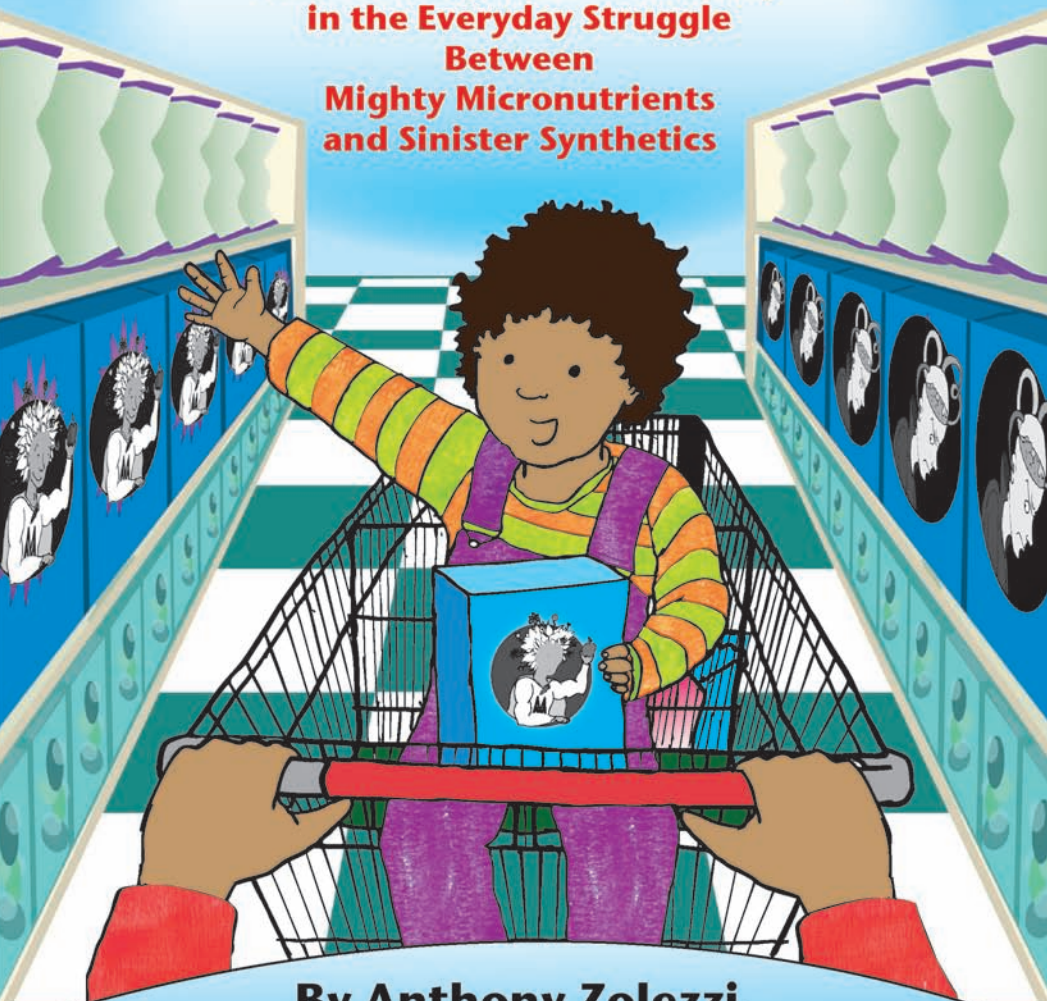


CHEMICAL-FREE KIDS

The Organic Sequel

**How to Safeguard Your Family
in the Everyday Struggle
Between
Mighty Micronutrients
and Sinister Synthetics**



**By Anthony Zolezzi,
Linda Bonvie and Bill Bonvie**

Illustrations by Jade Harmon

Chemical-Free Kids

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Published by ASM Books

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For further information:

ASM Books
PO Box 3083
La Habra, CA 90631
www.asmbooks.com

Printed in the United States of America

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1. Title 2. Author 3. Health

Library of Congress Control Number: 2008932274

ISBN-10: 0-9753157-5-7

ISBN-13: 978-0-9753157-5-0

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ACKNOWLEDGMENTS

We would like to thank Jay Mann, whose sharp and experienced editor's eye and suggestions greatly enhanced both the content and style of this book, and Jade Harmon, whose delightful artistic renderings and creativity helped to “lighten up” the information contained in these pages.

