

Keratopeel

DI-KERPE-00

No acid gentle enzymatic peeling. No irritation. No side effects

KERATOPEEL is an active ingredient consisting of Keratinase protein proceeding from *Bacillus licheniformis* stabilized under cross linkages with a polysaccharidic stabilizing agent.

Due to the specific keratolytic activity of the Keratinase, **KERATOPEEL** eliminates selectively the excess of the corneocytes by a mild exfoliation, smoothing the skin surface.

KERATOPEEL is a natural alternative to conventional chemical peeling with AHAs (irritant and with side effects).

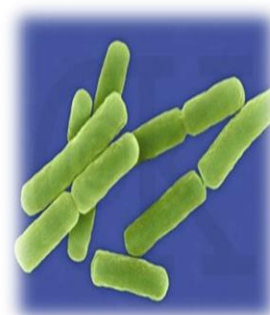
INCI name

Sucrose, Silica, Keratinase

Description

Bacillus licheniformis is a bacterium commonly found in the soil. It is found on bird feathers, especially chest and back plumage, and most often in ground-dwelling birds (like sparrows) and aquatic species (like ducks).

It is a gram-positive, thermophilic bacterium. Its optimal growth temperature is around 30°C, though it can survive at much higher temperatures. The optimal temperature for enzyme secretion is 37°C. It can exist in spore form to resist harsh environments, or in a vegetative state when conditions are good.



KINGDOM:	Bacteria
PHYLUM:	Firmicutes
CLASS:	Bacilli
ORDER:	Bacillales
FAMILY:	Bacillaceae
GENUS:	Bacillus
SPECIES:	B. licheniformis

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B. licheniformis is an important commercial bacterium because it is used to produce enzymes, mainly alpha-amylases and proteases, as Keratinases.

Keratinases are particular sort of proteolytic enzymes with capability of hydrolyze insoluble keratin substrates. In the last years, those enzymes have been increasingly studied because their potential application in biomedicine, cosmetic and pharmacy (*Brandelli 2008*).

Keratinases, are keratinolytic enzymes, with remarkable applications.

Keratins are fibrous proteins which compose the structures and large portions of the cell compositions of living organisms, can be found in human skin, hair and nails, it is also a part of the animal kingdom and found in birds, reptiles, amphibians and mammals. It is used in hair care products, animal feed and fibres for textiles.

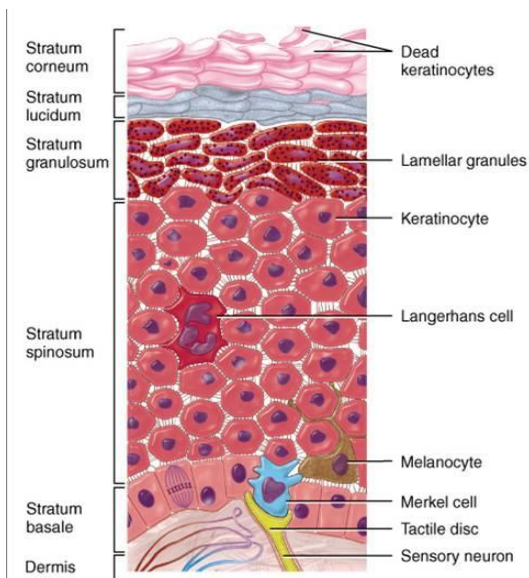
There are two primary groups of keratins, the alpha-keratins and the beta-keratins. While both fulfil similar roles, they differ slightly in structure, composition and properties.

Keratins are composed of amino acids, primarily the amino acid glycine and alanine.

The epidermis is the outermost part of the dermis and consists of a squamous epithelium having a thickness of between 0.03 mm (upper eyelid) to 1.5 mm (palm), with an average thickness of 0.4 mm. It consists of four layers and in it we find four cell types: keratinocytes, melanocytes, Langerhans cells and Merkel cells.

Of these four, keratinocytes are more present cells in the epidermis (representing 80% of epidermal cells) and are responsible for the production of keratin.

Keratinocytes constitute the four epidermis layers: basal layer, stratum spinosum, stratum granulosum and stratum corneum. The move from the basal layer cells to keratin lasts about 15 days.



As they mature, they rise through the epidermis to reach the outside, to the stratum corneum, driven by new cells in formation.

During this process, and as they move outwards, the cells change their shape (gradually flatten), and especially keratin content increases.

When they get outside, pushed by new cells, they have served their purpose, they're dead cells, consisting exclusively of keratin, which fall off naturally.

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When skin is exfoliated, these accumulated dead cells, which gives dull aspect to the epidermis, especially as we age because the process of renewal and cell movement slows down, are dragged.

Remove these keratinocytes is not only a way to give a smoother look to the skin, but also stimulates cell renewal from within, which helps to give a more youthful appearance.

