

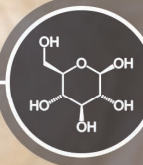
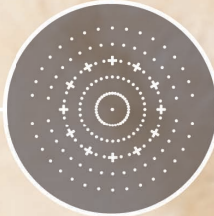
# Reveal your Dermatology Touch



HELPS THE SKIN DO ITS JOB



DEFENSIN TECHNOLOGY



GLYCO TECHNOLOGY



## S-I-S Skin Innovative Science™

Skin Innovative Science™ (S-I-S) is the name given to the combination of **two technologies** from Virbac which work together to help the skin do its job.

### A. Defensin Technology

Two plant extracts proven to stimulate the production of endogenous antimicrobial peptides resulting in a significant reduction in bacterial load.<sup>1,2,3</sup>

### B. Glycotechnology

A combination of saccharides decreasing microbial adherence to the skin.<sup>4,5,6</sup>



## DEFENSIN TECHNOLOGY

New from Virbac is the introduction of Defensin technology into the dermatology range.

Defensin technology uses the naturally sourced components Boldo extract and Meadowsweet extract. These components work together to stimulate the body's natural innate immune system by increasing the production of two of the body's own antimicrobial peptides (AMPs) – defensins and cathelicidins.<sup>1,2</sup>

AMPs, as part of the innate immune system, are involved in many different processes including the recruitment of other immune cells, such as mast cells and T cells when there is an invasion of pathogens such as bacteria and yeast.<sup>7</sup>

Another interesting and important function of AMPs is in the protection of the skin. When bacteria, fungi, or yeast are a threat to the skin, the AMPs can attach to the invading cell's membrane and create a pore. This pore then causes disruption and results in cell death – thus helping to reduce the load of pathogens on the skin surface (as shown in the diagram below).

## NATURAL PLANT EXTRACTS TO STIMULATE ENDOGENOUS ANTIMICROBIAL PEPTIDES

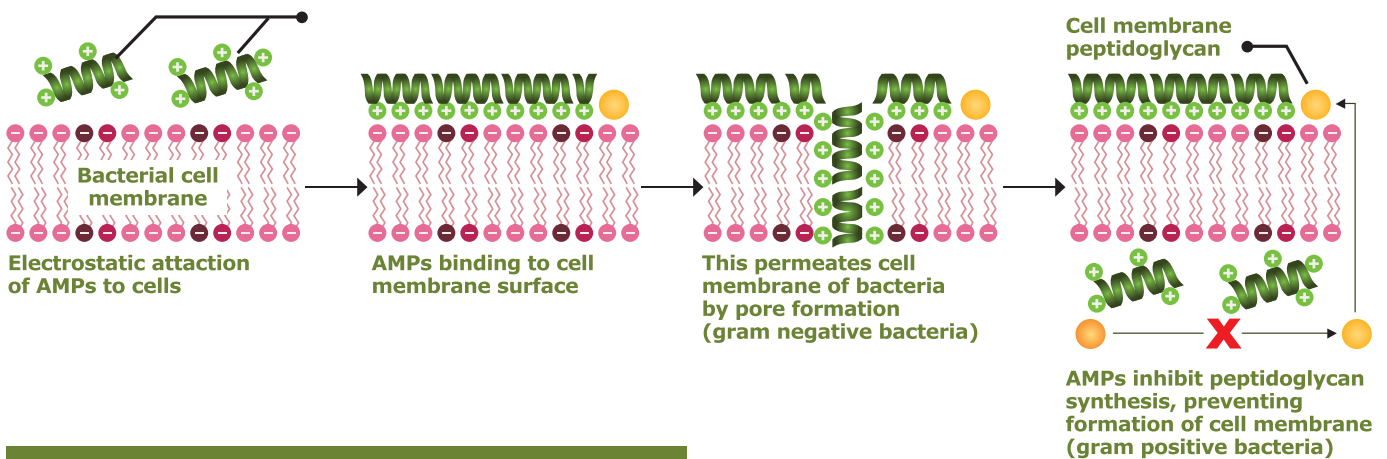
### Boldo extract

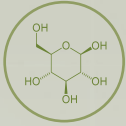
- *Peumus boldus*



### Meadowsweet Extract

- *Spiraeae ulmaria*  
(*Filipendula ulmaria*)



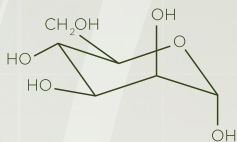


## GLYCOTECHNOLOGY

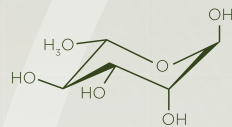
Glycotechnology is the innovative use of exogenous carbohydrates and is incorporated in our shampoo. These are similar to the sugars naturally expressed on the skin cell membranes, which act as attachment points for bacteria and yeast.