Our appreciation also goes to Dr. Charles Benbrook and Steve Hoffman of the Organic Center, Bill Freese of the Center for Food Safety, and Rick North of the Oregon Physicians for Social Responsibility for their valuable insights and guidance.

~ Introduction ~

Knowing What's Good for Us—and What to Do With That Knowledge



Back in 2003, the original *Chemical-Free Kids* was published with the intent of helping parents safeguard their children's diet and environment from the many toxic perils that posed a threat to their health and well-being. The book was designed to serve as a source of information on precisely what these hazards were, where they could be found and how they could best be avoided. It chronicled the variety of insidious ingredients that had come to be so routinely accepted in our everyday diets, as well as the prevalence of poisonous substances lurking in our homes, our back yards and even our schools.

In the preface to that book, it was pointed out that contemporary parents faced far more complex challenges than did those of an earlier era, when the chief concern was whether their kids would simply survive to adulthood. Would their children, for example, “be among the countless victims of our growing epidemics of allergies and asthma”? Would they become “hyperactive, dysfunctional and unable to learn, or, worse yet, join the fast-growing numbers of kids considered autistic”? Would they grow “dependent on drugs, either illegal or prescribed to modify their behavior in the classroom”? Would their bodies “become overweight and obese, even as their brains are nutritionally starved”? Would they be “prime candidates for the cancers and cardiovascular problems that now result in so many premature deaths”?

While *Chemical-Free Kids* remains a valuable guide to parents in showing the steps that can be taken to allay such concerns, a lot has happened since its publication. Due largely to the efforts of some dedicated researchers for such organizations as The Organic Center and the



Center for Food Safety, there is now a much greater degree of scientific proof of the benefits of an organic diet and lifestyle. At the same time, considerably more information has been uncovered about the pernicious effects that toxic pesticides and chemical and biological manipulation can have on our health, the sustainability of our land, the purity of our water and the safety and nutritional value of our food.

A 2005 study spearheaded by the Environmental Working Group (EWG) provides some idea of the problems still to be overcome. Researchers with two major laboratories performing the study found that the umbilical cord blood of 10 babies born in U.S. hospitals the previous year contained an average of 200 industrial chemicals and pollutants, including pesticides and household product ingredients.¹

So, to keep parents updated on such developments, we decided that a follow-up was in order—one that would provide readers with some of the information that has come to light since *Chemical-Free Kids* was first published. This book is also designed to make this often complex subject easy to read and remember.

The theme we've chosen is a battle between "Mighty Micronutrients"—the essential elements of a healthy diet—and "Sinister Synthetics"—the toxic or suspect substances that have replaced them in so many conventional and processed foods, as well as contributing to the polluting of our environment.

The last few years have been marked by substantial progress in making healthier choices available to consumers, as well as a



much greater public awareness and appreciation of their importance. But along with that has come significant governmental resistance to instituting

any type of meaningful reform of the system that has allowed toxic substances to continue to be manufactured and used.

On the negative side, the role of government agencies in protecting the integrity of our food supply and alleviating threats to the health of our families has been largely stonewalled—something that many scientists and environmental groups have blamed on the sympathetic reception given by those in power to representatives of the chemical industry, some of whom were formerly in regulatory capacities.

As proof of such purported collusion, these critics cite what they consider to be the massive failure of the officials charged with implementing the Food Quality Protection Act of 1996 to accomplish their assigned task of weeding out the pesticides that pose the greatest peril to children—along with their attempts to close off existing avenues of information on those chemicals.

Another regulatory lapse can be seen in the way genetically engineered foods have been allowed to proliferate with no oversight or requirement that they be tested for safety, despite the opinions of many reputable scientists—including those working for the FDA—that they pose considerable risk to the public.

