

# Food, Not Nutrients, Is the Fundamental Unit in Nutrition

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The identification of nutrients and the study of their bioactivity were significant developments in the evolution of contemporary nutrition science. This review argues for shifting the focus towards food in order to better understand the nutrition-health

**Shifting the focus  
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interface. It begins by introducing the concept of food synergy (a perspective that more information can be obtained by looking at foods than at single food components) to denote the action of the food matrix (the composite of naturally occurring food components) on human biological systems. A proposal is then made for the means by which food-focused research might build the knowledge base for etiologic discovery and appropriate dietary advice. The diet-heart disease dilemma is put forward as an example of where a nutrient-based approach has limitations, and a summary of studies targeting food composition strengthens the case for a food-based approach. Finally, the argument is made that evidence from interventions points back to the central position of food in the relationship between nutrition and health, a position that begs for more whole food-based research.

Key words: foods, nutrients, heart disease, food synergy, apples, fruit, pomegranates, broccoli, peanuts, tomatoes

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doi: 10.1301/nr.2007.oct.439-450

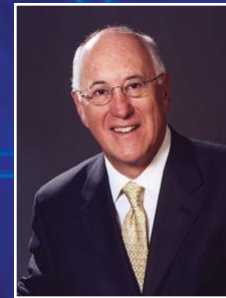
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A growing body of medical information and clinical data indicates the value of a nutritional approach toward treating disease and illness in both humans and animals. In particular, recent research indicates a link between inflammation and disease, examples being diabetes, heart disease, cancer and even early aging in humans. Research on the impact of nutrition has shown that the food matrix (composite of naturally occurring food components) can aid in reducing chronic inflammatory diseases. Moreover, much of this research also reveals that a nutritional approach to treating illness and disease is less effective when it involves a single bioactive substance or nutrient rather than a whole food. It is quite logical that a human or animal, a complete biological system, would obtain the greatest nutritional therapeutic value from consuming a whole food that contains a complete interactive set of bioactive agents.

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Natural Biosciences Inc. is a company focused on developing natural oral supplements with the potential to nutritionally prevent chronic inflammatory disease and specifically the associated aging process. Oxidative stress/reactive oxygen species (ROS) is associated with chronic inflammation, abnormal cellular function, and a process of aging that is associated with various disease states such as cancer, viral and bacterial infections, gastrointestinal disorders, Alzheimer's disease and heart disease.



Marvin S. Hausman MD  
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Natural Biosciences Inc.

As an Immunologist and Urological Surgeon, Marvin S. Hausman MD, Formulator and Chief Executive Officer of Natural Biosciences Inc., became fascinated with the concept of a whole food approach to preventing diseases. Mammals are a complex biologic system and as such require supplementation with whole foods, such as mushrooms, that contain a complex array of bioactive nutrients and enzymes.

The relevant nutritional approach to health is not just the taking of nutrients but the associated necessary mechanisms required to get these substances into cells and tissues of the host. An evolutionary designed species, such as mushrooms, surviving for more than 100 million years, most likely contains both the nutrients as well as the mechanisms for cellular entrée.



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**DIETARY SUPPLEMENT**

# MyCell™ Immune Health

## A Breakthrough Scientific Whole Food Approach Targeting Chronic Inflammation and Aging

A nutritional approach that focuses on one substance oversimplifies treatment of a complex system. In fact, research indicates that the overuse of one substance to treat disease may even cause harm. Medical researchers who have focused on the role of food in health have tended to isolate and study particular nutrients. This approach not only is too simplistic but has even done harm. A classic example of research focused on a single nutrient is the use of vitamin C to treat scurvy. Food such as citrus food was the primary agent to treat scurvy, but this science was commercialized with the production of vitamin C and the use of this vitamin is now the fad for not only scurvy but other illnesses, including the common cold.

### A number of other studies challenge the health benefits of single nutrients, including:

- A 24-month NIH GAIT II Trial that found glucosamine and chondroitin sulfate ineffective for osteoarthritis.
- An NIH study on vitamin E published in *JAMA*, July 6, 2005 titled "Women's Health Study Finds Vitamin E does not Protect Women from Heart Attack, Stroke, or Cancer."
- A National Cancer Institute study published in December 2004 in the *Journal of the National Cancer Institute* titled "Beta-Carotene Supplements Confirmed as Harmful to Those at Risk for Lung Cancer."

Despite indications that whole foods provide far greater health benefits than single nutrients, there are few studies or clinical trials that examine the use of whole foods and/or combinations of foods in addressing illness and disease. In an effort to fill this gap, Mushroom Matrix Inc. and Marvin S. Hausman MD have undertaken several studies examining the impact of a whole food on the health of horses. A mushroom-based nutritional supplement, ingredients of which are present in MyCell™ Immune Health, was used. Mushrooms were chosen because they are a complex whole food consisting of a wide array of bioactive enzymes and nutrients. Several clinical studies have been completed and the initial results indicate a positive impact of mushrooms and their mycelial biomatrices on mammalian inflammatory disease and health.