Effects in Cosmetic Products

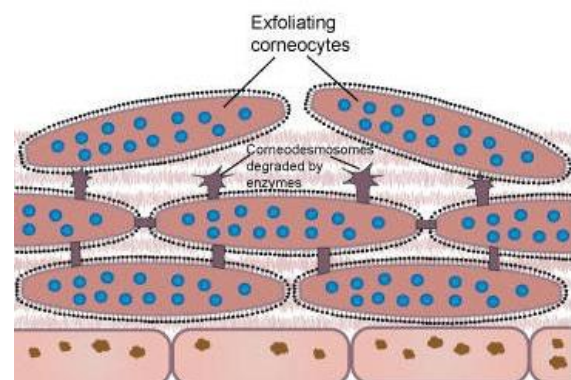
Keratinases are used for biomedical, pharmaceutical and cosmetic applications (*Vignardet et al. 2001; Friedrich et al. 2005; Gradisar et al. 2005; Mohorcic et al. 2007. Chao et al. 2007*).

KERATOPEEL, accelerates the natural process of 'shedding' of the upper layers of the stratum corneum. Cell renewal is thus stimulated and younger, brighter looking skin is revealed.

This type of enzymatic exfoliation does not require harsh conditions such as abrasion (by rubbing particles over the surface of the skin) or a highly acidic pH and is therefore suitable for all skin types, including sensitive and fragile skin.

In particular, **KERATOPEEL** can be used for:

- Elimination of keratin in acne and psoriasis: Keratinase can remove blocking keratin of the sebaceous pore and improve the aspect of the skin.
- Elimination of human callus and degradation of keratinized skins.
- Keratosis pilaris: it occurs when the body produces excess keratin, entraps the hair in the pore causing hard plugs. Keratinase might help in removing keratin from the pore of the hair follicles.
- Depilation/ Body hair retardant: keratinase interfere with the stem cells of the follicle, which are required for hair follicle cycling, weakening the hair follicle.

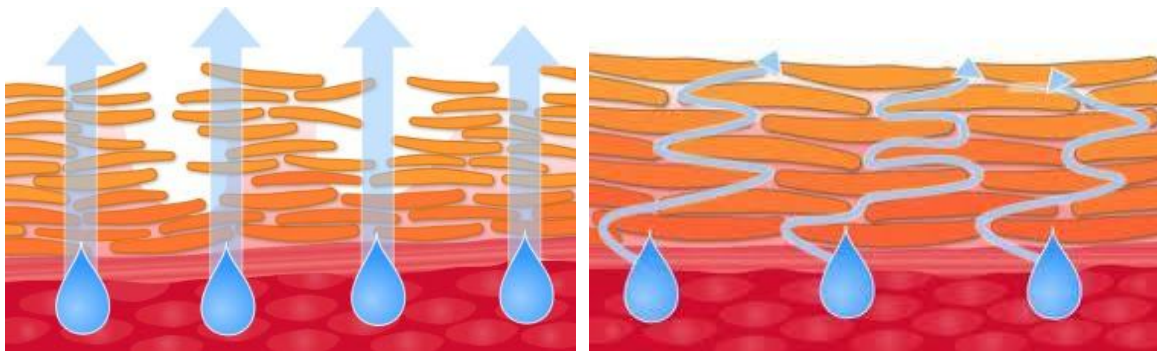


- Improvement of scars and epithelium regeneration.
- Nail infections: removes keratin from the nail plate to improve penetration of other treatments.
- Male care after shaving to promote the cleaning of the hair and avoid the formation of grains.

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KERATOPEEL can be incorporated in all types of dry ready to use cosmetic formulations where skin cell exfoliation is desired. It is hypoallergenic and has a very good cutaneous compatibility: Applicable to sensitive products.



Corneocyte cohesion avoids dehydration

- Cell renewal exfoliating, moisturizing and firming improving corneocytes cohesion: Cellular renewal of basal layer by removal of dead cells from horny layer.
- Keratolytic and softener: Increases cell turnover to give brighter, younger looking skin
- Daily use
- No irritations and no side effects

KERATOPEEL provides an intense long-lasting hydration of the horny layers by reinforcing the resistance of corneocytes against dehydration. It accelerates the cell turnover leading to a smoother and younger look of the skin.

KERATOPEEL is a gentle natural (without any acids) alternative to AHAs and thioglycolates.

KERATOPELL: The natural way to mild biological peeling and cell renewal

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Dosage – Solubility – Processing

A- DOSAGE:

From 1 to 2%. Lyophilized and sterile powder form to be resuspended

B- SOLUBILITY:

Hydro-soluble. Can be incorporated in powder formulations also at 2%

C- PROCESSING: **KERATOPEEL** must be prepared at the time of use, dissolved in distilled H₂O

KERATOPEEL is compatible with most of the raw materials normally used in cosmetics, nevertheless, it is the duty of the formulator to make sure of the stability of the formulae with the necessary tests.

Analytical Data

- APPEARANCE: Dry format. Powder form to be resuspended
- PRESERVATIVES: Preservative Free
- MICROBIOLOGY:
 - Total germs: <100 cfu/g
 - Pathogen: Absence
- TOLERANCE: Excellent.
- STORAGE: Store at room temperature, dry and away from light.

If original container is opened, to avoid secondary microbiological contamination handle with special care and keep refrigerated.