In other respects, however, developments have been immensely encouraging, particularly the responsive manner in which the retail and service sectors have adapted to the fast-growing demand for organic foods and products with truly natural ingredients.

It wasn't all that long ago that organic products were available only in natural-foods stores, or were limited to a few select items carried by a smattering of supermarkets. Within the past few years, however, there



has been a phenomenal upsurge in the marketing of all types of organic commodities, ranging from produce to dairy products to cookies to canned and processed foods. Many big-name food companies have jumped on the organic bandwagon.

Corresponding to this development have been dramatic new findings about the nutritional advantages that organic foods have over conventional ones. Such revelations, repeatedly confirmed by researchers, can't help but fuel the demand for products grown or processed without pesticides or other harmful additives. Thanks to such studies, we now know that the best way for our kids to get the "Mighty Micronutrients" they require to grow into healthy and productive adults is to provide them with a diet that includes as many organic foods as possible—the same type of diet that can largely eliminate their exposure to "Sinister Synthetics" in the form of toxic pesticides, harmful additives and genetically modified organisms (GMOs).

Growing consumer consciousness has led to many other encouraging trends as well. Exposures to environmental pesticides have been reduced in many neighborhoods due to nontoxic or integrated techniques of pest management and weed control now being made available by many lawn-care and landscaping firms that once had nothing to offer their residential customers but chemical poisons. An increasing number of school systems have also begun to adopt alternative methods of pest control after coming to the realization that the children in their charge were being unnecessarily exposed to poisonous chemical applications in classrooms and playgrounds.



Such sweeping transformations give us both cause for optimism and an enhanced ability to

protect our families. The fact that they have come about in so short a time is testimony to the power of people to demand and facilitate a change in course once they become fully cognizant of the hidden hazards of continuing to travel along the same road.

Also encouraging us to reduce our reliance on things that may be hazardous to our health are events abroad. In the European Union, for example, the growing consumer rejection of foods containing GMOs has been causing U.S. growers and food processors to have second thoughts about using them. As this book goes to press comes news of another development—the passage of new EU laws requiring companies to prove that chemicals used in commerce are safe, as opposed to U.S. policies that only require they be shown to be harmful. “This is going to compel companies to be more responsible for their products than they have ever been,” noted Daryl Ditz, senior policy adviser at the Center for International Environmental Law. “They’ll have to know more about the chemicals they make, what their products are and where they go.”

The new laws also call for a list to be drawn up of “substances of very high concern”—those suspected of causing cancer or other health problems, which will require authorization to be produced or sold in the EU.² Such restrictions are bound to have an effect in America, as well, causing manufacturers to reconsider the economic impact of using such chemicals.

But much remains to be done if our kids—and future generations—are to be rescued from the assorted afflictions that a lifestyle tainted by toxic substances and a diet lacking in essential nutrients can lead to. The process of getting the poisons out of both our system and our



Chemical-Free Kids: The Organic Sequel

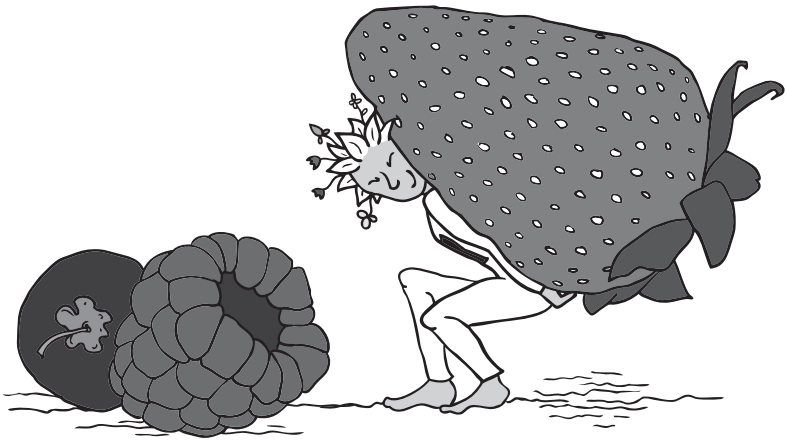
systems—and restoring the beneficial elements our survival requires—is one in which all of us need to be active participants.

