

LIPEX

A hand is shown from the left, palm up, holding a bright, glowing sun. The sun is positioned in the center of the frame, with rays emanating from it. The background is a clear blue sky. Below the hand, the sun's reflection is visible on a body of water, creating a shimmering effect. The overall scene is bright and positive, suggesting protection and care.

**Active emollient for improved
skin protection – Lipex[®] PreAct**

Prevent skin damage with bioactive emollients from sustainable rapeseed oil



Lipex PreAct is a unique emollient, combining skin-protective action from natural vitamin E and phytosterols with excellent emolliency and moisturisation. Lipex PreAct is photo-protective and reduces the damage caused by UV radiation, making it an ideal ingredient for sun care applications. Due to its mildness Lipex PreAct is also a versatile ingredient in formulations for sensitive and aged skin.

Swedish rapeseed – the secret of efficient and sustainable skin care

AAK has utilised locally grown rapeseed oil for developing skin care ingredients for a long time. This raw material offers a good source of skin nutrients: vitamin E, phytosterols and skin-friendly fatty acids. By gentle processing in our state-of-the-art facilities, we enhance the natural benefits of the rapeseed oil to make a true cosmetic ingredient that fulfils the expectations of the formulator. The high raw material utilisation and energy-optimised processing using biofuels, also makes Lipex PreAct a truly sustainable cosmetic ingredient.

The safety of cosmetic ingredients is an essential aspect of raw material selection, and Lipex PreAct has both a long history of safe use and documented lack of skin irritation. It is also biodegradable and has low aquatic toxicity.

Vitamin E and phytosterols – natural protecting agents for the skin

The skin is the barrier protecting our bodies against the environment, and in order to preserve the integrity and strength of the barrier, it needs constant maintenance.

Vitamin E is one of the key components in effective skin maintenance, acting as a free radical scavenger and antioxidant. Free radicals are formed under the influence of UV radiation, oxygen and environmental pollutants and can result in skin irritation, inflammation and other damage. Vitamin E (alpha-, delta- and gamma-tocopherols) is a natural antioxidant, present in both animals and plants. Vegetable oils, especially the more sensitive unsaturated ones, are good sources for this functional ingredient.

Phytosterols are the plant analogues of cholesterol in animal cells and act as cell membrane stabilisers and precursors of vitamins and hormones. Topically applied phytosterols are anti-inflammatory and can improve moisturisation and barrier properties.

The protective properties of Lipex PreAct have been demonstrated in several studies, both in vivo and in vitro.

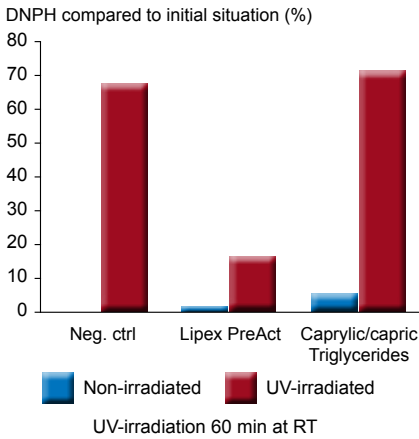
The generic skin healing and protective effects were studied in a clinical study (Loden and Anderson) which showed that Lipex PreAct improves skin recovery after treatment with an irritating surfactant solution. Both transepidermal water loss and erythema were reduced, showing the healing effect of the combination of vitamin E and phytosterols.

Claim substantiation studies show a significant photoprotective effect

An in-vitro study, showing the photoprotective effects, compared Lipex PreAct with a high content of tocopherols and phytosterols to Akomed R, a stable emollient based on caprylic/capric triglycerides (Figure 1). Human reconstructed epidermal cell cultures were irradiated with UV radiation, and the resulting effects on protein oxidation, cell integrity and the release of inflammatory markers were evaluated. Lipex PreAct gives significantly better protection under these conditions compared to the inert caprylic/capric triglyceride.

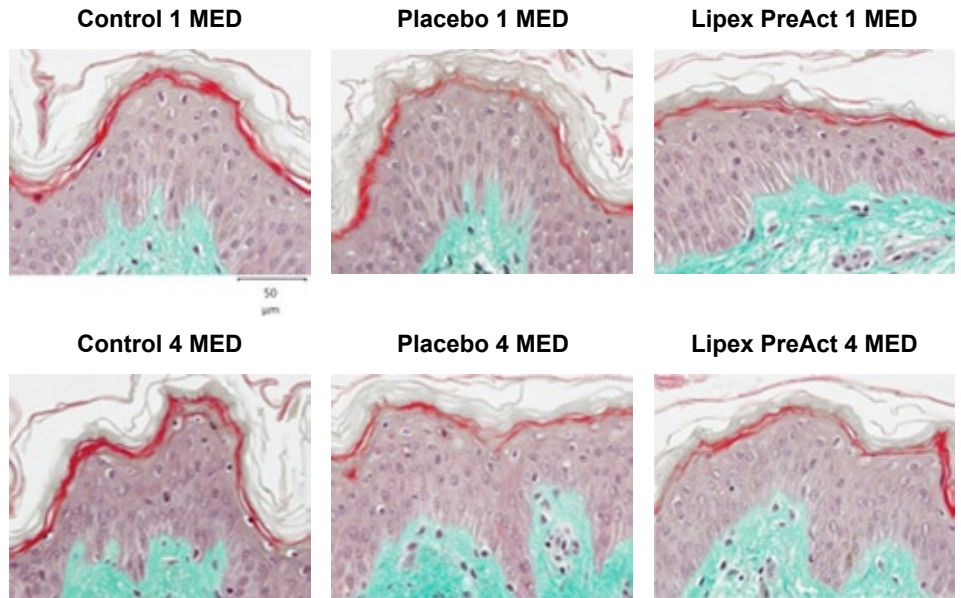
Figure 1: Antioxidant and photo-protecting properties

Lipex PreAct protects the reconstructed human epidermal skin cells by protecting the proteins from oxidation, shown by a significant reduced formation of carbonyl proteins.



