

# FOOD Insight™

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## The Challenge of Type 2 Diabetes in Children

If you think back to when you were in grade school you might remember a fellow student who had diabetes. It seemed a rather mysterious condition — one that required him or her to get insulin shots and that necessitated the occasional cup of orange juice or trip to the nurse’s office. What this scenario brings to mind is type 1 diabetes, which is thought to be an autoimmune disease. Type 1 diabetes was formerly known as “juvenile-onset diabetes” and used to be the kind of diabetes associated with childhood. Today, however, the Centers for Disease Control and Prevention (CDC) reports type 2 diabetes is rapidly increasing among children and adolescents. In fact, type 2 diabetes, which used to be called “adult-onset diabetes,” is so prevalent among youngsters that it is no longer referred to as adult-onset diabetes.

According to the American Academy of Pediatrics, research shows that in 1990 less than 4 percent of children newly diagnosed with diabetes were type 2. Now, 30 to 50 percent of children newly diagnosed with diabetes have type 2 diabetes. Why is this disease affecting our kids and what can be done? To better understand the issue, it helps to have some background on what type 2 diabetes is as well as its causes.



### Type 2 Diabetes Defined

After your body digests food, the final product used by the body for fuel is glucose (sugar). Insulin allows the body to turn the glucose that comes from food into energy. The American Diabetes Association defines type 1 diabetes as a metabolic condition resulting from the body’s inability to make insulin. This condition is thought to occur when the body attacks its own pancreatic cells, which make insulin. In type 2 diabetes either the body does not produce enough insulin or it is unable to properly use the insulin that it produces. When the body cannot respond to insulin, glucose builds up in the blood.

The longer a person has diabetes, the greater the chance he or she will develop one or more serious complications of this disease, including blindness, heart disease, and stroke. Frank Vinicor, MD, director of the CDC’s diabetes program says, “An

increase in type 2 diabetes in young people means that we are going to have more people — adults and children — with diabetes. Also, they will have it for a longer time, which increases the rate of severe complications like blindness, renal failure, and amputations.” According to diabetes researchers, some teenagers are already developing complications from type 2 diabetes.

Type 2 diabetes usually begins with a condition called insulin resistance, a disorder in which the cells do not use insulin properly. To make up for this inefficiency, the pancreas produces additional insulin. Eventually, the pancreas is unable to keep up and blood sugar levels rise. Impaired glucose tolerance (IGT) is considered a prediabetic condition in which the blood sugar level is elevated, but is not high enough to be classified as diabetes. Research indicates that IGT may be reversible through diet and exercise.

### How Do You Detect Type 2 Diabetes?

Type 2 diabetes can be difficult to detect in children because they may have very mild or no symptoms. For example, a recent study of children and prediabetes published in the *New England Journal of Medicine (NEJM)*, found that 4 of the 112 obese adolescents in the study had silent type 2 diabetes, a form that doesn’t cause any symptoms. Knowing that diabetes diagnosis in children can be difficult,

**INSIDE** What’s the Latest Scoop on Sugars and Health?.....2  
In A World of Hazards, Worries Are Often Misplaced.....4  
NewsBites.....7

# What's the Latest Scoop on Sugars and Health?

Ask someone to name his or her favorite food and, chances are, you'll get a sweet answer such as cookies, cake, candy, or ice cream. However, sugars have long stirred up concern because of their possible link to health conditions such as obesity, diabetes, and heart disease.

Sugars are present throughout our lives, beginning with the "sweet" amniotic fluid in the womb, moving on to the milk sugar lactose in breast milk or formula, and then on to favorite foods. Sugars provide an array of functional properties important to food processing, as well as energy (calories), and sensory pleasure.

The question becomes, what does consuming sugar mean for our health?

A scientific session at the 2002 American Dietetic Association annual meeting, jointly sponsored by the International Food Information Council (IFIC) and the International Life Sciences Institute (ILSI), addressed this question. A panel of experts presented the latest consensus science regarding the impact of sugars on health, and offered guidelines for effectively communicating with consumers about this often-confusing topic. This article summarizes significant points from the session.

