

# Dermatonics Dry Skin Balm

Clinically proven for effective treatment of dry skin



**A healthy skin will typically contain 28 micrograms of urea per square centimetre. Dehydrated, dry skin can see a reduction in urea content of as much as 50% and those with eczema as much as 80%.**

- May be applied up to 4 times daily if required
- Ideal for dry skin
- Paraben free
- Hypoallergenic fragrance



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# Evidence for the inclusion of urea as constituent of emollient products

## Urea

Urea is a natural component of the epidermis. Specifically it is part of the skin's own natural moisturising factor essential for maintaining skin hydration and skin health<sup>1</sup>. It is an organic compound which has long been used as a skin hydrator and keratolytic to treat dry and scaly skin conditions. Its effect on keratin depends on the concentration of urea in a product. Evidence suggests that 5%-10% concentrations are effective as humectants in emollients. Recent evidence shows that an emollient containing 5% urea enhances skin hydration for longer than those without and that it also enhances skin barrier structure and function<sup>3</sup>. A study examining the effect of 10% and 20% urea in an emollient base, showed that at both strengths there was increased expression of the gene encoding for filaggrin, suggesting an improved barrier function<sup>4</sup>.

Urea is a well-researched humectant with a number of studies showing evidence of improving skin hydration and barrier function with very few adverse side effects<sup>2</sup>. Its mechanisms of action in topical formulations have been listed as: humectant, keratolytic, stabilizer of intercellular lipids and enhancer of water uptake in the stratum corneum and regulator of genes required for barrier function<sup>1</sup>. Evidence for efficacy at both 5% and 10% concentrations can be found for conditions including psoriasis, eczema and ichthyosis vulgaris<sup>1,2</sup>.



## DRY SKIN CONDITIONS

### Atopic Eczema

Atopic eczema is described as a disease where skin barrier dysfunction leads to dry and itchy, often inflamed, skin, with frequent skin infections<sup>5</sup>. It is a skin disease in which genetics and environmental factors combine to produce a waxing and waning condition that can resolve and flare periodically. For some, although not all of those with eczema, filaggrin, which is a vital protein for the healthy structure of the skin, is deficient and this causes skin dysfunction<sup>6</sup>.

### Psoriasis

Psoriasis is a hyper-proliferative condition characterised by thickened, scaly plaques of skin which may itch. The evidence for the use of emollients for psoriasis is significantly less than for eczema. Nevertheless, a 2008 review indicated that emollients are useful for reducing scale in psoriasis. In addition, when urea is added to an emollient base, epidermal thickening and cell turnover were both reduced<sup>7</sup>. A subsequent review in 2015 showed that in four out of five studies examined, 10% urea products were responsible for improving psoriasis outcomes<sup>8</sup>. Both these reviews suggest that as psoriasis is a hyper-proliferative condition it is likely that urea, particularly at higher concentrations, has an anti-proliferative effect on skin cells, as well as an humectant effect.

### Ichthyosis vulgaris

Loss of function mutations in the filaggrin gene are present in individuals with ichthyosis vulgaris<sup>9</sup>. This leads to a defective skin barrier causing transepidermal water loss and hyperkeratosis. As a result of this the individual experiences dry, scaly skin. Whilst there is little direct research about the use of emollients and ichthyosis vulgaris, by understanding the effect of emollients in other dry skin conditions, it is possible to see how it is a vital part of treatment.



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<sup>1</sup>Friedman, AJ von Grote, EC Meckfessel, MH Urea: A clinically oriented overview from bench to bedside *J Drugs Derm* 2016 15(5):633-39

<sup>2</sup>Pan, M Heinecke, G Bernardo, S Tsui, C Leviitt, J Urea: a comprehensive review of clinical literature *Dermatol Online Jnl* 2013 19(11):20392

<sup>3</sup>Danby, SG Brown, K Higgs-Bayliss, T Chittock, J Alebenali, L Cork, MJ The effect of an emollient containing urea, ceramide NP and lactate on skin barrier structure and function in older people with dry skin *Skin Pharmacology and Physiology* 2016 29:135-147

<sup>4</sup>Grether-Beck, S Felsner, I Brenden, H Kohn, Z Majora, M et al Urea uptake enhances barrier function and antimicrobial defense in humans by regulating epidermal gene expression *J Invest Dermatol* 2012 132(6):156-72

<sup>5</sup>Simpson, EL Chalmers, JR Hanifin, JM Thomas, KS Cork, MJ et al Emollient enhancement of the skin barrier from birth offers effective atopic dermatitis prevention. *J Allergy Clin Immunol* 2014 134(4):818-23

<sup>6</sup>McLean, WHI Filaggrin failure from ichthyosis to atopic eczema and beyond *BJD* 2016 175(sup 2):4-7

<sup>7</sup>Fluhr, JW Cavallotti, C Berardesca, E Emollients, moisturizers and keratolytic agents in psoriasis *Clin in Derm* 2008 26:380-86

<sup>8</sup>Jacobi, A Mayer, A Augustin, M Keratolytics and emollients and their role in the therapy for psoriasis: a systematic review *Dermatologic Therapy* 2015 5:1-18.