It is all a matter of knowing what's good for us—and how we can best use that knowledge to benefit ourselves, our families, our society and our planet.



~ Chapter 1 ~

**Mighty Micronutrients:
The ‘Little Things’
of Which We Don’t Seem
to Get Enough**



“It has long been an axiom of mine that the little things are infinitely the most important.”

~Sir Arthur Conan Doyle,

British author and creator of “Sherlock Holmes”

Called *micronutrients* because they are needed only in minuscule amounts, these substances are the “magic wands” that enable the body to produce enzymes, hormones and other substances essential for proper growth and development. As tiny as the amounts are, however, the consequences of their absence are severe. Iodine, vitamin A and iron are most important in global public health terms; their lack represents a major threat to the health and development of populations the world over, particularly children and pregnant women in low-income countries.

—World Health Organization



If one phrase could sum up much of what health and food science researchers have learned in recent years, it might well be that old adage “You are what you eat.”

Ongoing studies of nutrition are making it more and more evident that every aspect of our being—both mental and physical—is influenced by what we ingest, and that the health of our cells and vital organs is for the most part dependent on chemical interactions that take place between the various ingredients in the food we consume. Usually our bodies use these ingredients—consisting of a variety of vitamins, minerals and antioxidants—in such small quantities that they are commonly referred to as “micronutrients,” the functions and sources of which are described in some detail in Chapter 6. Nevertheless, we require certain minimal doses of them



for our brains, hearts and other organs to function the way nature intended. Also, it is very important that micronutrients work together as a team.

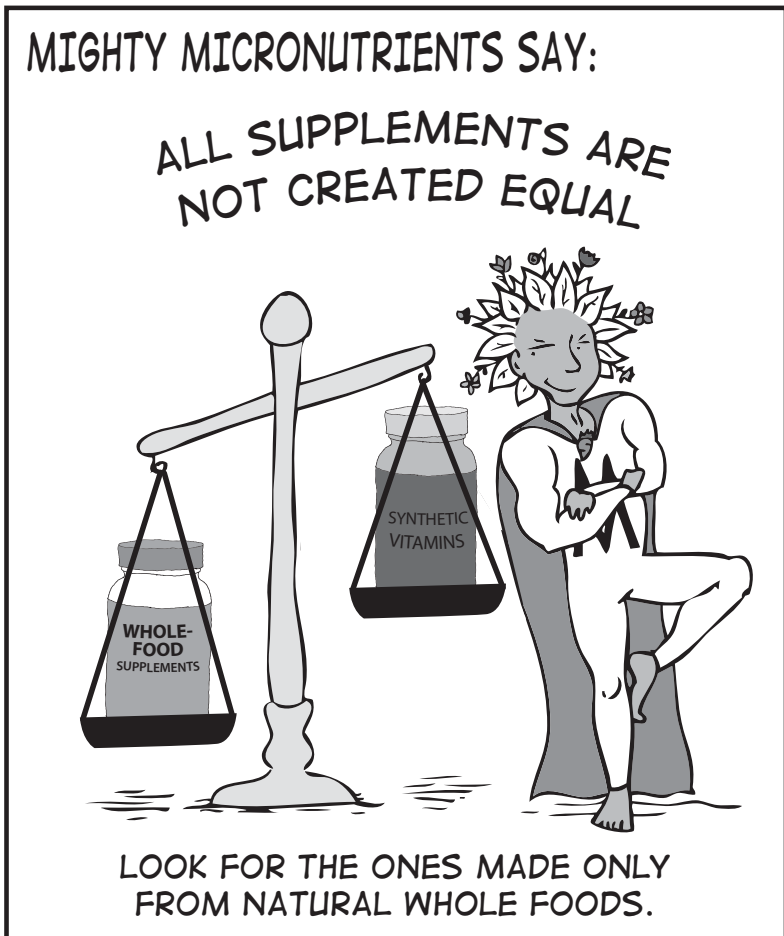
THE HIDDEN ‘NUTRIENT GAP’ IN THE TYPICAL AMERICAN DIET

Unfortunately, our contemporary diets are all too often failing to deliver the amounts and intricate combinations of the “Mighty Micronutrients” our bodies need to work at peak efficiency, to keep our metabolisms in balance, maintain our physical and psychological well-being and enhance our mental acuity. As a result, many of us—and in particular, our children—may suffer from what is, in effect, a nutrient gap that can go unnoticed or unrecognized.

