

# Replenish, Repair and Protect



## Medilan™

Emollients soothe, smooth and hydrate the skin. They are of great therapeutic value in the treatment of a number of dermatological disorders. **Medilan** is a unique natural emollient, able to augment the functions of the human skin lipids. By replenishing the essential lipids of the skin, **Medilan** is able to accelerate the repair of the skin's natural barrier function, whilst simultaneously protecting against microbial infection.

Croda's **Medilan** range of lanolin products offer exceptional purity, beyond that of monograph compliance, and unrivalled performance in clinical trials. The pure and hypoallergenic properties deliver outstanding efficacy in dermatological applications, as well as proven safety in use. Clinical trials have demonstrated that the **Medilan** range brings a number of functional advantages to modern treatments.

- **Replenishing essential lipids**  
Medilan is able to supplement the skin with the lipids essential to skin health.
- **Repairing the skin's natural barrier**  
Medilan is effective in accelerating the repair of the skin's natural barrier function.
- **Protecting against microbial infection**  
Medilan is proven to control a variety of micro organisms responsible for today's skin disease.

CRODA

## Replenishing Essential Lipids

Healthy skin has been compared to a strong brick wall in that the outer skin cells, or corneocytes, are the bricks and the skin lipids are the mortar holding the bricks together<sup>1</sup> (Figure 1).

The skin lipid mortar helps retain water inside the skin cell bricks giving healthy, hydrated skin cells and preventing gaps opening up between them.

The lipid component of the mortar is arranged in a bilayer fashion (Figure 2), getting the name from its two layers of fatty acids, the role of which is to lock moisture into the skin whilst locking out harmful aggressors. Along with fatty acids, the lipid bilayer also contains ceramides and 'essential' cholesterol.

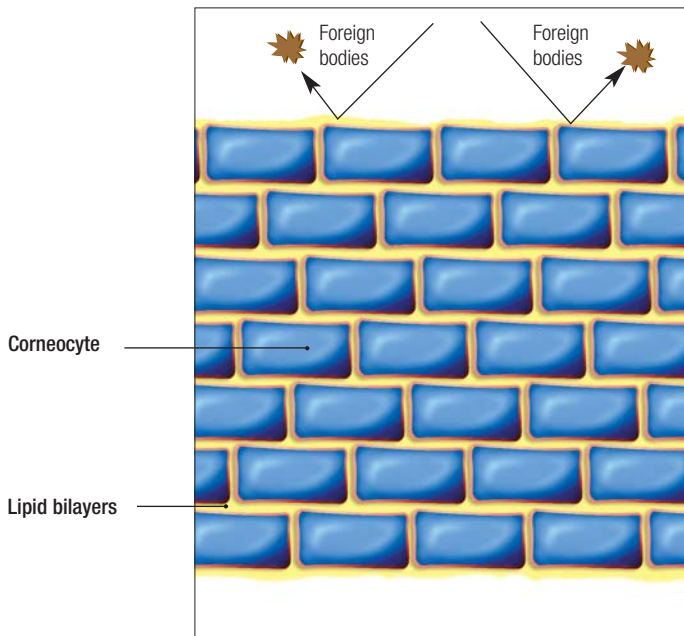


Figure 1: Bricks and mortar model of normal skin

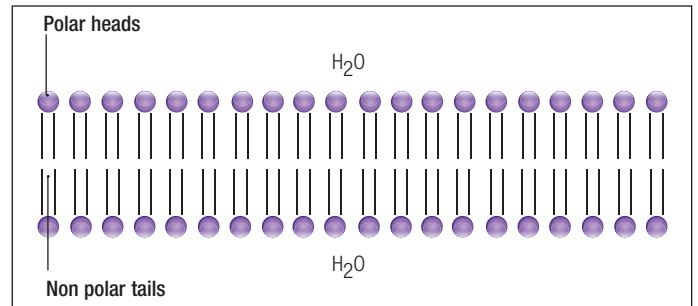


Figure 2: Lipid bilayer structure

## Compromised Skin

We now know that the top layer of the skin is made up of corneocytes and lipid bilayers. Not surprisingly each time we wash, scrub or use detergents some of the corneocytes and lipid bilayers are washed away. There are a number of other factors that can impair the skin barrier:

