



## **Natural Antibacterial Skin Care - Needed Now, More Than Ever**

### **The Skin Microbiome**

The skin the largest organ in the human body with an area of around 1.8 square metres. It acts as a protective shield against pathogens and toxins while retaining moisture and nutrients inside the body [1].

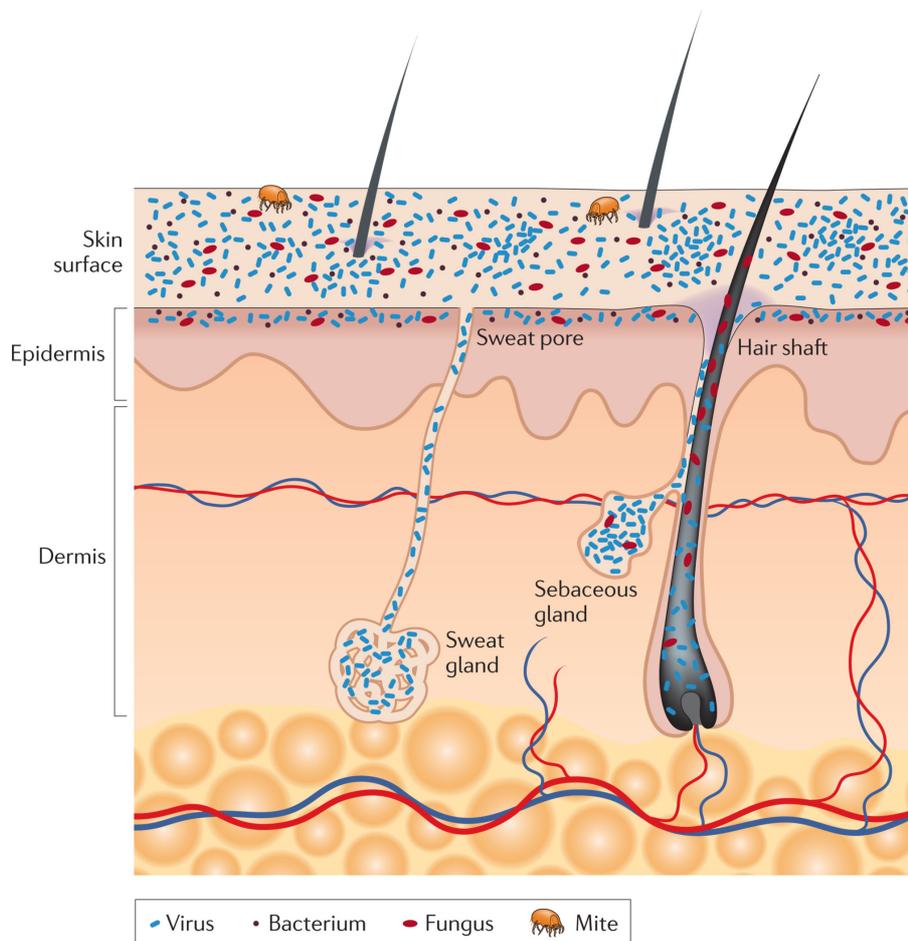
From the time of birth, our skin is colonized by a wide range of microorganisms such as bacteria, fungi, viruses and mites (“microbiota”), most of which are harmless or even beneficial. Having millions of microbes living on our skin is a disturbing notion for many of us, but understanding the skin microbiome is enabling scientific and medical researchers to develop new and more natural skincare products and dermatological treatments to beautify and treat diseases of the skin.

There are many factors that affect the skin microbiome and the delicate balance between the human hosts and the microorganisms that inhabit their skin. These factors include: sex, age, genetics, health status (including the effectiveness of the immunity system), lifestyle, stress levels,

skincare and hygiene practices, geographical location, climate, antibiotics usage and much more. When this balance is disrupted, skin problems and infections can arise.