Lipex PreAct was also investigated in an ex-vivo study showing the protective effect against damage caused by UV radiation. Explants were treated with a formulation containing 3% Lipex PreAct for 6 days, followed by an irradiation with 1 MED or 4 MED UVA and UVB radiation. The morphology of the skin, presence of sunburn cells, formation of thymine dimers and effects on heat shock protein hsp70 was evaluated on day 7. While no effect was found on the hsp70, sunburn cells were effectively suppressed by the active cream (Figure 2). Thymine dimers were suppressed at the lower radiation dose but not at 4 MED (Figure 3), indicating that Lipex PreAct can improve the protecting effect of organic and inorganic sunscreens in sun care formulations.

Figure 2: Morphology and sunburn cell formation

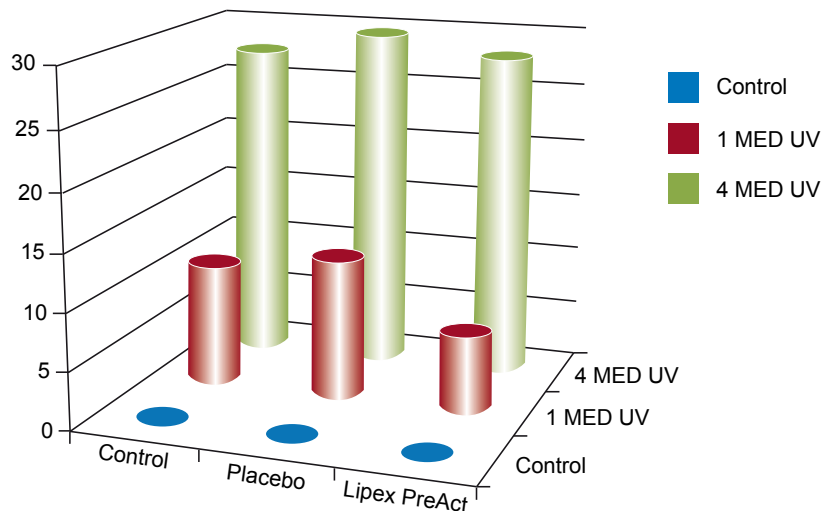


Sunburn cells are completely absent in skin treated with Lipex PreAct cream.

Batch	Control		1 MED UV		4 MED UV	
	Mean	SD	Mean	SD	Mean	SD
Control	0	0	5.6	3.6	1.5	0.9
Placebo	0.3	0.6	0.3	0.5	0.6	0.5
Lipex PreAct	0	0	0	0	0	0

Figure 3: Thymine dimer formation

Lipex PreAct suppresses the formation of thymine dimers at low UV dose. At higher UV doses, combinations with traditional sunscreens give extra protection.



Composition & properties

Tocopherols:	300 ppm alpha & 600 ppm gamma
Phytosterols:	0.7 %
Fatty acid composition:	C16:0 3% C18:0 6% C18:1 81% C18:2 7 %
OSI (110°C):	>100h
Appearance:	Cloudy liquid at 20°C

Regulatory status

INCI name:	Canola Oil
REACH:	Exempted (Annex IV, SDA 11: Triglycerides, C16-C18 saturated, C18-unsaturated)
Ecocert:	Ingredient of natural origin

Daily moisturiser SPF	AAK-09-101tili
Emollient phase:	
Lipex PreAct	2 %
Lipex Sheasoft	3 %
Lipex Omega 3/6	5 %
Akomed R	6 %
Lipex Shea Tris	0.5 %
Dimethicone	3 %
Emulsifiers	6 %
Organic UV filters	10 %
Water and other ingredients	Ad 100%

A high-performance naturally protective and moisturising facial day cream or body cream, inhibits damage and regenerates the skin, keeping it young-looking and healthy. Omega, shea butter and essential fatty acids bring smoothness, firmness, elasticity and moisture. Protection against internal and external stress based on antioxidants and anti-inflammatory ingredients such as natural tocopherols and vitamin C give the skin protection all day long. The SPF protects your skin against daily sun and light exposure, defending against signs of ageing.



Formulating with Lipex PreAct is easy – release your creativity!

There are numerous applications for a stable, bioactive, emollient such as Lipex PreAct. Enhancing the protective properties of sun care products is an obvious one, but Lipex PreAct can also be used in formulations for aged skin and sensitive skin to provide skin nutrients. It also helps to protect the skin against premature ageing caused by internal and external factors.

Lipex PreAct combines well with all types of emollients used in skin care. The recommended starting concentration is 2% of the formulation, but it can easily accept levels up

to 5%. The high oxidative stability of Lipex PreAct ensures long shelf life for the finished formulations.

If formulated with lightweight esters or silicones, Lipex PreAct gives an increased moisturisation

while preserving a light skin feel. For heavier night creams and body butters Lipex PreAct can be formulated with semisolid shea butters and other exotic butters.

Reference

Loden, M. and Andersson A. C. "Effect of topically applied lipids on surfactant-irritated skin." Br. J. Dermatol. 134.2 (1996): 215–20.



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