## Challenges to Interpreting the Science

Several challenges complicate the interpretation of the science surrounding sugars and health. For instance, various definitions are commonly used to describe the sugars in foods and beverages. *See the chart on page 3.*

Accurate assessment of sugar-consumption patterns is difficult because different methods are used

to collect and report data. Food supply (disappearance) data collected by the U.S. Department of Agriculture's (USDA's) Economic Research Service (ERS) estimates consumption by tracking changes in food availability or supply by measuring the flow of commodities through the U.S. marketing system. In 2000, the food supply provided 32 teaspoons of caloric sweeteners per person per day, up 23 percent since the 1980-1984 survey. A concern is that food supply data overstate the consumption of caloric sweeteners because the data include food that is disposed of, not finished, inedible, or lost through spoilage or waste. However, the ERS makes some adjustments to the data to account for these factors.

Self-reported data derived from the USDA Continuing Survey of Food Intakes of Individuals (CSFII) indicate that during the 1994-1996 survey period, mean intakes of added sugars were 20.5 teaspoons per day for people older than 2 years of age, up 31 percent from the 1989-1991 survey period. CSFII defines "added sugars" as sugars eaten separately or used as ingredients in processed or prepared foods, such as white sugar or corn syrup.

Recommendations for sugars intake also are a mixed bag. The 2000 Dietary Guidelines for Americans say, "Choose beverages and foods to moderate your intake of sugars." Although the Institute of Medicine's (IOM's) 2002 report *Dietary Reference Intakes for Macronutrients* did not set a Tolerable Upper Intake Level for sugars, it suggests a maximum intake of 25 percent of calories from added sugars. According to the IOM report, higher intakes are associated with a dramatic decrease in micronutrient intakes, especially calcium. The IOM panel determined no other adverse effects.

## Sugars and Health: What the Latest Science Says

Despite the continuous controversy that swirls around sugars' impact on health, scientific consensus indicates that no adverse health effects can be directly attributed to sugars consumption, other than an association with dental carries. The following sections highlight the science in several key areas.

**OBESITY:** Obesity results when more calories are eaten than expended, whatever the source of the extra calories. Although there is no direct connection between added sugars and obesity, health guidelines to prevent or reduce obesity generally recommend increasing physical activity and reducing extra calories by eating fewer fats and sugars.

**DIABETES AND INSULIN SENSITIVITY:** The sugars in foods do not increase blood glucose levels any higher or faster than starches do. Therefore, current American Diabetes Association nutritional recommendations do not provide specific guidelines for sugars intake, except that sugars should be substituted on a calorie-for-calorie basis with other carbohydrates. Debate continues regarding the merit of using the glycemic index of starches and sugars in nutritional planning for people with diabetes.

Animal research shows that diets high in sucrose and fructose decrease insulin sensitivity. However, the results of experimental studies with humans are conflicting, with limited evidence showing that insulin sensitivity decreases when sugars intake is high (greater than 30 percent of daily calories for sucrose or greater than 15 percent of daily calories for fructose). Epidemiological studies do not show a link between sucrose consumption

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# Sugars and Health

and insulin sensitivity independent of other dietary factors. More research is needed to determine the effect of sugars on insulin sensitivity in humans.

**SERUM TRIGLYCERIDES AND HEART DISEASE:** Short-term studies show that sugars produce a dose-dependent increase in serum triglyceride levels. However, diets that meet recommendations for fiber, saturated fat, and unsaturated fat lessen this effect. Triglyceride levels are more likely to increase in obese individuals with metabolic syndrome who consume a high-sugar diet. However, several studies indicate that modest weight loss coupled with a shift to a diet rich in fruits, vegetables, and whole grains prevents a rise in triglyceride levels even when diets are high in sugars (greater than 20 percent of calories). Carefully controlled clinical studies are needed to determine whether an increase in triglyceride levels resulting from diets high in sugars affects the risk for heart disease.