The vast “ecosystem” that is the human skin has three main types of sites: sebaceous or oily (face, chest and back), moist (bend of elbow, back of knee and groin, feet) or dry (forearm and palm) [2]. Studying the composition of the microbiota at different sites enables medical researchers in identifying the cause common skin disorders, which often have a preference for specific skin sites. For example, eczema is often found inside the elbow (where it is moist) and psoriasis on the outside of the elbow (where it is dry).

**FIGURE 1:  
Skin Microbiome**



Source: [1]

## Common Skin Disorders

### Bacterial Skin Infections

Most skin infections are caused by the bacteria families *Staphylococcus* (staph) and, to a lesser extent, *Streptococcus* (strep) [3,4]. These bacteria, especially staph, live on the skins of most people and remain harmless. When the skin is perforated as a result of wounds, cuts or abrasions, even ones

that are almost invisible such as paper cuts, these bacteria multiply rapidly and can cause infections that are mild, serious or even life threatening.

Common bacterial infections whose symptoms are mild to moderate in severity include impetigo (school sores), sties, abscesses, boils, folliculitis, cellulitis, carbuncles and furuncles. Most of these conditions are contagious, uncomfortable and very painful.

Serious, life threatening bacterial infections include toxic shock syndrome, endocarditis (inflammation of the heart valve), surgical wound infections, septicaemia (blood poisoning), necrotizing fasciitis (flesh eating bacterial disease) and infections of prosthetic devices such as heart valves, pacemakers, catheters and joint replacements.

Hospitalisations as a result of bacterial infections, especially those caused by antibiotic-resistant staph, are on the rise [5]. Overuse and incorrect use of antibiotics are creating virulent antibiotic resistant strains of bacteria (also known as “super bugs”) that are difficult to treat and often lethal. MRSA is one of the most common strains of antibiotic resistant staph bacteria.

Anyone can get bacterial skin infections, but children, pregnant women, elderly people, those who play contact sports, live in communal situations, have skin trauma or chronic diseases such as diabetes and heart disease and those with compromised immune systems are most susceptible.

### Non-Bacterial Skin Infections

Bacteria are not the only microbes that cause skin infections.

Childhood viral infections such as measles, chickenpox, rubella and glandular fever cause widespread skin rashes. Common viral infections that cause localised skin conditions include cold sores, genital herpes, shingles, viral warts and orf, also known as pustular dermatitis, a viral skin infection that may be caught from sheep and goats [6].

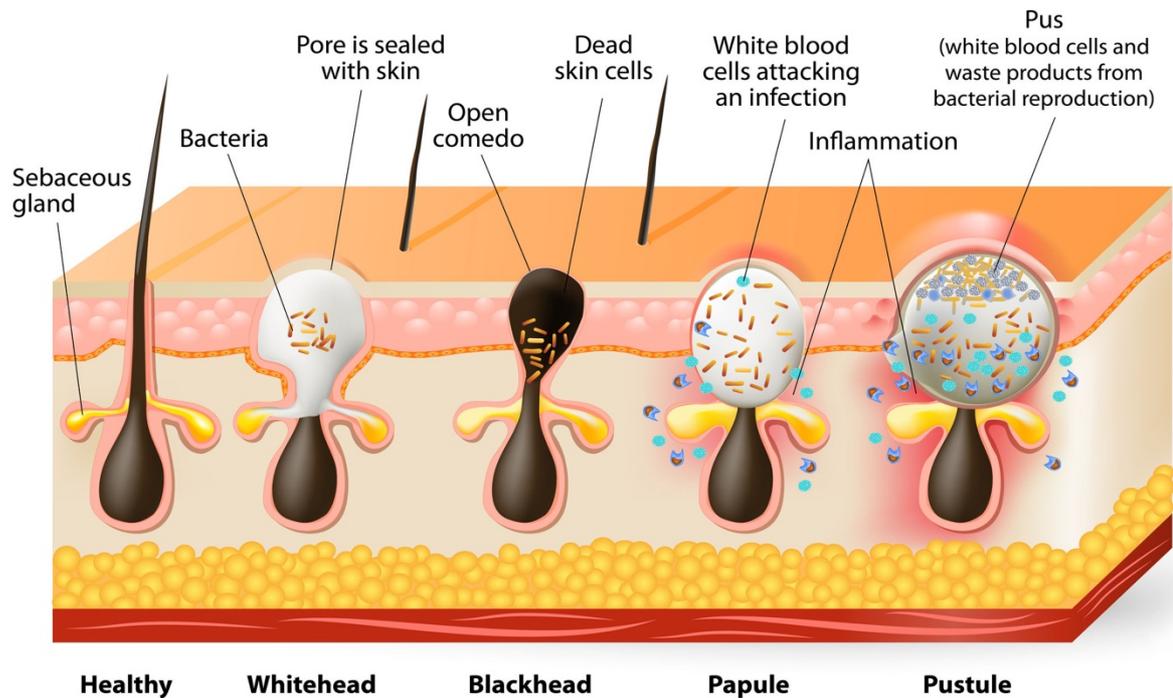
Fungal infections are extremely common, with 20-25% of the world’s population suffering from one of them at any given time [7]. These include nappy rash, thrush, ringworm (body and scalp), jock itch and athlete’s foot. Those living in warm and humid climates and/or wear tight, non-breathable clothing are particularly susceptible to these infections.