These exogenous carbohydrates attach to bacteria and yeast invaders preventing them from adhering to the skin cell membranes. The use of these carbohydrates has been shown to reduce bacterial and yeast adherence and therefore helps in the control of cutaneous infections often associated with inflammatory skin disease.<sup>4,5,6</sup>

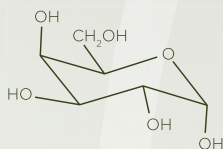
3 SIMPLE SUGARS =  
MONOSACCHARIDES (MRG)



**D Mannose**

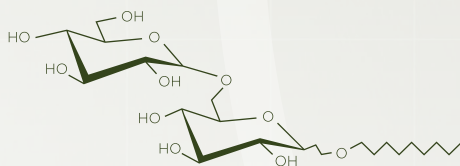


**L Rhamnose**



**D Galactose**

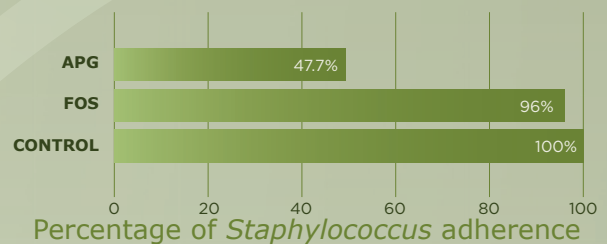
1 COMPLEX SUGAR =  
POLYSACCHARIDE (APG)



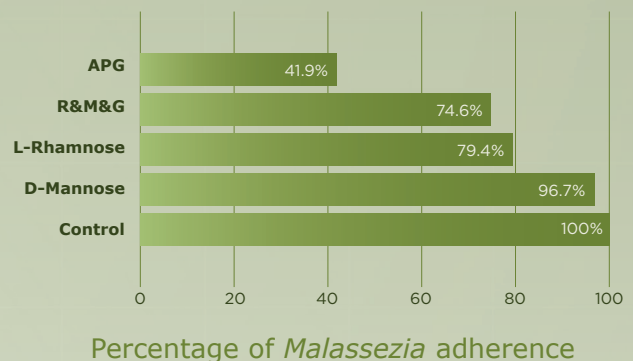
**Alkyl PolyGlucoside**

## Glycotechnology reduces microbial adherence

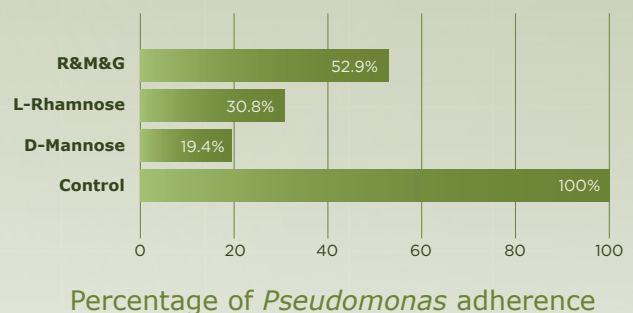
### 1. STAPHYLOCOCCUS PSEUDOINTERMEDIUS<sup>4</sup>