**DENTAL CARIES:** Sugars and cooked starches (i.e., bread, pasta, crackers, and chips) are fermentable carbohydrates that contribute to the risk for caries. The degree of risk from a carbohydrate-rich food is related to several factors such as form, stickiness, exposure time, and frequency of consumption. However, risk is decreased by several factors, with the most important being the use of topical fluorides and fluoridated water. Also important are good oral hygiene and eating a balanced diet in line with current dietary guidelines.

**THE BOTTOM LINE:** Research into potential links between sugars and health continues in several areas. Meanwhile, experts agree that a health risk is not posed by enjoying sweet foods and beverages in moderation as part of a balanced diet and a physically active lifestyle.

## Sugars: No Crystal Clear Definition

The chart below shows the definitions commonly used to describe the sugars in food.

TERMINOLOGY	DEFINITION	SOURCE
Added Sugars	Sugars eaten separately or used as ingredients in processed or prepared foods. Examples include white sugar, corn syrup, and honey.	Food Guide Pyramid, USDA/DHHS
Sugar	Indicates sucrose (table sugar) in food label ingredients statement.	FDA
Sugars	All monosaccharides and disaccharides appearing on the Nutrition Facts panel. Includes both naturally occurring and added sugars.	FDA
Caloric Sweeteners	Sweeteners consumed directly and as food ingredients. Examples include sucrose, honey, and corn sweeteners.	Food Disappearance Data, ERS, USDA

NOTE: USDA=U.S. Department of Agriculture; DHHS=U.S. Department of Health and Human Services; FDA=Food and Drug Administration; ERS=Economic Research Service.

## Sweet Messages and Tips with Consumer Appeal

Quantitative research conducted by IFIC shows that most consumers agreed with the messages below and would be likely to try the supporting action tips.

MESSAGE	ACTION TIPS
You can enjoy sweet foods in moderation as part of a healthy eating plan.	<ul style="list-style-type: none"> <li>• Share the experience. Split dessert with a friend or take half home to enjoy the next day.</li> <li>• For a snack, fruit-flavored yogurt or chocolate pudding tastes great and provides bone-building calcium, too.</li> <li>• If you enjoy chocolate, try packing a snack-size chocolate bar in your well-balanced bag lunch.</li> </ul>
Children can enjoy sweet foods and drinks in moderation as part of a healthy eating plan.	<ul style="list-style-type: none"> <li>• Banning sweets can backfire. When you allow kids some sweet treats, they're less likely to overdo it.</li> <li>• Milk and cereal are a welcoming after-school snack. Sweetened or unsweetened, you make the choice.</li> <li>• Pack your kids a well-balanced lunch that includes their favorite treat.</li> </ul>
Most kids love sweets: show them how to enjoy them in moderation.	<ul style="list-style-type: none"> <li>• A snack-size treat is a good size for a smaller tummy.</li> <li>• Set an example. Order a small to medium soft drink instead of an extra-large, and skip the refills.</li> <li>• For younger children, serve up just the right portion with kid-size bowls, cups, and plates.</li> </ul>



# In a World of Hazards, Worries are Often Misplaced

## Editor's Note:

This article was written by Jane E. Brody, syndicated columnist for the *New York Times* on August 20, 2002. It provides an excellent overview of risk perception and thus is reprinted here, with permission, for *Food Insight* readers.

**By Jane E. Brody**

**S**pared from worry about whether they will have enough to eat today or a roof over their heads tomorrow, most Americans have the luxury of worrying about the hazards that may be lurking in their air, water, and food as a result of all this progress and affluence.

We are healthier, live longer, have more sources of pleasure and convenience and more regulations of industrial and agricultural production than ever, but we are also more worried about the costs to our health of environmental contaminants.

