



# VIRAbalm

## PROTECTIVE HAND MOISTURISER

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### INTRODUCTION

Late 2019 saw the entry of a new coronavirus (SARS-Cov-2), commonly called Covid-19, into humanity with devastating effects. As of the time of writing this note on 29 September 2020, there were over 32 million documented cases world-wide, with over 980,000 deaths.

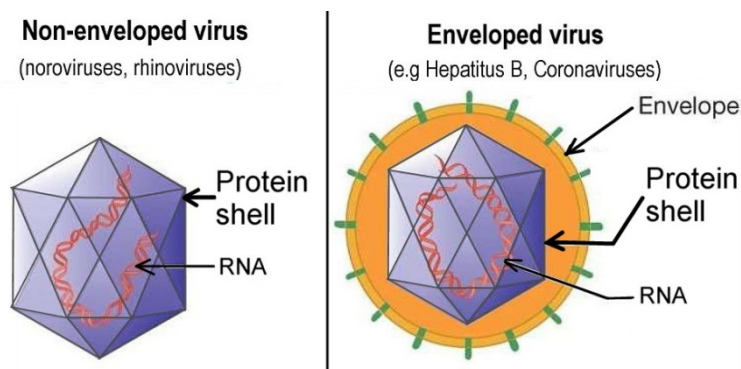
World-wide societal defences have been various forms of lockdown and isolation, social distancing, face masks, and disinfecting surfaces and skin. Economic impacts have been massive. A safe vaccine is still to be found.

This note relates to a product, VIRAbalm, which is based on extensive scientific testing as summarised in the World Health Organisation Guidelines<sup>1</sup>, which can assist in providing some skin protection against the Covid19 virus. The unique two-part formulation uses alcohol to denature viruses on contact, and then a macadamia oil, coconut oil and beeswax moisturiser to help restore natural skin defences

### VIRUSES

Viruses are proteins and, unlike bacteria, are not living organisms. They cannot reproduce without a host.

They occur in two basic forms: enveloped and non-enveloped. Covid-19, a coronavirus, is an enveloped virus.



Ethyl alcohol and water solutions<sup>2</sup> at concentrations between 60% and 75% have been demonstrated by testing to be very effective at denaturing (irretrievably damage) both types of virus because of the ability to damage the proteins and jumble the RNA.

<sup>1</sup> WHO Guidelines on Hand Hygiene in Healthcare (2009)

<sup>2</sup> The water is an essential component to facilitate denaturing of the proteins.

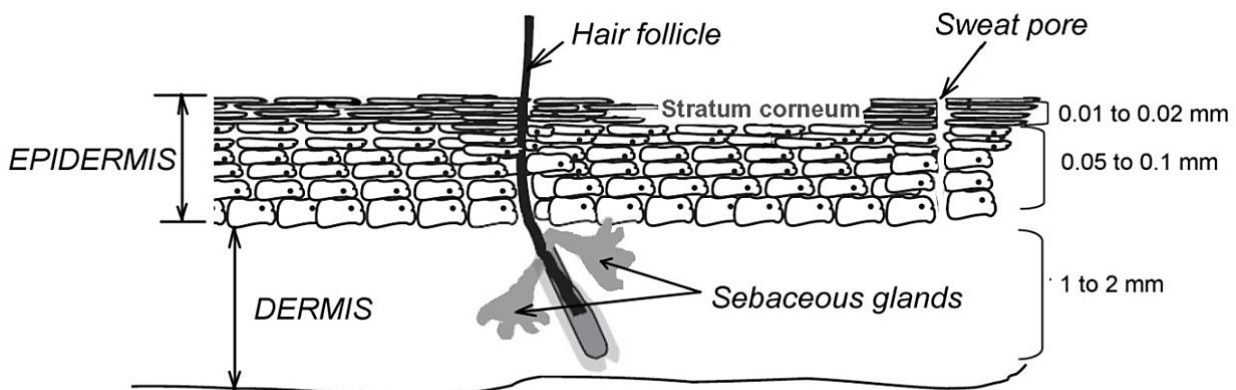
Isopropyl alcohol is ineffective against non-enveloped viruses.

## HUMAN SKIN

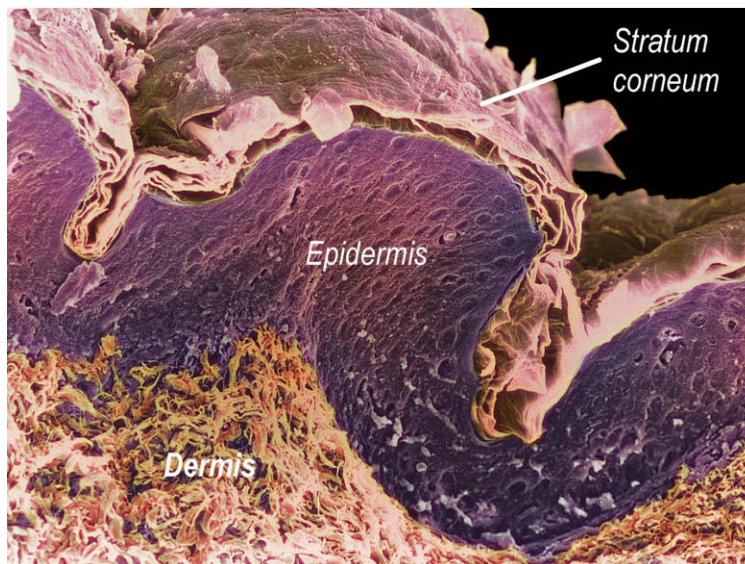
Skin is the barrier between the human body and the external environment. It is a complex organ serving many purposes including<sup>3</sup>:

