



MCCORD SUPPLEMENTS

IMMUNE THERAPY & HEALTH

BETTER HEALTH THROUGH SCIENCE • A PUBLICATION BY MCCORD SUPPLEMENTS

Air Pollution & Damage to Skin

Air pollution is becoming an increasing health problem worldwide. It's an environmental threat to which millions of people are exposed, and is currently the world's largest single environmental health risk. It's well known that air pollution is bad for lungs, but scientists are just beginning to discover how damaging air pollution is to the skin. McCord Supplements skin and wound care products were designed to protect skin from irritants, and help restore skin cells naturally back to health.

Not only is outdoor air pollution a risk to skin health, but indoor air pollution can also be harmful. Indoor risks include exposure to volatile organic compounds (VOC) from organic solvents, protective coatings on furniture, paints, dry cleaning products or cigarette smoke. In fact, atopic dermatitis or eczema has been linked with exposure to air pollution including tobacco smoke. Outdoor air pollution containing VOC includes exhaust from automobiles. Polycyclic aromatic hydrocarbons (PAHs) including dioxins, particulate matter (PM), ozone and smog are some other outdoor pollutants that can be harmful to skin. Many of these air pollutants have been linked with oxidative stress in exposed skin.

Oxidative stress results from the inability of skin cells to eliminate free radicals that damage important cellular molecules including DNA, protein and lipids. The potent small molecule polyphenols, oleuro-

pein, resveratrol and epigallocatechin-3-gallate (EGCG) from olives, grapes and green tea respectively, as well as the important small molecules melatonin and L-glutathione, are all powerful antioxidants found

in McCord Supplements skin and wound care products that have the ability to counteract oxidative stress, particularly in skin cells.

McCord Supplements Silicone Barrier contains an advanced 34% silicone shield to provide a barrier or "second skin" to help protect skin from irritants and help skin stay hydrated. The shield in McCord Supplements Silicone Barrier is composed of a sophisticated silicone complex that will keep protecting the skin even after the skin is cleansed several times. Along with all the McCord Supplements skin and wound care products, McCord Supplements Silicone Barrier includes powerful antioxidants, beneficial amino acids and important vitamins found exclusively in McCord Supplements.

Ozone, typically a component of smog, results in damage to the epidermis and reduction of antioxidants in skin leading to skin barrier disruption, oxidative stress and inflammation. Ozone has been associated with



urticarial (hives), eczema, contact dermatitis, rashes, and skin disease. Ozone exposure has also resulted in increased expression of matrix metalloproteases, suggesting a role in skin matrix remodeling and skin aging.

Polycyclic aromatic hydrocarbons (PAHs) are found in smoke and fumes from wood burning and cigarettes as well as automobile exhaust. PAHs have been shown to cause melanocyte proliferation, skin pigmentation, acneiform eruptions and potential skin cancer. PM includes dust and particles from power plants, incinerators, automobiles, and fires. PAHs adsorbed on the surface of PM may lead to long-term skin exposure through hair follicle or transepidermal absorption that can result in oxidative stress and skin aging.

Outdoor VOCs, in the presence of nitrogen oxides from combustion sources and sunlight, produce smog. Air-to-skin transdermal uptake of many semi-VOCs may actually be



comparable to or greater than lung inhalation of these substances. Scientific evidence indicates that VOCs may cause inflammatory reactions. In one study, exposure of skin cells (keratinocytes) in vitro to VOCs increased the release of chemical messengers (cytokines) that favor the development of inflammatory or allergic reactions. McCord Supplements skin and wound care products contain beneficial small molecule ingredients with powerful anti-in-

flammatory activities including oleuropein, resveratrol, EGCG, L-gutathione, melatonin, dipotassium glycyrrhizinate, and methylsulfonylmethane.

Finally, cigarette smoke may contain more than 100 trillion free radicals that can cause substantial

oxidative stress. Cigarette smoke is composed of thousands of chemical substances including many that activate transepidermal water loss and degeneration of connective tissues. Smoking correlates with skin wrinkling and aging, and is associated with skin conditions including psoriasis and acne. Furthermore, smoking is associated with decreased blood circulation and aberrant wound healing. Resveratrol has been shown to protect skin cells (keratinocytes)

from cigarette smoke-induced damage by increasing the expression of an enzyme involved in cellular defense against oxidative protein damage. Resveratrol has also been shown to promote healing of chronic wounds. In addition, many other ingredients found in McCord Supplements skin and wound care products promote wound healing including oleuropein, EGCG, L-carnosine, L-glutathione, and TECA.

It's good to know that McCord Supplements skin and wound care products can help protect against irritants and the damage that can result from air pollution. Fortunately, McCord Supplements Silicone Barrier provides a protective barrier against irritants that remains effective after several washings. In addition, McCord Supplements Silicone Barrier, along with all of the McCord Supplements skin and wound care products, includes potent antioxidants as well as powerful anti-inflammatory ingredients to help protect skin from oxidative stress and inflammation.

References

1. *Dermato-Endocrinol* 2012; 3: 227-231.
2. *Front Environ Sci* 2014; 2: 1-6.
3. *Int J Mol Sci* 2014; 15: 18508-18524.
4. *Oxid Med Cell Longev* 2012; ID 560682: 1-8.
5. *Ann Plast Surg* 2007; 58: 449-455.
6. *PLOS One* 2015; 10: e0115341: 1-18.
7. *Exp Dermatol* 2008; 17: 713-730.
8. *Indoor Air* 2012; 22: 356-377.
9. *Int J Mol Sci* 2014; 15: 18508-18524.
10. *Diabetes Vasc Dis Res* 2014; 11: 92-102.
11. *Oxid Med Cell Longev* 2012; ID 560682: 1-8.
12. *J Pineal Res* 2013; 55: 325-356.
13. *Int J Gen Med* 2011; 4: 105-113.
14. *Evid Based Complement Altern Med* 2012; ID 650514: 1-9.
15. *Ann NY Acad Sci* 2012; 1271: 75-81.
16. *Food Funct* 2014; 5: 2348-2356.
17. *Cell J* 2014; 16: 25-30.
18. *ISRN Endocrinol* 2014; ID 816307: 1-8.
19. *J Am Acad Dermatol* 2005; 52: 1049-1059
20. *J Pineal Res* 2008; 44: 387-396.
21. *Surgery* 1986; 100: 815-821.
22. *Ann Plast Surg* 2007; 58: 449-455.
23. *Complement Altern Med* 2012; 12: 103-109.
24. *Phytother Res* 1999; 13: 50-54.

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 exem-

plary 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 2015 McCord Research. All rights reserved