### Non-infectious Skin Conditions

Acne, eczema, psoriasis and rosacea are common, non-infectious skin conditions.

Acne is a chronic inflammatory skin condition that is associated with the bacterium *Cutibacterium acnes*. It is common disorder of the hair follicles and sebaceous glands [8]. It has been estimated that acne affects 85% of teenagers and 14% of adults [9]. Acne occurs when hair follicles become plugged with oil and dead skin cells. It often causes whiteheads, blackheads or pimples, and usually appears on the face, forehead, chest, upper back and shoulders.

**FIGURE 2:  
Types of Acne**



Source: [acne-care.expert.com](http://acne-care.expert.com)

Despite the fact that *C. acnes* is the most abundant organism in the microbiota of healthy adults, only a minority of people have acne, highlighting the importance of studying diseases in the broader context of the microbiome, genetics, health status and the environment [2].

Dermatitis is a common condition that has many causes and occurs in many forms. It usually involves itchy, dry skin or a rash on swollen, reddened skin. Or it may cause the skin to blister, ooze, crust or flake off. Examples of this condition are atopic dermatitis (eczema), seborrheic dermatitis (dandruff) and contact dermatitis (resulting from contact with allergens such as soap, cosmetics and fragrances) [10].

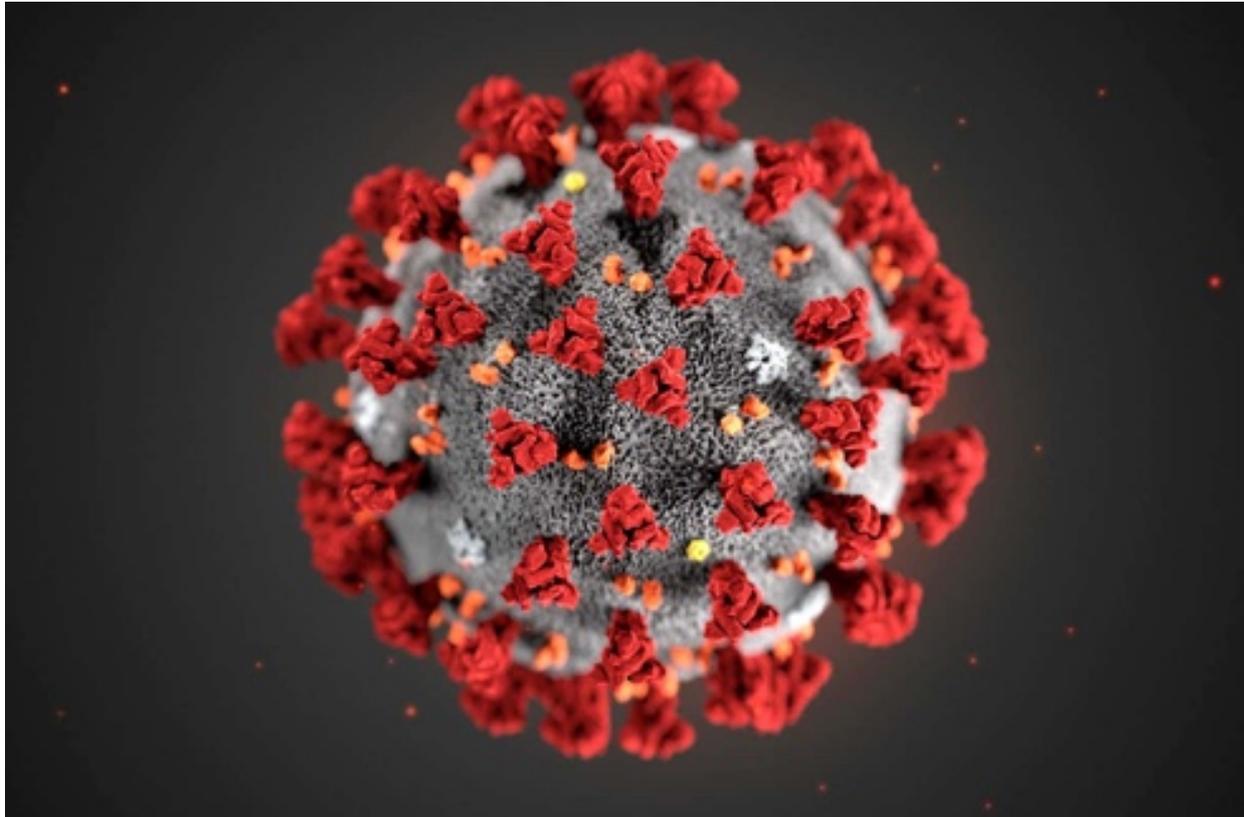
Psoriasis is a skin disease that causes red, itchy scaly patches, most commonly on the knees, elbows, trunk and scalp. Psoriasis is a common, long-term (chronic) disease with no cure. It tends to go through cycles, flaring for a few weeks or months, then subsiding for a while or going into remission. Treatments are available to help manage symptoms [11].

