

# Harnessing the Healing Powers of Natural Substances: The Revolution in Nutraceuticals and Medicinal Foods By Michael Mannion

You sit down for breakfast on a beautiful morning, proud of the healthy cornucopia before you—a high-fiber cereal, a low-fat homemade muffin with a tab of margarine, fortified nonfat milk, freshly squeezed juice, along with Vitamins A through E, calcium and other supplements. As you do every morning, you pick up the newspaper and look at the headlines on Page One. Your jaw drops as you read, **“Low Fat Diets Cause Obesity.”**

**“Vitamin Supplements Are Seen As No Guard Against Diseases,”** the next headline blares. A related story inside the paper adds to your uncertainty. **“Fat in Margarine Is Tied to Heart Problems.”** The latter story claims that margarine may contribute to 30,000 heart disease deaths each year. And you switched from butter to margarine to protect your heart!

You look at your meal and the supplements before you, confused. What else do you believe to be true about foods and supplements that may, in fact, be false? It seems that every year one contradictory nutritional claim replaces another.

Yesterday's news reports are contradicted by today's and who knows what tomorrow's stories will say. There are too many “experts” and no completely reliable sources of knowledge. Americans are getting fed up and people are demanding more substantive information about how to become healthier and disease-free. Increasingly, people are beginning to understand that the new diet shake is just snake oil in modern packaging, marketed with the help of slick ad campaigns..

The public's strong negative reaction to conflicting nutritional stories in the media clearly indicates that Americans are hungry for more information about the benefits of natural foods. But every new piece of information the consumer receives about the role of food in health only seems to bring more questions.

## **Nutraceuticals — What Are They?**

The term *nutraceutical* was coined in 1989 by Stephen DeFelice, MD, founder and president of the Foundation for Innovation in Medicine, appropriately enough over dinner, to help bring clarity to discussions of food and medicine. In the intervening years, it has become a part of the standard lexicon in the nutritional field. A *nutraceutical* is defined as “any substance considered a food, or part of a food, with medical or health benefits, including the prevention, treatment or cure of disease.”

Such substances include traditional foods, isolated nutrients, plants, dietary supplements (vitamins), genetically engineered “designer” foods, herbs, and processed foods. Naturally occurring substances with the promise of medical and health benefits need an identity, just

like pharmaceuticals.

Today, “nutraceutical” is recognized internationally as the singular word that describes the emerging industry of food or food-related substances with potential medical and health benefits. The new word has helped give an identity to this field.

*Physicians will become key players* in this area in the next decade. They will need to learn about food as medicine because *consumers will force them to become educated* in this area. It is hoped that they will then be reliable sources of information about nutrition based on the emerging clinical data. The following facts suggest this is beginning to happen:

- 50% of American physicians recommend nutraceuticals for their patients
- 80% of physicians use nutraceuticals themselves

### **The Nutraceutical Market**

Everyday, people are using nutraceuticals-whether it be daily vitamins for overall health, folic acid to prevent neural tube defects or simply homemade chicken soup to minimize the symptoms of the common cold.

How big is the nutraceutical market? 100 million Americans use *nutraceuticals* daily and about 50% of the money Americans spend on food is spent on nutraceuticals in the form of special foods, food substitutes, dietary supplements and foods eaten for medical reasons (e.g., skim milk, fiber, fat-free meats).

Let's compare the nutraceutical market with the pharmaceutical market. In 2001, Americans spent well over \$150 billion on drugs. In the same year, Americans spent over \$500 billion on food, half of it on nutraceuticals. The American nutraceutical market-\$250 billion a year and growing-is 2.5 times larger than the prescription and over-the-counter drug markets combined.

In fact, increasingly, foods are beginning to compete with pharmaceuticals worldwide. It appears that a "Nutraceutical Revolution" may be underway. However, something critical is needed before such a revolution can succeed-solid clinical research.

The first reports on calcium, fiber and fish oil that were published in medical journals helped usher in the nutraceutical era. When the results of these clinical trials were published in *The New England Journal of Medicine*, *Journal of the American Medical Association*, and the *Archives of Internal Medicine*, the situation changed dramatically. Fifteen years ago, it was inconceivable that such articles would ever have been accepted for publication.