- Exposure to sun, wind and low humidity
- Use of soaps or harsh cleansers
- Skin conditions such as eczema and psoriasis
- Certain medications that can dry the skin, such as those for eczema, psoriasis, acne and rosacea
- Age

When the lipid bilayer is compromised, trans-epidermal water loss increases, the corneocytes dehydrate and cracks are left in the skin barrier wall. This allows the penetration of irritants, allergens and bacteria that trigger inflammation and infection (Figure 3).

Medilan, due to its chemical and physical similarity, is able to imitate and augment many of the skin's natural lipids. The Medilan range can be used in treatment for many skin conditions such as atopic dermatitis, psoriasis and acne to prevent damage to the skin barrier and promote healthy skin.

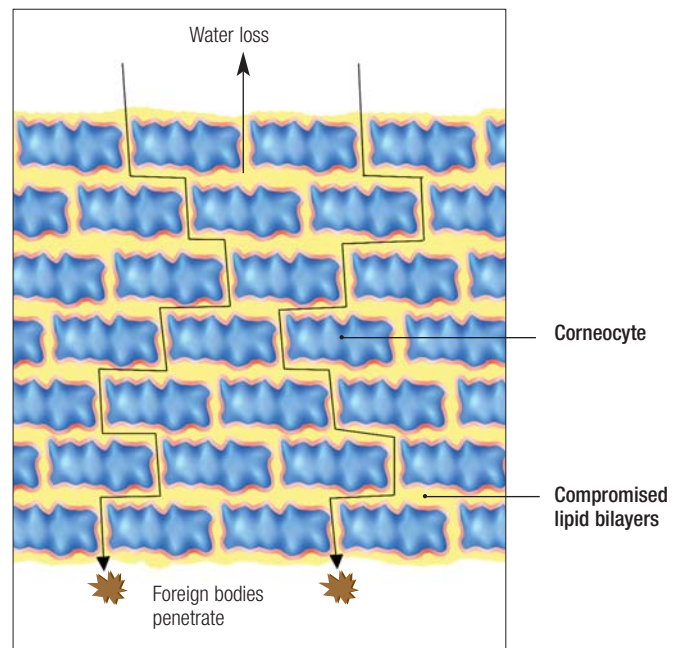


Figure 3 Bricks and mortar model of eczematic skin

## Repairing the Skin's Natural Barrier

White petrolatum has traditionally been regarded as the gold standard emollient for moisturising the skin and treating cuts, abrasions, erosions and superficial burns<sup>2,3</sup>. However, further studies have indicated that certain types of purified lanolins available in the Medilan range possess a number of attributes that make them superior to petrolatum.

### From the Hands...

In an in vivo trial, Medilan reduced the clinical signs and symptoms of all evaluated parameters over the treatment period. Improvements in skin condition were assessed by the investigators and classified as follows:

- 0 = unchanged
- 1 = slight improvement
- 2 = moderate improvement
- 3 = very noticeable improvement
- 4 = dramatic improvement

Overall, treatment with Medilan was seen to dramatically improve clinical signs (score = 4), whereas the petrolatum treatment only gave moderate improvements against baseline (score = 2).

