

ALLANTOIN

An impressive history ...

a **DSM** Product



DSM Nutritional Products

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Allantoin. Always in fashion

Allantoin – an impressive history ...

The earliest reported topical use of Allantoin was in the 16th century. Roots of comfrey (*Symphytum officinale*) or black salsify (*Scorzonera hispanica*), which were later discovered to contain Allantoin, were used to treat wounds and skin ulcers¹. It wasn't until 1912, that Macalister chemically identified the substance as Allantoin².

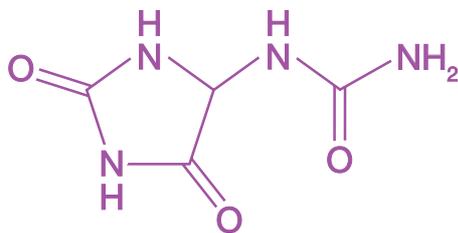


Figure 1: Structure of Allantoin (INCI name: Allantoin)

The same physician confirmed the value of Allantoin as a cell proliferant. After an explosion in a factory, people's burns were treated with Allantoin, and surgeons noticed it stimulated epithelial growth, cleaned up sloughing surfaces and reduced the appearance of scars.

Kirschner, a physician, also described his use in clinical practice of comfrey and Allantoin poultices for the treatment of wound sores and cancers in the 1950's¹.

The use of Allantoin in topical creams was enthusiastically reported in scientific journals since the 1930's.

The US Food and Drug Administration (FDA) classified Allantoin as a category I (safe and effective) skin protectant.

The value of Allantoin as a cosmetic ingredient has been further supported by in vitro and in vivo tests, although its mode of action is still not fully understood.

Allantoin – to increase moisture retention

Skin is particularly sensitive to life's daily stress factors, which may result in skin dryness and tightness.

By increasing the capacity of corneocytes to bind water, Allantoin reinforces the skin's natural protective barrier and improves its moisture retention, providing a soothing effect to the skin.

Allantoin – to soften the skin

Allantoin exfoliates dry and damaged cells and boosts the radiant appearance of the skin.

Due to its keratolytic activity, Allantoin removes corneocytes by loosening the intercellular kit or the desmosomes (protein bridges) that maintain the adhesion of corneocytes to each other. Thus the surface of the skin is smoother, softer and becomes suppler.

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Allantoin – to prevent skin irritation

Allantoin has been demonstrated as an anti-irritant. When Allantoin is added to rinse-off products (shower gels, shampoos, wash lotions or shaving creams) it protects the skin by minimizing irritation caused e.g. by surfactants. It also helps avoid the feeling of tightness, and volunteers have experienced a better skin feeling after showering or washing².

The use of Allantoin in antiperspirant products can help counter the irritation caused by some of the more aggressive actives.

Allantoin – to support the natural regeneration of the skin

Allantoin aids to protect skin against environmental and mechanical stresses such as shaving by helping the skin to maintain its integrity.

Formulating with Allantoin

Because of its soothing, softening and protecting properties, Allantoin has a wide range of application, including skin care, toiletries and oral care products.

Recommended use level: 0.05% to 0.3%

Some formulation guidelines

- Soluble in the aqueous phase
- Insoluble in commonly used oils
- Add to water and dissolve at 50°C
- Alternatively add at 25°C under stirring
- A pH between 4 and 8 is recommended

Solvent	T	Concentration
Water	20°C	ca. 0.4%
Water	75°C	ca. 4.0%
Ethanol	20°C	ca. 0.1%
5% Glycerin in water	20°C	ca. 0.8%
Propylenglycol	25°C	ca. 0.3%
50% Isopropanol in water	25°C	ca. 0.3%
Sodium Lauryl Sulfate (30%)	20°C	ca. 0.8%

Table 1: Solubility of Allantoin in different solvents

Different reference formulations with Allantoin are available on request.

References

- 1 DiSalvo, R.M. Allantoin. in: Chemistry and Manufacture of Cosmetics, Vol 3, 29-34 (2002)
- 2 Eggensperger, H. Allantoin und seine Derivate. in: Multiaktive Wirkstoffe für Kosmetika, 9-33 (1995)

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