This is not to say there is nothing to worry about. In an ideal world, progress would result only in benefits, no risks. In an ideal world, we would be able to produce, organically and inexpensively, all the food we need and the food our importers rely on. In an ideal world, manufacturing would leave no residues in air, water, or soil, and people would be smart and disciplined enough to resist exposure to health-robbing substances like tobacco and consistent about using protective devices like seat belts, helmets, and condoms.

But this is not and never will be an ideal world, so bad things will occasionally happen. Regulations cannot control every risk. Besides, every regulation has a price. The millions or billions spent in compliance and enforcement might be better used in ways that would save many more lives, and sometimes the cost is not worth the potential benefit. I say

“potential” because in many cases, the risks involved are only hypothetical, extrapolations from studies in laboratory animals that may have little or no bearing on people.

For example, despite widespread belief and laboratory studies in rats that link pollution to breast cancer on Long Island, this month an \$8 million federal study found no evidence that environmental contamination from pesticides and industrial chemicals was responsible.

## Why People Worry

“People are scared about environmental dangers,” noted Dr. Glenn Swogger, Jr., a psychiatrist in Topeka, Kan. “Being scared affects their ability to think realistically and use good judgment.” Underlying these fears, he believes, are uncertainty about the effects of exposures to certain substances, a tendency to overreact and seek scapegoats in stressful situations, guilt about our affluence and an unspoken wish to return to a simpler and purer world.

Experts in risk perception say people who become agitated about real or potential risks are influenced by a number of “outrage” factors. Prominent among them is control. Is the risk voluntarily assumed or imposed by others? A woman I know who eats only organically grown food enjoys rock climbing, skiing, and whitewater rafting, sports far riskier than all the chemical fertilizers, pesticides, and antibiotics combined. Likewise, does it make sense for

smokers to worry about pollution from a nearby factory?

In short, too often, the risks people worry most about are out of proportion to the actual dangers involved.

Next is the fairness factor. Is there a benefit to the consumer, or are consumers assuming risks resulting from benefits gained only by the manufacturer? A classic example is toxic waste dumped on a community. Or, if there are some consumer benefits, are they out of proportion to the risks? One example is the use of antibiotics in animal production, a process that has led to the spread of antibiotic-resistant bacteria.

Is the hazard natural or caused by people? Although there was a brief flurry of concern about radon, which emanates naturally from soil and rock, perpetual and far more intense concern arises over radioactivity from mine tailings and nuclear power plants. Yet the known cost to lives from other energy sources, including solar power, gas and oil, still far exceeds that associated with nuclear power. How new or familiar is the risk? People worry much more about possible accidents caused by new technologies than about ones they have known about all their lives. Traditional plant-breeding techniques have resulted in no protests. But the introduction of genetically modified foods has prompted some people to pay premium prices for foods said to be free of any genetic manipulation, even if it results in more wholesome products.

*(continued on page 5)*

## Worries Misplaced

Is there potential for a catastrophe? Consumers have repeatedly ranked nuclear power as the No. 1 hazard among more than two dozen activities and technologies, including smoking and handguns. Many people are far more frightened of air travel, especially after a plane crash, than they are of driving, which, mile for mile, presents a far greater risk.

### Facts to Consider

It is not possible to anticipate, regulate and control every risk. Priorities must be assigned for risk management, with time and money devoted to those hazards best established and most likely to cause the most harm.

Not every regulation is a good investment. For example, for each premature death averted, the regulation that lists petroleum-refining sludge as a hazardous waste costs \$27.6 million while the rule that does the same for wood preserving chemicals cost \$5.7 trillion per death avoided, according to estimates from the Office of Management and Budget.

The asbestos ban, at \$110.7 million per life saved, was a bargain compared with the exposure limits placed on formaldehyde, which cost an estimated \$86.2 billion per death averted.

Animal tests that result in cancer caused by a suspect substance do not necessarily apply to people. Half of all chemicals that have been tested have caused cancer in one or another experimental animal, but not always in all species or strains tested or even in both sexes. Often animal strains genetically susceptible to

certain cancers are chosen for these tests. When very large doses are used in animal tests, the result is often toxicity and inflammation, which itself can cause cancer even if the substance is not carcinogenic.

