

# LEBENSMITTELCHEMISCHE GESELLSCHAFT

- Fachgruppe in der GESELLSCHAFT DEUTSCHER CHEMIKER -  
Arbeitsgruppe Kosmetische Mittel

**Data sheets for the evaluation of the effectiveness of active ingredients in cosmetic products**

## Allantoin

### 1. Definition

Allantoin (5-ureidohydantoin,  $C_4H_6N_4O_3$ , CAS No.: 97-59-6) is a product of protein metabolism found in mammalian urine and in plants (where it is a product of ammonia detoxification), e.g., in horse chestnut bark, maple, wheat germ, comfrey, black salsify and beet [1, 2]. Chemical synthesis is carried out by oxidation of uric acid with alkaline permanganate solution, by heating urea with dichloroacetic acid or from glyoxylic acid and urea [1].

### 2. Effect

Allantoin is a well-established multiactive agent used in skin and hair care products due to its favourable toxicological and dermatological properties [3,4].

The following effects are attributed to allantoin:

Allantoin can exert a longer-lasting keratoplastic effect on the stratum corneum, which is manifested in an emollient effect, smoothing of the skin surface, and elimination of a skin condition characterised by more severe scaling [3,4,14].

The keratoplastic effect of a 0.2% allantoin solution on the stratum corneum studied in vitro is equivalent to that of a 10% urea solution [8,9].

Allantoin increases - albeit only moderately compared to modern active ingredients - the skin's moisture retention capacity, although an objective evaluation of the degree of effectiveness for allantoin as a moisturiser proves difficult [4,10,14].

Furthermore, an anti-irritant effect is attributed to allantoin [11,12,14].

For the described effects cited in the literature [5,6,7,14], there is no evidence that these effects are actually caused by the added allantoin in a wide variety of cosmetic products.

Use concentrations described in the literature [4,13,14].

Products	Concentration
After-shave preparations	0.2%
Soaps and shaving creams	0.15 – 0.2%
Hair tonic	0.2%
Eye preparations	0.2%
Oral and dental care products	0.05 – 0.2%
Antiperspirants and deodorants	0.1 – 0.2%
Skin creams, lotions and sunscreens	0.1 – 0.5%
After-sun lotion	0.5%
Baby care	0.2 – 0.5%
Lipsticks and makeup	0.1%
Preparations for foot care	0.2%
Toothpaste	0.2%

**Note:** The general notes and recommendations of this data sheet series must be taken into account, as well as the currently valid legal standards.

**Literature:** [1] Römpp Lexikon Chemie, 10th edition, Georg Thieme Verlag Stuttgart (1996)

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