There is overwhelming evidence to support the use of foods to treat disease and prevent recurrence. For example, it is estimated that if Americans increased their fiber intake,

about 50,000 cases of colon cancer could be prevented, saving over \$2 billion in medical costs. Experts believe that nutraceuticals have helped reduce the incidence of cardiovascular disease and breast, lung and stomach cancers, saving an estimated \$8.7 billion. Folic acid has prevented neural tube defects that would have cost tens of millions of dollars and even more in human suffering.

## **Nutribabble Is Everywhere**

Cable TV now has a food channel and many cable channels have popular food shows; most newspapers have a weekly section devoted in large part to food; and there are hundreds and hundreds of titles on the shelves of bookstores dealing with the many aspects of food. The public's appetite for reading material on food is voracious.

Although food is central to life and health, there is great disagreement as to what to eat, when to eat, how much or how little to eat, and how to prepare what you do eat. Some call this avalanche of conflicting counsel *nutribabble*. From the texts of ancient times to the pages of *The New York Times*, we about recommendations for proper nutrition that range from eating a diet similar to that of prehistoric man to eating more to weigh less. Contemporary culture has radically altered both what we eat and how we eat it. In so doing, it has altered our health, sometimes for better, sometimes for worse. A wide variety of TV and radio shows, magazine articles and books are available on different aspects of nutrition, each with its own slant and recommendations. Together, they form a modern "Tower of Nutribabble." Which of these books are valuable and which contain erroneous information? Which advice is based on fact and which on fad and passing fashion? The consumer does not know where to turn regarding nutrition, natural substances, supplements and diets.

## **Nutraceuticals – A New Golden Era of Medicine?**

Nutraceuticals have opened a door to a potential golden era of medicine. Increasingly, Americans are becoming more and more aware of the potential health benefits of nutraceuticals. Treatments for many devastating diseases may be found in the garden, supermarket, health food store, or the natural product section of local pharmacies.

Today, in the supermarket or grocery store, you can purchase many nutraceuticals, such as cranberry juice to fight a urinary tract infection, yogurt with lactobacillus to treat a vaginal yeast infection, orange juice supplemented with calcium and even plain bottled water containing vitamins. At present, over half of the major food companies and more than one-third of pharmaceutical companies are performing nutraceutical research to develop one kind of nutraceutical product or another. In the not-too-distant future, consumers may head for the "nutraceutical aisle" of the local supermarket when they do their weekly food shopping.

The role of nutraceuticals in the treatment and prevention of disease is now being

investigated in a wide range of illnesses, including heart disease, cancer, diabetes, arthritis, hypertension, high cholesterol levels, and osteoporosis. The potential benefit of nutraceuticals for anxiety and depression is also being explored.

## **Public Lack of Awareness About Nutraceuticals**

Although there is great interest in the subject of "food as medicine" today, there is a tremendous lack of awareness of nutraceuticals in this country. In addition, the general public is not well-informed about the rules, regulations and economic considerations that hamper the development of this revolution in health and medicine.

How do we know there is public interest in this topic? A poll conducted for the Foundation for Innovation in Medicine revealed that:

- *84% of Americans favor legislation to disseminate accurate information on the medical benefits of food and nutrition*
- *87% of Americans support legislation to back scientific research in nutrition to help prevent or treat disease*
- *84% of Americans believe that it is important to have accurate information on the role of food and nutrition in health*

Within the very near future, products based on nutraceutical discoveries will be forthcoming in abundance. This should come as no surprise. Natural substances—food and non-food—have long played powerful roles in preventing disease and promoting health.

A rapidly expanding body of scientific research, published in respected medical journals, clearly demonstrates the medical and health benefits of nutraceuticals. Japan has already established a system for approving nutraceuticals and has taken the lead in the world race to patent plant-derived products. Major European countries now have systems that grant exclusivity for innovative medical and health claims for nutraceuticals based on proprietary research, and procedures to grant exclusivity throughout Europe have been developed by the European Economic Community (EEC).