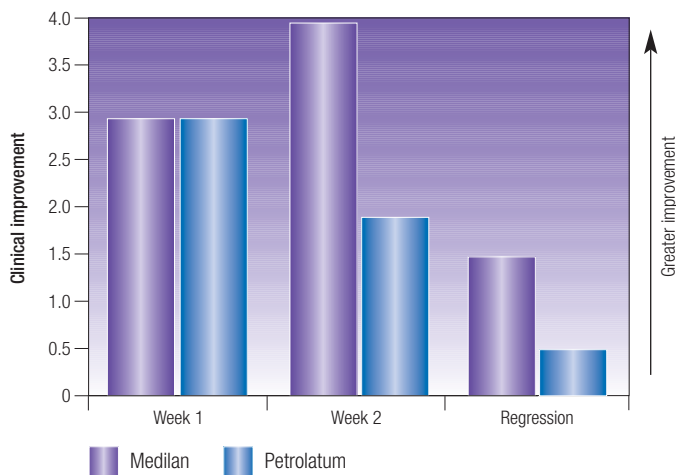


Figure 4: Clinical assessment of overall improvement over baseline

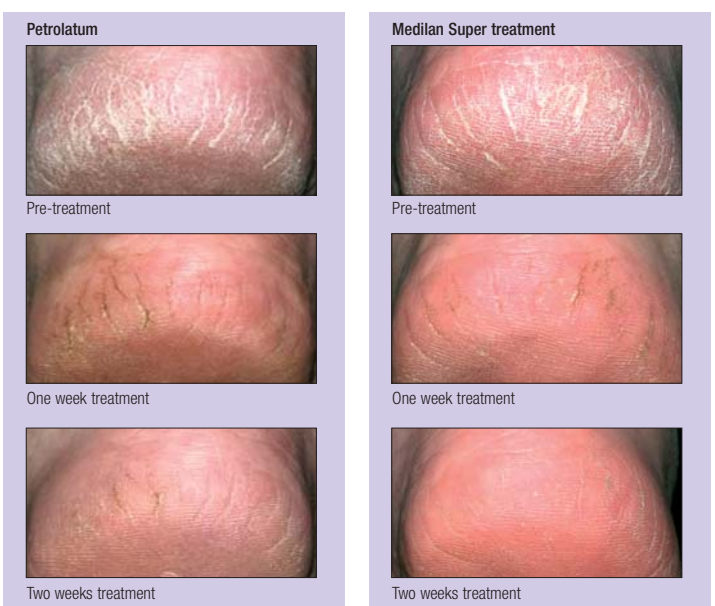


### ...To the Feet

Over a two week in vivo study of Medilan Super applied to the feet each evening, results showed that the treatment soothed, re-hydrated and repaired cracked, dry, brittle and thick heels.<sup>4</sup>

When a further study was conducted to compare Medilan Super with white petrolatum to evaluate the clinical effects in repairing heel problems, Medilan Super once again out-performed this leading competitor product.

In a subjective assessment, Medilan Super was also the most effective in decreasing the symptoms of painful and itchy feet.



## Crack Down on Sore Lips<sup>4</sup>

Any impairment to the lipid components of the lips can cause dryness, scaling, cracks and soreness. Liquid Medilan Ultra has shown superior performance to petrolatum in replenishing the lips' skin lipids and repairing the xerotic lips.



## Accelerated Wound Repair

Medilan Ultra, a Super Refined ultra-pure medical grade lanolin has been specifically designed for use in the treatment of wounds and dermatological disorders. Wounds typically heal faster and with less scar formation in a moist environment<sup>5</sup>, with its ability to form a bi-directional vapour permeable membrane, Medilan Ultra delivers the ideal moist wound-healing environment.

Clinical and photographic assessments have demonstrated that Medilan Ultra is superior to petrolatum at promoting the healing of superficial wounds<sup>6</sup>. Medilan Ultra was observed to improve evaluated clinical parameters more effectively than petrolatum reducing drying, scaling, crusting and inflammation as early as day two.

In the same study, by day eight, glyptic lines, which are a measure of statum corneum barrier restoration, were becoming visible in some subjects treated with Medilan Ultra, and by day 10 the glyptic line formation was far more advanced than those treated with petrolatum. This is further evidence that the Medilan range is superior to petrolatum.