One key reason for this nutrient gap is our addiction to processed and junk foods that has resulted, for many adults and children, in the consumption of large quantities of essentially “empty” calories largely devoid of nutritional value. Just about all nutrition authorities agree that this is a leading cause of the epidemics of obesity and diabetes currently being seen in our society, together with a lack of exercise (but then, who feels like exercising when they have such a limited source of energy?). Nor do “fortified” foods really do much to compensate, as will be explained later.

Simply eating more nutritious foods, such as fruits and vegetables, would, of course, seem to be the ideal solution. But that’s no longer as pat an answer to the problem as it once was, due to a marked decline in the nutrient value of conventional “healthy” foods. (We’ll talk more about this in Chapter 4, where you’ll discover how much of





a difference switching to organic products can make from a nutritional perspective.)

What's important is that for far too many families, “breakfast, lunch and dinner” are no longer doing an adequate job of providing basic nourishment—and that can have a profound impact on our ability to get through the day, as well as on our health, energy levels and even our personalities.



Eating ‘Three Meals a Day’ Doesn’t Mean You’re Not Malnourished

To those of us here in America who have been fortunate enough never to have actually experienced real famine, the idea of people suffering from starvation and exhibiting obvious signs of malnutrition might seem incomprehensible. Living in a land of well-stocked supermarkets and fast-food restaurants, it may be a bit hard for many of us to imagine things like drought or pestilence making it impossible for families to avail themselves of adequate nourishment. It is even difficult to fully relate to those fellow citizens unable to eat three squares a day because they simply can’t afford to buy food—a situation in which more and more American families are now finding themselves.

But what those of us who consider ourselves “well-fed” might not realize is that we, too, may be malnourished, even though we eat three meals a day while snacking down in between. As a result, we may also be experiencing symptoms of very real, though not always apparent, nutritional deficiencies.

A growing body of scientific evidence indicates that many of the ailments for which we seek relief—all too often in an excess of prescribed and over-the-counter medications—may well be the direct results of dietary deficiencies in essential micronutrients.

An inadequate intake of these “Mighty Micronutrients”—many needed on a daily basis—may also lead to a myriad of emotional problems, including chronic irritability or even unprovoked anger, a tendency to be easily distracted or quickly become bored, and an inability to concentrate. Nutritional shortages in children could lead to



disobedience, belligerence and aggressive behavior, and might even contribute to the nationally troubling conditions of attention deficit disorder and attention deficit hyperactivity disorder.

While most Americans believe themselves to be living in the most privileged, technically sophisticated and agriculturally advanced country on the planet, we actually lag behind when it comes to nutritionally sound diets. In fact, the kinds of foods traditionally cultivated and eaten by inhabitants of what we would consider “backward” cultures are actually apt to be a lot more nutritious and beneficial than the refined, processed and genetically altered foods that people living in our society are in the habit of consuming.

SYNTHETIC SUPPLEMENTS OFTEN COME IN COMIC DISGUISES

A lot of well-meaning parents have come to rely on supplementation. And there are some good supplements out there, but you do have to be selective and knowledgeable in choosing them. Unless you know the difference between synthetic supplements and those made from natural sources, you're apt to be spending money on things that are really failing to deliver the benefits such products are intended to provide. And in the case of supplements geared to children, most of which come in packages festooned with colorful cartoons, it's quite likely that some of the ingredients, such as aspartame, could actually be harmful as well as ineffective.



