assessed products

- Mild to moderate atopic dermatitis
- Dry, itchy skin
- Xerosis
- Ichthyosis
- Erythema in new-born children
- Patients during and after medications treatment
- Patients with diabetetes
- Patients with leg ulcers