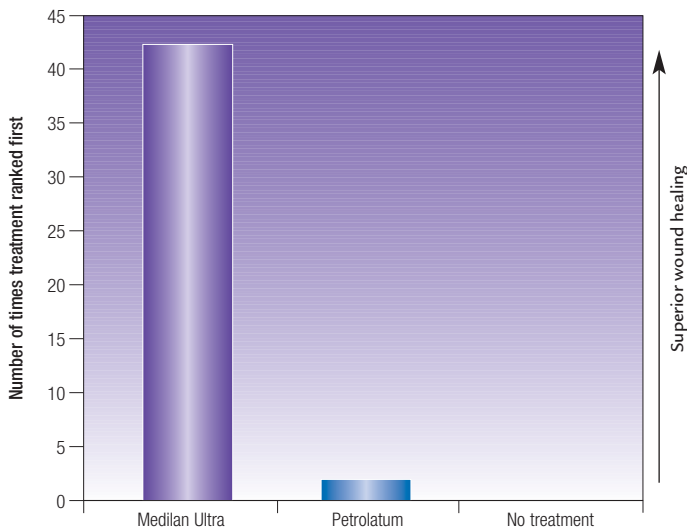
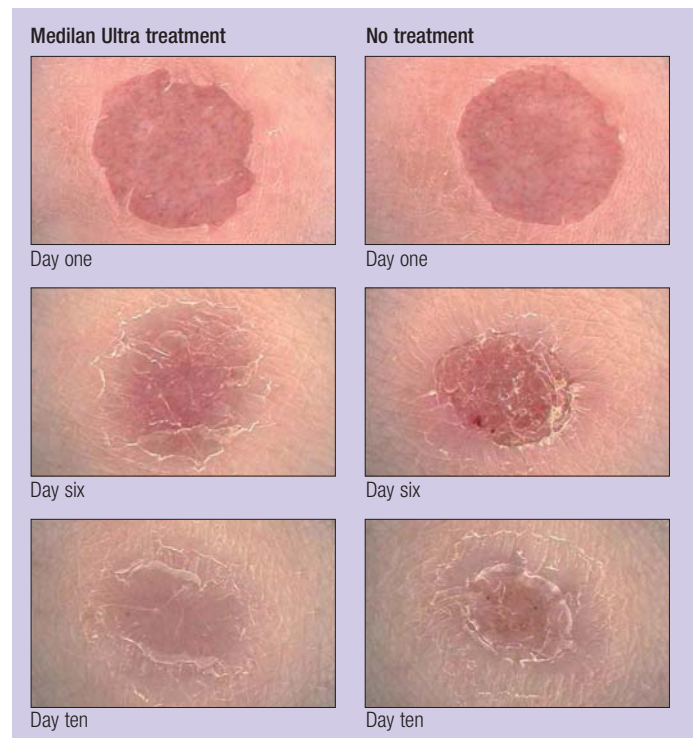