### 2. MALASSEZIA PACHYDERMATITIS<sup>5</sup>



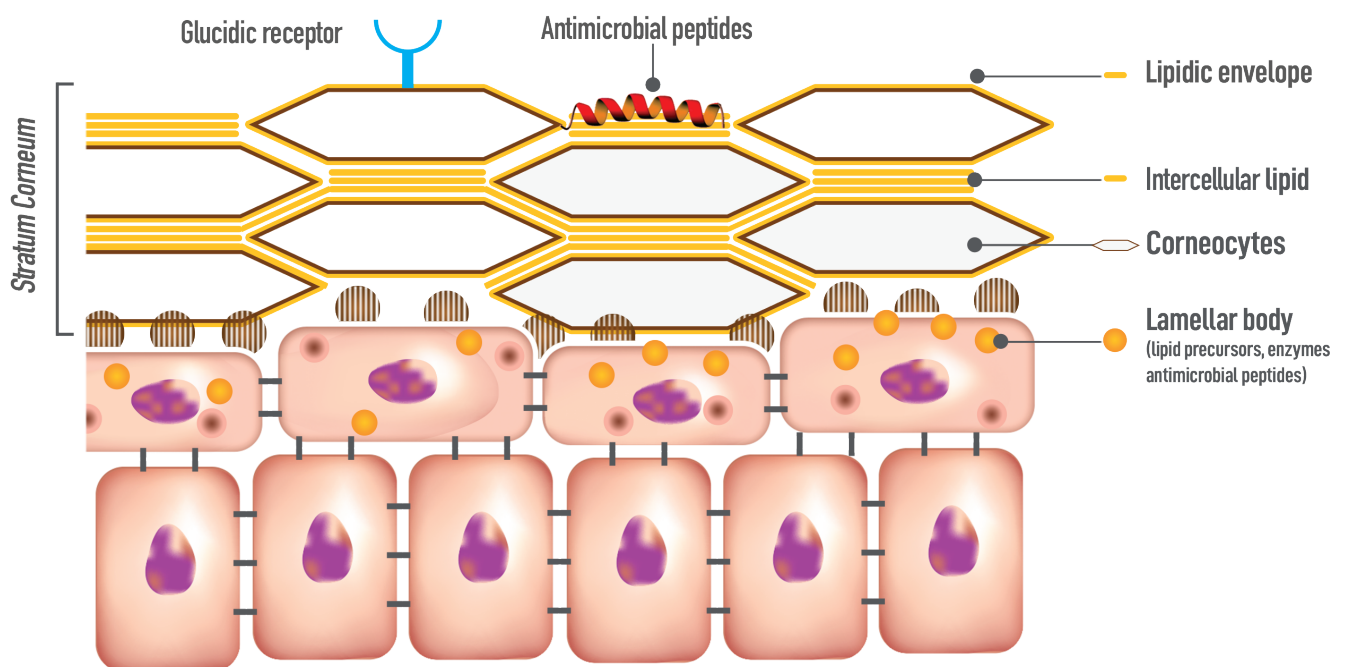
### 3. PSEUDOMONAS AERUGINOSA<sup>6</sup>



## Three ways to defend the skin

- A. Colloidal oatmeal soothes the skin.
- B. Reinforce skin barrier function with **Glycotechnology**
- C. Stimulate skin defence with **Defensin Technology**.

## THE CUTANEOUS BARRIER



### Reference

- 1 Marsella, R, Athrens, K, Vesney, R & Santano 2013, Evaluation of the in vitro effect of plant extracts on the production of antimicrobial peptides and inflammatory markers in canine keratinocytes: a pilot study, *Veterinary Dermatology*, 24; 308-309.
- 2 Santoro et al 2017, Evaluation of the in vitro effect of Boldo and Meadowsweet plant extracts on the expression of antimicrobial peptides and inflammatory makers in canine keratinocytes, *Research in Veterinary Science* 115; 255-262.
- 3 Santoro et al 2016, Evaluation of the effects of 0.1% Peumus boldus leaf and Spiraea ulmaria plant extracts on bacterial colonisation in canine atopic dermatitis: a preliminary randomised, controlled, double-blinded study, *Veterinary Dermatology*, 27 (Suppl. 1), 6-121.
- 4 McEwan NA et al 2006, Sugar inhibition of adherence by *Staphylococcus intermedius* to canine corneocytes, *Veterinary Dermatology*, 17(5):358.
- 5 McEwan NA et al 2007, Sugar inhibition of *Malassezia pachydermatitis* to canine corneocytes, *Veterinary Dermatology*, 18(3):187-188.
- 6 McEwan NA et al 2008, Monosaccharide inhibition of adherence by *Pseudomonas aeruginosa* to canine corneocytes, *Veterinary Dermatology*, 19: 221-225.
- 7 Jenssen, H, Hamil, PA & Hancock, RFW 2006, Peptide antimicrobial agents, *Microbiology Reviews*, 19, 491-511.