A cardinal rule in toxicology is “the dose makes the poison.” You can eat a dozen carrots at once with no ill effect, but 400 carrots could kill you. Animal studies rarely reveal the possible effects, or safety, of long-term exposure to the kinds of low doses people may experience.

Keep in mind that we all have liver, which accrue and detoxify small amounts of hazardous substances. Another limitation of animal tests is their usual failure to detect risks that may result from interactions between two or more otherwise innocuous substances.

Remember, too, that “natural” is not necessarily safer, and just because something is manufactured does not make it a potential hazard. Nature is hardly benign. Arsenic, hemlock, and despite its current medical applications, botulism toxin are wholly natural but also deadly.

For helpful, detailed discussions of how best to consider environmental threats, consult the new book *How Much Risk? A Guide to Understanding Environmental Health Hazards* (Oxford University Press) by Inge F. Goldstein and Martin Goldstein, who explain how controversies are investigated and why scientists sometimes disagree and fail to find definitive answers.

### Does Caffeine Affect Insulin Sensitivity?

During the past few years a few studies have looked at the potential link between caffeine consumption and changes in the way in which the body responds to insulin. Although it has been found that caffeine consumption may reduce insulin sensitivity in humans (one study found reductions in insulin sensitivity following a relatively high intravenous — rather than oral — administration of caffeine), the physiological significance of this effect remains unclear. Additional research is required before any conclusions can be reached regarding caffeine’s impact on insulin sensitivity.

## Diabetes

experts are working to define accurate diagnostic measures and establish prevalence in the U.S. population. And, both the CDC and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) are funding clinical trials to examine ways to prevent and treat diabetes in children.

As difficult as they may be to detect, symptoms and risk factors play a key role in diagnosing type 2 diabetes in children. Some symptoms include excessive thirst, frequent urination, tiredness or lack of energy, and acanthosis nigricans (darkening of the skin between the fingers and toes and near the shoulder blades). Exhibiting just one of these symptoms does not mean that a child has type 2 diabetes, but a visit to the doctor may be in order.

In addition to the symptoms mentioned above, there are a number of risk factors for type 2 diabetes in children:

- **Overweight**
- **Older than 10 years of age and in middle-to-late puberty (although some children with type 2 diabetes are younger)**
- **A family history of type 2 diabetes**
- **A member of certain racial/ethnic groups (African American, Hispanic/Latino, and American Indian)**

All of these factors are important; however, it is becoming clear that obesity may be the most significant. “The epidemic of childhood obesity in the U.S. is paralleled by a marked increase in the frequency of type 2 diabetes,” according to the authors of the *NEJM* study. In fact, the study reports that IGT was highly prevalent among the children and adolescents with severe obesity — regardless of ethnic group. Twenty-one percent of the 112 obese adolescents studied had IGT, while 25 percent of the 55 obese children studied exhibited IGT.

(continued on page 6)

# Type 2 Diabetes in Children

## Controlling Type 2 Diabetes in Kids

Research studies have found that lifestyle changes can prevent or delay the onset of type 2 diabetes among at-risk children (those with IGT or other risk factors), but these changes can be challenging to the child and to the child's family. What's needed is a highly motivated child and a supportive and involved family. Without this, the chance of sustaining lasting lifestyle changes is greatly reduced.

Since being overweight is a major risk factor for type 2 diabetes in children, preventing inappropriate weight gain and/or losing weight is one of the most important lifestyle changes to be made. Combining weight loss efforts with regular, moderate physical activity and physical play will increase the chance of success. Enlisting the help of a registered dietitian to assist with goal setting, meal planning, and nutrition education can also help the child and his or her family deal with the day-to-day challenges of a weight-loss program.