## **The Great Potential of Nutraceuticals**

**Heart disease** and **cancer** account for over 50% of deaths each year in the United States. This year, nearly a million Americans will die from cardiovascular disease and 500,000 will die from cancer. We know that nutraceuticals can help decrease mortality from these two diseases.

Approximately 11 million Americans have **diabetes** and about 150,000 will die from the disease and its complications this year. We know that nutraceuticals, in the form of soluble fiber, for example, can help fight diabetes.

**Hypertension** affects an estimated 58 million Americans and contributes to about 250,000 deaths each year. Nutraceuticals, in the form of potassium, calcium and magnesium supplements or fiber, can be of great help to those with high blood pressure.

**Arthritis** afflicts nearly 37 million Americans. About 1.5 million people are completely disabled by the disease. Nutraceuticals (mainly vitamins and minerals) help many people with arthritis counteract the adverse effects of the drugs they are taking for their disease. Some nutraceuticals, such as herbs, may help treat arthritis directly.

**High cholesterol levels** put more than half of all Americans at risk of developing heart disease. Risk appears to be directly related to cholesterol level. Nutraceuticals, such as fiber and Omega-3 fatty acids, can help reduce cholesterol levels and the associated heart attack risk.

**Osteoporosis** will affect about 15 to 20 million Americans in the coming years, a majority of them women over age 55. Nutraceuticals, in the form of calcium-rich foods or calcium supplements, are of great value in maintaining bone health and preventing bone loss.

Nutraceuticals not only play a valuable role in treating and preventing known diseases, but also, they will most likely be critical in new areas of research. For example, nutraceuticals in the form of *phytochemicals* may be used to slow the aging process or to detoxify the body of heavy metals.

These few examples show that *clinical research will form the foundation of a successful "Nutraceutical Revolution."* It is paramount that the results of clinical trial be made known, not only to professionals through medical and scientific journals, but also to the public through the electronic and print media.

Medical science provides a great deal of underpinning for the health claims of folk lore and tradition regarding foods and natural substances. Ongoing clinical research into nutraceuticals may provide solid evidence on which to build a *vision of the future*. Such clinical data can be used to guide people on how to take charge of their health by helping them learn which foods, isolated nutrients, herbs, plants, dietary supplements (vitamins), or genetically engineered "designer" foods (all known collectively as nutraceuticals) are effective in promoting health and treating and preventing disease.

## **The Nutraceutical Supermarket of the Future**

Imagine for a moment that, like a modern Rip Van Winkle, you have fallen asleep for 10 years. You awake in your home town. It looks familiar but also quite different. Confused and somewhat frightened, you go to a store where a good friend works. The name on the sign outside is the same and you feel somewhat relieved. You step inside, expecting to see a drug store but instead you find a grocery store. You leave the store, cross the street, and head for your local supermarket-only to walk into what looks like a pharmacy. You walk down the aisles and see products you have never heard of or even imagined could exist:

many shelves of fruit-flavored “cocktails” that claim to fight heart disease; tomatoes that promise to lower blood pressure; licorice candy that asserts it helps prevent cancer. You pinch yourself and, fortunately, you wake up.

Over the next decade, the distinction between the pharmacy and the supermarket may blur. One of the hottest items in the pharmacy in recent years has been canned tuna fish; sales have skyrocketed. Customers will be going to both kinds of stores to buy their nutraceuticals. In the future, the consumer may need a prescription for certain nutraceutical products. For example, a new nutraceutical product could be available, made from a combination of chicken cartilage and beef bullion, that will be effective against arthritis.

Other products in the nutraceutical section of the supermarket or pharmacy will include a blend of a variety of plants to prevent prostate cancer; a candy bar of heavily concentrated chocolate to fight depression; fortified cereals to enhance normal memory; delicious nutraceutical drinks designed to stimulate sexual arousal; and wonderfully tasting fortified teas to lift the spirits. None of these products will require prescriptions.

### **Nutraceuticals and 21st century Biomedicine**

There is little doubt that, increasingly, both those who are ill and those who are healthy will undergo a variety of tests regarding the individual nature of their genes, as well as tests to measure the levels of natural substances in their cells. Guided by the results of these examinations, physicians will then recommend nutraceuticals for their patients. And, by sending their patients to the store to purchase nutraceuticals, physicians will have a major impact on the prevention and treatment of disease.