A Tale of Two Segments of the Same Tribe

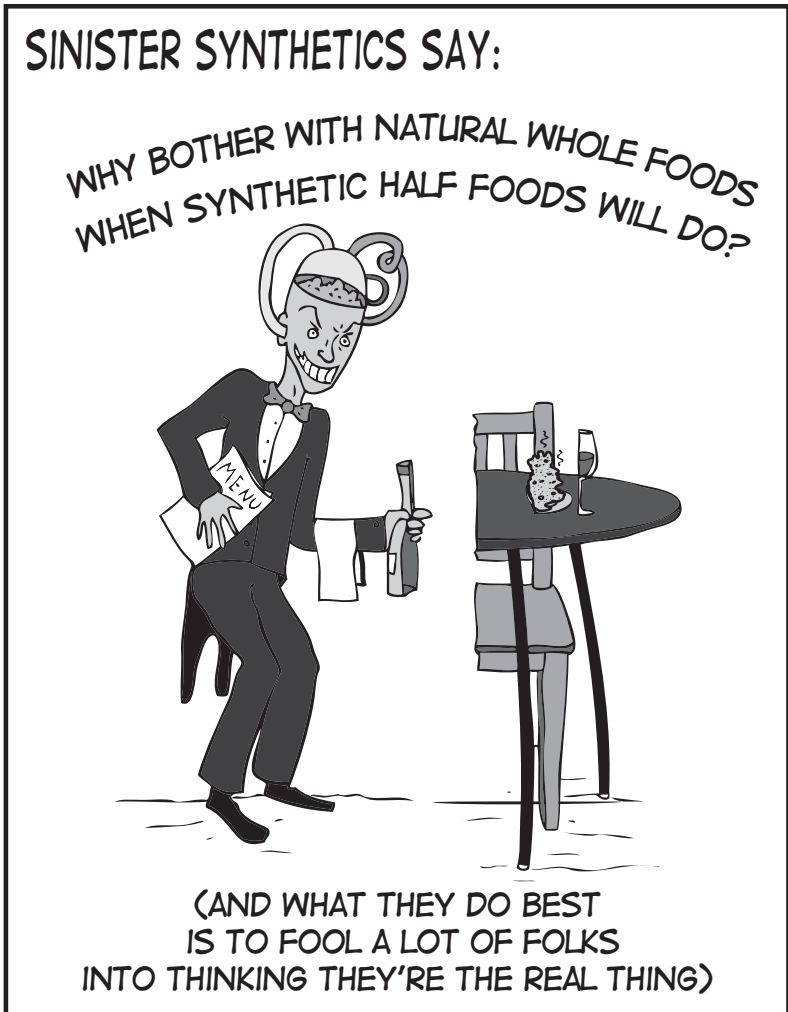
Just how much healthier a traditional diet can be was seen in the results of a study of Pima Indians, some of whom had settled in the Southwestern United States and others who had continued to reside south of the border. The members of the tribe living in the U.S. have been described by researchers as being “an extremely obese population,” with 77 percent of those over the age of 55 suffering from type 2 diabetes. The ones who had remained in Mexico, however, tended to be vigorous, trim and robust, with a prevalence of diabetes only a fifth that of their northern relatives (a mere 9 percent for those 55 and over).

When researchers examined the lifestyles of the two branches of the tribe, they discovered that the Mexican group, in addition to engaging in far more physical activity, had continued to subsist on a traditional diet of basic crops they grew themselves and harvested by hand, with beans, wheat flour tortillas, corn tortillas and potatoes their principal staples. The U.S. Pimas, by contrast, had converted to a typical high-fat, low-fiber American diet of processed foods (which typically contain refined sugar and flour) that they either purchased from supermarkets or received from a commodity food program.³

Such a well-delineated discrepancy in dietary habits and their results dramatically illustrates the characteristic underperformance of our own diets. But how can Americans be undernourished while receiving constant confirmation, via advertising and packaging, that the food we eat is full-bodied and packed with vitamins and minerals?



That’s because much of the food we consume in this country today has been virtually strip-mined of its



“Mighty Micronutrients”—vital components that can’t really be added back, as terms like “enriched” and “supplemented” on food labels seem to imply.

These micronutrients, as a rule, aren’t nearly as “mighty” when reconstituted as they are in their



natural state, where their effectiveness is supported and enhanced by a lot of other trace substances, many of whose roles aren't even yet understood by science.