- limiting loss of water from our bodies'
- antimicrobial protection through peptides,
- antioxidant action through free fatty acids and secreted vitamin E,
- mechanical and chemical protection and our psycho-sensory and neuro-sensory interface.

Diagrammatically, skin is as follows:



Real skin is shown in the scanning electron microscope given below.



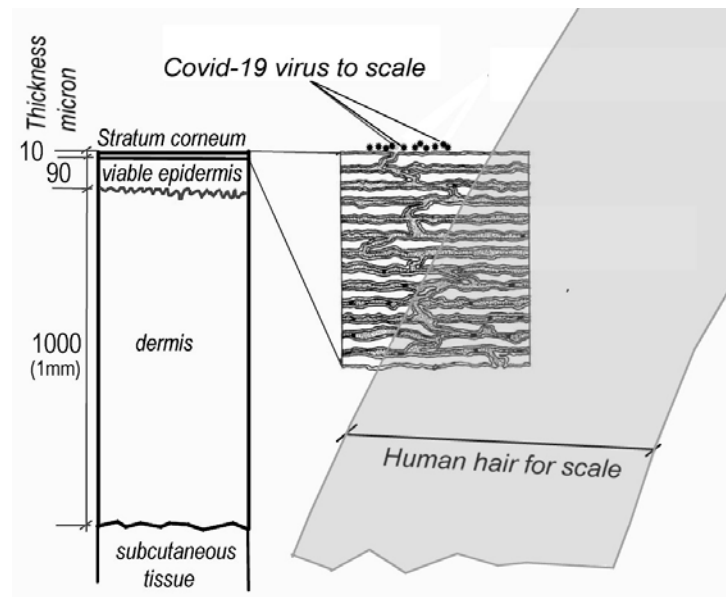
Cells proliferate in the basal layer of the epidermis and then migrate towards the skin surface as they change in character. Final differentiation of the cells occurs at the base of the *stratum corneum* where viable cells are transformed into flat, dead keratin filled cells surrounded by an envelope of proteins and lipids (fats, waxes and steroids). The structure is

<sup>3</sup> Elias, P M *Skin Barrier Function* Current Allergy Asthma Report, Vol 8 No 4 2008.

like a wall built of paving bricks surrounded by a mortar of lipids and proteins. This wall is our protection.

But lipids are dissolved by alcohol: "alcohol enters the skin and removes an appreciable amount of lipid from the *stratum corneum*"<sup>4</sup>.

The Covid-19 virus is about 100 nanometres in diameter, which means one could put about 1000 side by side across a human hair. Bacteria are roughly ten times the size of the Covid-19 virus. If we place Covid-19 viruses on the human skin it looks roughly as in the following picture.



As already stated, ethyl alcohol, together with water, denatures viruses on contact, but provides no residual protection. The alcohol evaporates off the skin in a few minutes, meaning that further Covid-19 viruses from the air or hard surfaces will attach to the skin and potentially wreak havoc. This means that frequent application of alcohol-based hand sanitizers is necessary and this continues to dissolve lipids and strip the natural barriers from the skin surface eventually causing physical damage.

It can be seen that the issue is more serious than simple 'drying' because the free fatty acids in skin's natural oils, which have antibacterial properties, are removed by alcohol.

This is the key consideration in the formulation of VIRAbalm, which incorporates the requisite concentration of ethyl alcohol to denature viruses on contact, but then provides natural oils and waxes to help repair damage to the normal skin defences.

## **VIRAbalm FORMULATION**

VIRAbalm comprises two distinct parts:

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<sup>4</sup> Bommannan and Guy. *Examination of the effect of ethanol on human stratum corneum in vivo*. Jnl Controlled Release, Vol16, No 3 1991

- Water-in-Oil emulsion, comprising globules of water surrounded by natural oils and waxes, suspended in a,
- Carrier comprising 95% ethyl alcohol.

It is made from pure Australian Macadamia and Coconut oils, and beeswax, with emulsifiers derived from plants.

The ethyl alcohol, which combines with the water when rubbed on skin, has the required chemistry to rapidly denature viruses, as for properly formulated hand sanitizers. Then the emulsion of coconut oil, macadamia oil, beeswax, and distilled water, acts initially as a gentle exfoliant, then replenishes the skins natural barrier facilitating normal ongoing natural protection against bacteria.



Like good natural-based products the ingredient list is short; being, in alphabetical order:

- Beeswax,
- Coconut oil,
- Ethyl alcohol (95%),
- Distilled water ,
- Macadamia oil,
- Plant-derived emulsifiers,
- Preservative and natural thickener.