### Chronic Inflammatory Gum Disease:



Condition of equine gums prior to nutritional, whole-food mushroom supplementation



Condition of equine gums 30 days after nutritional, whole-food mushroom supplementation

### Significance:

The significance of oral inflammatory disease goes well beyond the mouth; the gums are a "barometer" or "window" of what is going on elsewhere in the body. At this point in time most periodontal disease data has come from human studies; however, the mechanism of action crosses most species lines. The impact of chronic inflammatory disease on mammalian health is especially emphasized by the following human data:

- Gingivitis occurs in 60–75 percent of pregnant women.
- Periodontal therapy reduced pre-term birth and low birth weight infant rates by 68 percent in women with pregnancy associated gingivitis.
- Research published in the June 2008 issue of the journal *Lancet Oncology* found that those who had gum disease had a 14 percent higher risk of cancer compared to those with no history of gum disease.
- The risk varied from cancer to cancer. Gum disease appeared to increase the risk for lung cancer by 36 percent, kidney cancer by 49 percent, pancreatic cancer by 54 percent, and for white blood leukemia by 30 percent.

### Causation of Inflammation and/or Chronic Inflammatory Gum Disease

There is no question that mammalian diseases are intimately linked to a chronic inflammatory disease

process. Equine gum disease is a classic example and represents the injury response of the animal's body to the "tenuous balance of pro- and anti-inflammatory cytokines."

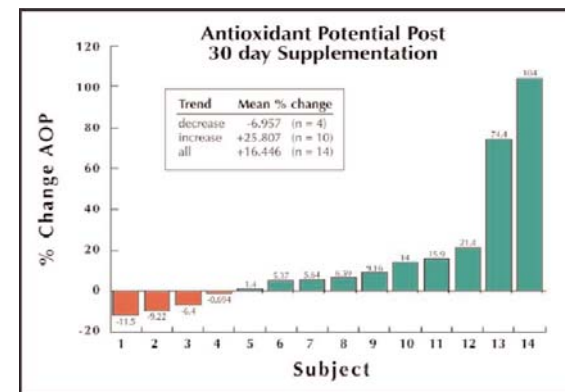
Oxidative stress/reactive oxygen species (ROS) is associated with chronic inflammation, abnormal cellular function, and a process of aging that is associated with various disease states such as cancer, viral and bacterial infections, gastrointestinal disorders, Alzheimer's disease and heart disease, to name a few. Inflammation is the response of tissues and organs to free radicals or reactive oxygen species (ROS). ROS are defined as molecules that have lost an electron and have moved into a state of electrical imbalance. The reaction is for tissues under stress to seek to steal electrons from other tissue and/or organs to regain cellular balance and thereby disease processes occur in joints, heart, GI tract, etc.

The therapeutic answer to this reaction is the application of antioxidants; bioactive substances that can donate electrons to neutralize electron-deficient free radicals and help regain cellular and tissue electrical balance.

### The Answers:

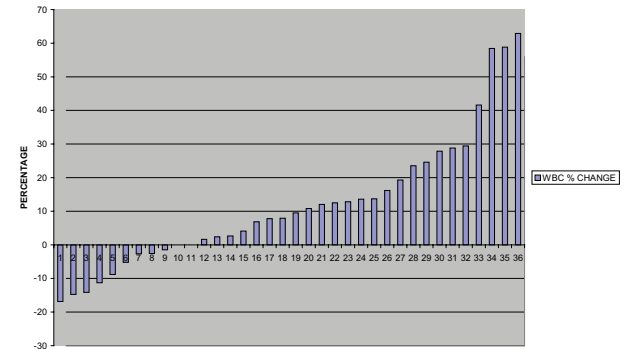
The right whole food, such as MyCell™ Immune Health, can change the oxidative capacity of your biologic fluids. The following studies used many of the mushroom components now found in MyCell™ Immune Health.

Cobra Farms 30 day Equine Mushroom Matrix™ Supplement Study



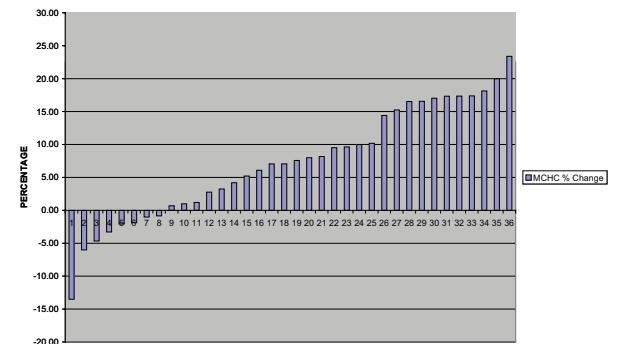
The mean increase was 16.45 percent.

Matrix 30-Day White Blood Cell Study



**White Blood Cell Results in 36 Horses**  
These percentage increases in total numbers of white blood cells could help explain the chronic gum disease response. Mean response was 12%.

Matrix 30-Day Mean Corpuscular Hemoglobin Concentration Study



**Red Blood Cell Mean Corpuscular Hemoglobin Concentration**  
The percentage increases were quite dramatic considering the changes after only 30 days. Mean response was 7.6%.

### Conclusions:

These studies show the ability of nutritional mushroom supplements to correct cellular imbalance and to control reactive oxygen species (ROS). MyCell™ Immune Health contains bioactive components that can actually increase the

### Studies show the ability of nutritional mushroom supplements to correct cellular imbalance.

antioxidative/antiinflammatory capacity of mammalian blood. Oxidative stress/ROS is associated with chronic inflammation and many disease states — cancer, viral and bacterial infections, gastrointestinal disorders, arthritis, heart disease and even early aging, to name a few. These studies suggest that proper nutritional supplementation with whole organic foods, such as MyCell™ Immune Health, may decrease the incidence and/or severity of these disease states.



Preclinical and clinical data provided by Mushroom Matrix, a Division of Golden Gourmet Mushrooms (Oceanside, CA USA).

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