



VINIFERAMINE®

# MOLECULES & HEALTH

HEALING THROUGH MODERN SCIENCE WITH SMALL MOLECULE TECHNOLOGIES

## Defending Against Microbes

Skin provides a fairly inhospitable environment for most microbes due to its amazing ability to remain cool, dry and slightly acidic. In addition to producing sweat, the skin frequently sheds cells and secretes oils and defensive peptides to protect against invading microbes. However, skin isn't completely hostile to microbes because it also welcomes a rich and complex flora of interacting microbes that live in harmony with the skin and actually protect it from dangerous pathogens.

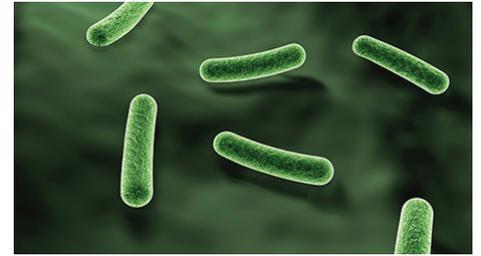
Our skincare products were designed to preserve the balance of the skin's normal chemistry and flora, and enhance protection against invading microbes and microbial over-population. Besides the ingredients that specifically function as antimicrobials such as Benzalkonium Chloride included in our Antiseptic Cleanser, many of the nutrients in our products have protective

antimicrobial activities. Oleuropein, a natural polyphenol in olive leaves, resveratrol, a natural polyphenol in grapevines, and EGCG (epigallocatechin-3-gallate), a natural polyphenol in green tea leaves, all have antimicrobial activities.

### Microbial Resistance and Biofilms

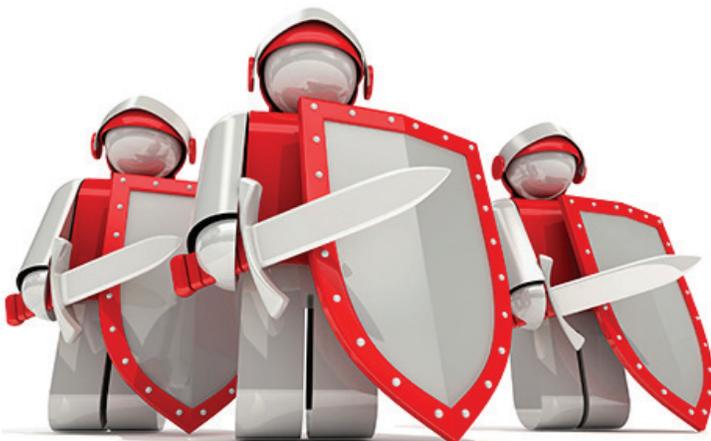
Several microbes have become resistant to antibiotics including methicillin resistant staphylococcus aureus (MRSA), making them much more difficult to defend against to protect skin against infection. One important reason some of these invading microbes resist antibiotics is that they are capable of producing biofilms. Biofilms are aggregates of microorganisms (enclosed in a protective matrix) that strongly adhere to surfaces, including skin tissues. The microbes in biofilms frequently

act together to cause chronic infections. Biofilms are a serious complication in diabetic foot ulcers and in other chronic wounds.



### Naturally Antimicrobial

Some of the naturally antimicrobial ingredients included in our skincare products also have activities against biofilms. Resveratrol has antimicrobial effects against *P. acnes*, as well as the ability to eradicate *P. acnes* biofilms. In addition, resveratrol is reported to inhibit MRSA biofilms. EGCG has been shown to have antimicrobial effects against *P. aeruginosa*, *S. aureus*, and *C. albicans*, which include activities against biofilm formation. EGCG has also been shown to disrupt the communication signaling required for *E. coli* to form biofilms. Oleuropein was shown to inhibit the growth of several bacterial strains including *S. aureus*. Olive leaf extract that contains oleuropein was found to have antimicrobial activity against *P. aeruginosa*, *E. coli* and *C. albicans*. Finally, another important natural antioxidant found in our skincare products, melatonin, has antimicrobial effects against MRSA and antibiotic resistant *P. aeruginosa*.





## Enhancing Protection

Antibiotic resistant microbes are becoming more prevalent. In addition, immune deficiencies and

physical changes associated with diabetes and other chronic illnesses make skin defense against pathogens substantially more difficult. It's good to know that our

products can enhance protection against harmful skin infections that can lead to chronic wounds.

## References

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