Rosacea is a common skin condition characterised by facial redness and swollen, red bumps. It can also cause dry, irritated and swollen eyes and eye lids and thickened red skin on the nose. It is most common in light skinned females over 30 who smoke and have a family history of the condition [12].

## Impact of Covid-19

The Covid-19 viral pandemic has changed many people's lives, lifestyles and livelihoods as well as global economies and healthcare systems irretrievably.

**FIGURE 3:  
SARS-Cov 2 Virus**



*Source: New Scientist, 2020*

The Covid-19 pandemic is directly linked to several unusual skin symptoms, including chilblain-like symptoms, blisters, wheals, flat and raised red bumps and necrosis [13].

Since the beginning of the pandemic in late 2019, enhanced infection prevention methods such as repeated hand washing with soap and hot water and the frequent use of alcohol-based hand sanitizers have led to significant hand skin damage through dermatitis, especially amongst healthcare workers [14].

This skin damage not only causes pain, discomfort and impairment of work performance, but also creates a route of entry for the highly contagious Covid-19 virus [15].

The Covid-19 pandemic has reiterated the need for highly effective yet gentle antimicrobial skincare, now more than ever.

## Maintaining a Healthy Skin Microbiome

Daily skincare routines and sensible lifestyle choices go a long way towards creating hydrated, clear, even-toned and beautiful skin, preventing various skin problems and delaying the effects of natural aging.