The medical information made available through genotyping and other advanced tests will influence people when they purchase the week's groceries, which will include the nutraceuticals needed by all the members of the family:

- Nutraceutical candy bars and ice cream for the kids
- An anti-arthritis nutraceutical soup for grandma
- A fortified nutraceutical drink to fight breast cancer; and
- Nutraceutical aphrodisiac “cocktails” for mom and dad to help them celebrate their wedding anniversary.

Your mother probably said to you, “Eat your greens! They are good for you.” Although your mother was correct, she probably did not know why. For example, you may have eaten broccoli for years and never known that broccoli contains *phytochemicals* such as sulphoraphane, a chemical that may guard against breast cancer or that it contains cyanohydroxybutene, a chemical that may guard against pancreatic cancer. Certain vegetables can affect estrogen levels in the body. Garlic affects the immune system and blood lipids. Soy protein influences cholesterol levels. People need to know more about the nature of these nutraceuticals.

Nutraceuticals are valuable for treatment as well as prevention. This is a very different approach from the general view of foods as only preventive substances in medicine. There is substantial evidence that natural substances can be used effectively to treat various diseases and conditions as well prevent them. There is documented evidence in publications such as *The New England Journal of Medicine* showing the benefit of Vitamin E supplementation in relation to heart disease. There is a vital role for *rational mixtures* of nutraceuticals, such as antioxidants along with garlic, magnesium and carnitine for cardiovascular disease. Valid clinical studies provide the evidence of the effectiveness of nutraceuticals in treating and preventing heart disease, cancer, diabetes, arthritis, migraine, anxiety, depression, PMS, skin disorders, memory loss, fatigue and many other health problems.

One of the most exciting and fruitful areas of nutritional research is at hand. Today, we study blood chemistries to understand what is going on in the body when we suspect certain diseases are present. Although they are valuable, blood chemistries do not give us the whole picture. Scientists are now looking *into the cell* to see what is occurring at that level, to find out what abnormalities exist there and then to correct them with a rationally designed regimen of diet and supplementation.

“Designer” nutraceuticals can be developed to help deal with the “metabolic mess” that we find in the cellular structure of a patient. For example, the blood chemistry of a patient who has had a heart attack may appear normal but, if you look into the cell, you may find a life-threatening chemical deficiency. A nutraceutical product could be used to correct that deficiency.

Natural substances will play a key role in clinical medicine in the near future. The effects of nutraceuticals on the mind and happiness is one area of great potential that will be explored. The new way of looking at and using natural substances that is just beginning will lead to many astounding applications of nutraceuticals to fight heart disease, cancer, diabetes and many other major illnesses.

Genistein may be developed into products to fight breast cancer; phytochemicals in mints may be used to against cataracts; psoriasis may give way to nutraceuticals derived from flax seeds; a new licorice candy may be turned into an anticancer agent; echinacea, an herb, will be turned into products that fight the flu without causing side effects; the suffering of AIDS patients will be eased by derivatives of mushrooms and herbs; uhiquinones will minimize the damage caused to heart muscle by heart attack.

These are just a few examples of how nutraceuticals will dramatically change the ways we approach cancer, heart disease, diabetes, arthritis, stroke, ulcers, viral infections, cataracts, measles, flus and colds, infections, degenerative diseases, high cholesterol levels, hypertension, anxiety and depression and many other diseases and conditions.

### **Selected Possible Uses for Nutraceuticals**

AIDS  
Alzheimer's Disease  
Anti-aging  
Anti-cancer  
Anti-fatigue  
Anxiety  
Appetite Suppression  
Arthritis and joint aging  
Attention Deficit Disorder  
Cancer  
Cardiovascular Disease  
Colon Care  
Chronic Fatigue Syndrome  
Depression  
Diabetes  
Dyslexia  
Energy Boosters  
Erectile Dysfunction  
Immune Boosters  
Inflammatory Diseases  
Memory Improvement  
Menopause  
Muscle Builders  
Obesity  
PMS  
Seasonal Affective Disorder (SAD)  
Sexual Arousal