That's why **whole** foods—that is to say, those that are consumed in an unprocessed form, with nothing removed or manipulated and nothing added—are the sole sources of such essential substances that can reliably be said to provide us with the optimal benefits that nature intended.

PUTTING THE 'WHOLE' PICTURE IN PERSPECTIVE

It is only when the intricate and interdependent network of these essential chemicals contained in whole foods remains relatively intact and undisturbed that we can be assured that we're receiving the maximum impact of their health-enhancing capabilities.

A prime example of how this works can be seen in the always-appetizing apple, the health benefits of which were common knowledge long before the fruit was subjected to scientific analysis.

When What You See Is What You Get the Most Benefit From

The saying “An apple a day keeps the doctor away” was coined more than a century ago by J.T. Stinson, the first director of the Missouri State Fruit Experiment station. It is believed to have been



inspired by a 12th-century report, given before the Salerno Medical School, on the healthfulness of regularly eating apples.

Ironically, current understanding of the benefits of eating apples strongly indicates the most wholesome sector of the fruit is its peel, which is chock full of antioxidants. Not only are peels routinely discarded in both home use and during commercial processing of products such as applesauce, but the variety of apple peeling devices that has arisen over the centuries comes close to paralleling the search for a better mousetrap.

Just how much of a loss such unadvised “disposables” can be to our nutritional well-being can be seen in a report issued by Cornell University’s Institute of Comparative and Environmental Toxicology and Department of Food Science. It focuses on the results of a comparative study of the flesh and peel components of four different varieties of apples:

“The peels all had significantly higher total antioxidant activities than the flesh + peel and flesh of the apple varieties examined ... Apple peels were also shown to more effectively inhibit the growth of HepG(2) human liver cancer cells than the other apple components ... The high content of phenolic compounds, antioxidant activity, and antiproliferative activity of apple peels indicate that they may impart health benefits when consumed and should be regarded as a valuable source of antioxidants.”⁴

The nutritional advantages of eating a “whole” apple complete with peel are similar to the benefits of eating bread, pasta, cereal and other foods made from whole



grain—that is, grain that has retained its outer covering, which, like an apple peel, is rich in vitamins, minerals and fiber. The significance of how a staple crop like grain is processed takes on planetary importance when factoring in findings that grain provides more nutrition—and is grown in greater amounts—than any other crop in the world. The over-processing of grain, a regular occurrence in all of North America, essentially removes its worldly benefits.

While producers of so-called *refined* grain products may claim their goods have various “added” nutrients, such after-the-fact additives—even additives identical to those removed during processing—are no substitute for the real McCoy. Once grain is broken down in this manner, it is next to impossible to restore—reconstruct, as it were—the complex web of chemical interrelationships that nature so intricately assembled. In fact, the chemical complexities and interactions of the various “Mighty Micronutrients” contained in a single grain or any other plant used for food are only now being gradually unraveled by scientists.

How Nature Orchestrates the Interaction of Micronutrients

If you want to get an idea of how “Mighty Micronutrients” work together in concert, try imagining them as separate instruments in a symphony orchestra, each assigned an essential part in performing a complex musical composition. Think of all the coordination and timing that takes place among strings, woodwinds,



brass and percussion, even with the guidance of a conductor, and of how some instruments are called on to perform long passages while others must wait for

ANOTHER REASON FOR GETTING ABOARD THE ‘WHOLE GRAIN TRAIN’

New scientific findings have indicated that consumption of whole grains may help prevent pancreatic cancer, one of the most deadly forms of the disease.

A study conducted by researchers from the University of California at San Francisco and published in the *American Journal of Epidemiology* has reportedly shown that a diet high in whole grain and other fiber-rich foods can drastically lower the risk of developing pancreatic cancer.

The study involved some 2,233 Bay Area residents, 532 of whom had been diagnosed with pancreatic cancer. Both groups were similar in terms of ages, body weight and gender, although the cancer patients were more likely to be smokers.

