



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

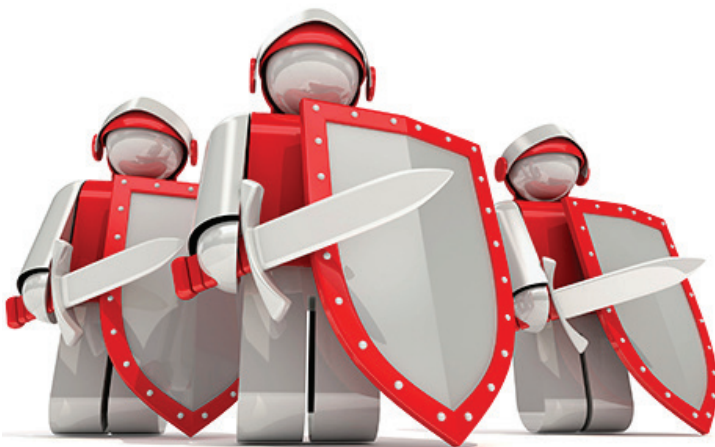
Several microbes have become resistant to antibiotics including methicillin resistant staphylococcus aureus (MRSA), making them much more difficult to defend against to protect skin against infection. One important reason some of these invading microbes resist antibiotics is that they are capable of 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

1. Semin Immunol 2013; 25: 370-377.
2. Molecules 2007; 12: 1153-1162.
3. J Pharm Pharmacol 1999; 51: 971-974.
4. Dermatol Ther 2014; 4: 249-257.
5. PLoS One 2014; 9: e92876.
6. Br J Pharmacol 2013; 168: 1059-1073.
7. Adv Wound Care 2015; 4: 38-49.
8. Phytomed 2012; 19: 409-412.
9. Sci Rep 2014; 4: 5467.
10. Can J Microbiol 2009; 55: 1033-1039.
11. Z Naturforsch C 2003; 58: 879-884.
12. J Pineal Res 2008; 44: 222-226.

Disclaimer: These statements have not been reviewed by the FDA. The decision to use these products should be discussed with a trusted healthcare provider. The authors and the publisher of this work have made every effort to use sources believed to be reliable to provide information that is accurate and compatible with the standards generally accepted at the time of publication. The authors and the publisher shall not be liable for any special, consequential, or exemplary damages resulting, in whole or in part, from the readers' use of, or reliance on, the information contained in this article. The publisher has no responsibility for the persistence

or accuracy of URLs for external or third party Internet websites referred to in this publication and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

About the author: Nancy Ray, PhD is the Science Officer at McCord Research. Dr. Ray received her PhD in Biochemistry and Biophysics and was a postdoctoral fellow at NIH, Harvard University and Dana-Farber Cancer Institute, and the University of Iowa. She also earned bachelor of science degrees in Chemistry and Microbiology.

Copyright 2016 McCord Research. All rights reserved.