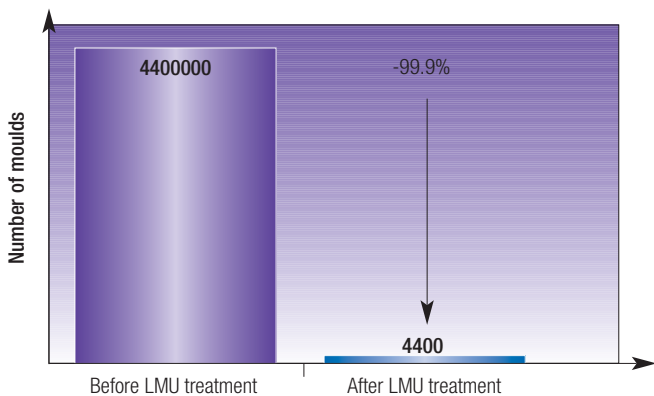
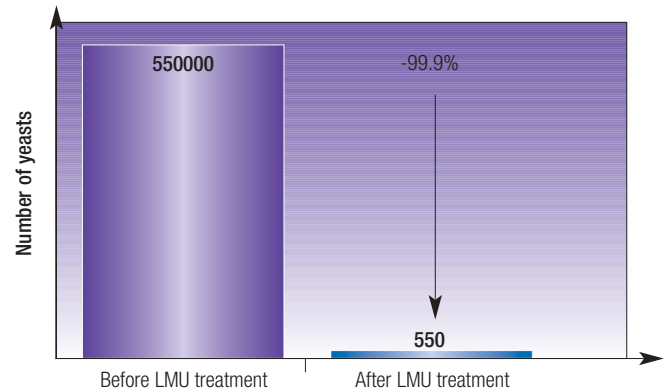
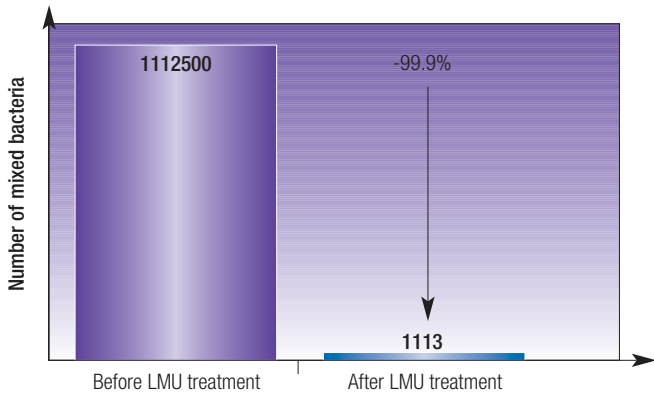
Figure 5 Clinical assessment of Medilan Ultra vs petrolatum on superficial wounds



## Protect Against Microbial Infection

Liquid Medilan Ultra (LMU) has been shown to have significant anti-microbial properties against a number of common micro organisms.

- Eczema is a group of inflammatory skin disorders affecting approximately 20% of the population at some point in their lives. Staphylococcus Aureus is a gram positive bacteria responsible for the infection that leads to the inflammatory symptoms in eczema sufferers. Liquid Medilan Ultra has been proven to reduce colonies of this bacteria by 99% after 24 hours.



- Candidiasis is an overgrowth of yeast that leads to a range of unpleasant symptoms, such as itching and soreness around the vagina. Candida Albicans is a yeast present in the body that grows out of control during candidiasis. Liquid Medilan Ultra has been proven to reduce the levels of Candida Albicans to a level that controls the candidiasis symptoms.
- Wound infection is common in immunocompromised individuals. Pseudomonas aeruginosa is a gram negative bacteria that can attack wound sites and lead to infection. Liquid Medilan Ultra has shown potent antibacterial effects against this organism.

## The story of the Medilan Range

Medilan has a 70 million year evolution advantage over most other topical excipients. Derived from nature, Medilan is uniquely engineered to imitate the natural lipids of the skin.

Croda has developed the Medilan range through a number of proprietary processes, which has resulted in a number of clinically excellent and aesthetically superior products.

**Medilan** is manufactured using a highly specialised process that removes traces of pesticides and free wool wax alcohols, delivering a medical grade product suitable for pharmaceutical use.



**Medilan Super** is manufactured using Croda's patented Super Refining process to deliver a medical grade product with superior aesthetics.



**Medilan Ultra** is the purest lanolin product available globally. Manufactured without bleaching, this water white product is the product of choice for premium dermatological applications.



**Liquid Medilan Ultra** has all the benefits of Medilan Ultra in a clear liquid form.

### The Medilan Range

Product Name	Pharmaceutical Monograph	Physical Form
<b>Medilan</b>	Wool Fat PhEur Lanolin USP Modified Lanolin USP	Yellow soft mass
<b>Medilan Super</b>	Lanolin USP Modified Lanolin USP	Off white soft mass
<b>Medilan Ultra</b>	Lanolin USP Modified Lanolin USP	White soft mass
<b>Liquid Medilan Ultra</b>	Liquid Lanolin	Colourless liquid

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