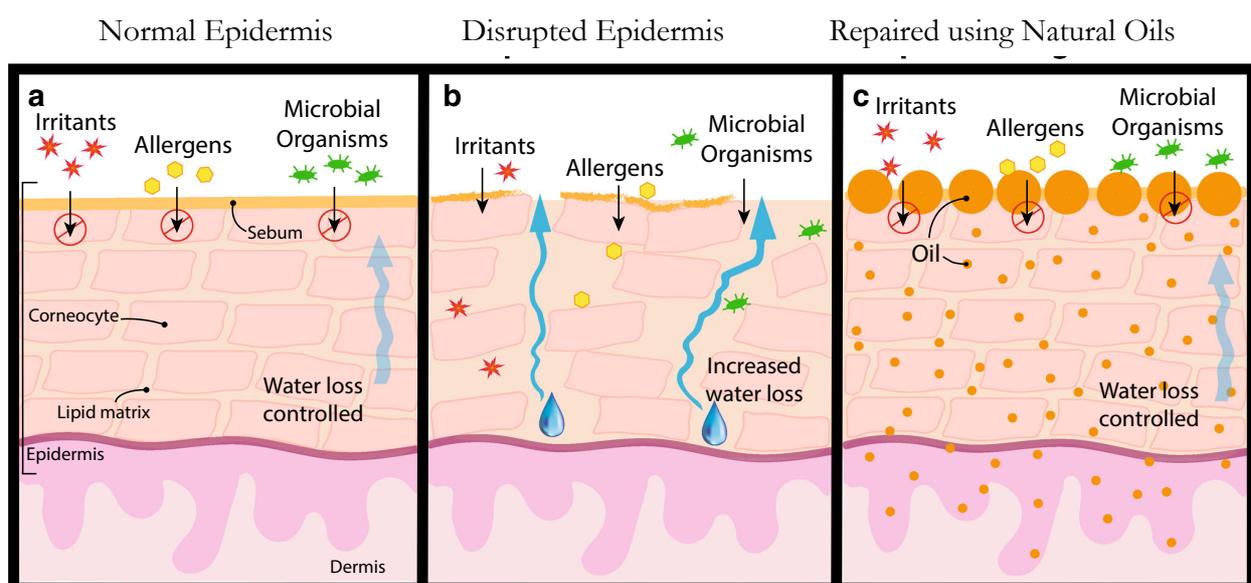
Skin basics include protection from the sun, not smoking, avoiding long hot baths or showers and strong soaps that strip natural skin oils, moisturizing dry skin, eating a healthy diet and managing stress [16].

Finding the “ideal” moisturizer that repairs the skin barrier and maintains a healthy skin microbiome are equally important to consumers and cosmeceutical/medical therapeutic development companies alike [17]. An “ideal” moisturizer provides hydration, prevents trans-epidermal water loss, helps maintain healthy microbiota, prevents the entry of pathogens and allergens while ensuring that the skin is beautifully smooth and flexible.

Many over-the-counter moisturisers contain allergenic and irritating chemicals, such as preservatives, fragrances and artificial colours. Prescription skin emollients tend to be expensive and not easily accessible to many people.

In this context, evidence-based natural formulations that contain plant based oils which repair the skin barrier, have antioxidant and anti-inflammatory properties and prevent or treat common health conditions such as acne, impetigo, eczema, herpes and athlete’s foot are becoming an increasingly attractive solution.

**FIGURE 4:**  
**Skin Barrier Repair Using Natural Oils**



Source: [17]

## Natural Plant Based Oils

For thousands of years, many cultures have used natural plant-based oils to maintain skin health and beauty. Over the last 20 years, research teams around the world have amassed scientific and clinical evidence that help identify their active constituents and mechanisms of action. For example, plant-based oils that are higher in linoleic acid, such as sunflower seed oil, may provide beneficial effects to the skin barrier, whereas oils higher in oleic acid, such as olive oil, may be detrimental to the skin barrier [17].

Recent findings have also confirmed the value of essential oils in the development of antimicrobial skincare products, that unlike antibiotics, do not contribute to the global health issue of antimicrobial resistance (AMR). For example, bioactive-rich manuka leaf oil from the East Cape region of New Zealand is useful in the treatment of acne, bacterial infections such as impetigo, fungal infections such as athlete's foot and ringworm, cuts, wounds and ulcers [18]. It also has anti-oxidant and anti-inflammatory properties. Furthermore, studies undertaken in Germany show that East Cape manuka oil is highly effective in the treatment of herpes [19].

**FIGURE 5:**  
**Manuka Leaves Used to Produce East Cape Manuka Oil in New Zealand**



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