The researchers found that those who ate two or more servings of whole grains per day had a 40 percent lower risk of developing pancreatic cancer than those who ate less than one serving daily.⁵

the exact right moment to add a couple of notes or some nuance to the overall effect the composer wanted to achieve.

Now imagine some of those instruments were rudely removed. The composition might still be distantly recognizable, but it would hardly represent a full and faithful rendition of what the composer had in mind.

All too often, today’s typical diet offers, at best, a similarly diminished level of nutritional fullness



and richness. Seemingly well-orchestrated meals—even those that give the appearance of being “well-balanced”—may satisfy hunger pangs while silently falling short on a great many essential nutritional notes. The result is a subtle, albeit significant, loss of what used to be known as “food value,” impoverished by the absence of essential micronutrients. What’s more, many components of an all-American meal, such as cereal, packaged bread, frozen entrees, instant potatoes and white rice, are likely to have been depleted of intrinsic micronutrients during processing, with cooking and preparation polishing off whatever few are left.

In essence, while many of us continue to “supersize” our food intake—and, inadvertently our physiques—what we’re (over)eating is actually dangerously downsized in terms of nutritional content, to the point where it negatively affects the ability of the remaining micronutrients to carry out their assigned tasks. And though “outsider” additives are often brought in by manufacturers to substitute for the missing team players, they can’t really substitute for the loss of “Mighty Micronutrients” in key positions. Once they’re gone, the magic that makes for a winning team is irretrievably lost.

An excellent example of the interdependency of micronutrients, and how the loss of any one can alter their effectiveness, is offered by Lester Packer, Ph.D., and Carol Colman in the book *The Antioxidant Miracle*: “When vitamin E disarms a free radical, it becomes a weak free radical itself. But unlike bad free radicals, the vitamin E radical can be recycled, or turned back into an antioxidant, by vitamin C or coenzyme Q10. These network antioxidants



will donate electrons to vitamin E, bringing it back to its antioxidant state. The same scenario occurs when vitamin C or glutathione defuses a free radical.”⁶



Such hidden nutritional deficits hit children hardest. The subtle starvation caused by the lack of micronutrients could well hinder their normal development. This may fly in the face of the American dietary syndrome in which children often eat throughout the day and into the night. While it may appear they are meeting all their nutritional



GET YOUR WHOLE GRAINS AND ENJOY THE AROMA, TOO

There's no doubt that whole grains are superior to refined ones. Whereas in refined grains, the bran and germ (the nutrient-rich interior of the grain) are removed, in whole grains they remain intact, serving as an excellent source of antioxidants and phytochemicals that help ward off disease, as well as providing magnesium, iron, fiber, vitamin E and B vitamins.

An easy way to incorporate more whole grains into your family's diet is with whole-grain bread. And the best and freshest bread is homemade.

Making bread is no longer an all-day process of kneading and rising. Bread machines have become affordable (good machines can be purchased for under \$50), are easy to use and produce a wonderful loaf. Making homemade bread also allows you to utilize organic, whole-grain flours and other high-quality ingredients to produce a loaf for a fraction of what a comparable one would cost at a quality bakery.

An excellent book for beginning (and experienced) bread-machine bakers is *Easy Bread Making for Special Diets* by Nicolette M. Dumke. Our favorite recipe is the amazingly simple one for traditional whole wheat bread.

requirements, the results tell a different story. Studies on childhood obesity done by the Centers for Disease Control and Prevention for the period between 2003 and 2006



indicated 32 percent of all American kids are considered at risk for obesity, 16 percent are obese, and 11 percent extremely obese.⁷ Their diets are simply making them well-rounded, rather than well-nourished.

Besides being ungainly and unhealthy, such nutritionally deficient kids may be behind the eight ball (and behind their contemporaries in other countries) in a number of ways, as information on the functions of various “Mighty Micronutrients” in Chapter 6 will make clear.

But what further complicates this situation is the fact that along with diminished nutrition, we’re regularly ingesting a whole assortment of “Sinister Synthetics”—toxic chemicals, harmful additives and even altered genetic material—that could be resulting in all kinds of hidden damage to our bodies and minds.