Ongoing scientific research is being conducted to learn about new treatment and better therapies to manage type 2 diabetes as well as prevention efforts to delay onset and early diagnosis to reduce risk for complications. On the front line, however, the fact remains that parenting or caring for a child with type 2 diabetes is not easy. The good news is that there are numerous health care professionals and organizations reaching out to communities and families with practical advice and tips on healthy eating and physical activities for children and teens with diabetes. Some of the resources listed on this page may be helpful.

## Want More Information about Type 2 Diabetes and Children?

### *National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)*

This branch of the National Institutes of Health offers a variety of materials for consumers via its Web site ([www.niddk.nih.gov](http://www.niddk.nih.gov)) or by mail. In addition, NIDDK is funding clinical trials to examine ways to prevent and treat type 2 diabetes in children. To get more information about the studies, go to [www.niddk.nih.gov/research](http://www.niddk.nih.gov/research).

### *American Diabetes Association*

Via its Web site at [www.diabetes.org](http://www.diabetes.org) you can read up on the latest scientific information on type 2 diabetes. Its magazine, *Diabetes Forecast*, occasionally runs articles on diabetes and children. The magazine can be accessed at [www.diabetes.org/diabetesforecast](http://www.diabetes.org/diabetesforecast). Enter "children and type 2 diabetes" into the search engine to find articles on this issue.

### *Centers for Disease Control and Prevention*

General information and statistics about type 2 diabetes can be found on the CDC Web site, [www.cdc.gov](http://www.cdc.gov). Look under the heading "Health Topics A-Z" and select "diabetes." There is also information about the Diabetes Prevention Program, the National Diabetes Education Program, and pertinent links under the "Diabetes" heading.

### *Children with Diabetes and the Children with Diabetes Foundation*

The Children with Diabetes Web site, [www.childrenwithdiabetes.com](http://www.childrenwithdiabetes.com), is packed with chat rooms, bulletin boards, information, and fun activities for diabetic children and their families. Also included are details on the foundation's annual conference. The foundation site, at [www.cwdfoundation.org](http://www.cwdfoundation.org), offers support, information, and opportunities to donate. Go online with your child and check out the "Just for Kids" section.

### *American Dietetic Association*

The organization's Web site, [www.eatright.org](http://www.eatright.org), has a variety of materials about type 2 diabetes, but few deal specifically with children. Look under the Nutrition Fact Sheets section for the one entitled "Healthy Habits to Help Manage and Prevent Type 2 Diabetes," which discusses ways to support a diabetic child. In addition, you can find a local registered dietitian through the site or by calling (800) 366-1655.

### *American Academy of Pediatrics*

A wide variety of books, articles, and news can be found on the Academy's Web site, [www.aap.org](http://www.aap.org). Click on the "You and Your Family" section and then on "AAP Publications" to locate the Academy's archived information.

# FDA Initiative to Provide Better Health Information About Foods and Dietary Supplements for Consumers

On December 18, 2002, the Food and Drug Administration (FDA) announced a new initiative to make available more and better information about foods and dietary supplements that could help American consumers reduce their risk of diseases and improve their health by making sound dietary decisions.

The Consumer Health Information for Better Nutrition Initiative is designed to foster two complementary goals concerning the labeling of food and dietary supplements: to encourage makers of conventional foods and dietary supplements to make accurate, science-based claims about the health benefits of their products, and to help eliminate bogus labeling claims by challenging those dietary supplement marketers who make false or misleading claims. The initiative consists of three related actions: issuing guidance on qualified health claims for conventional foods and dietary supplements, strengthening enforcement of dietary supplement rules, and establishing an FDA Task Force on Consumer Health Information for Better Nutrition chaired by Deputy Commissioner Lester Crawford. "Such labeling can help empower consumers to make smart, healthy choices about the foods that they buy and consume," Health and Human Services Secretary Tommy G. Thompson said.

The FDA Press Release (December 18, 2002) may be accessed at: <http://www.fda.gov/bbs/topics/NEWS/2002/NEW00859.html>.

## What's New at IFIC.ORG?

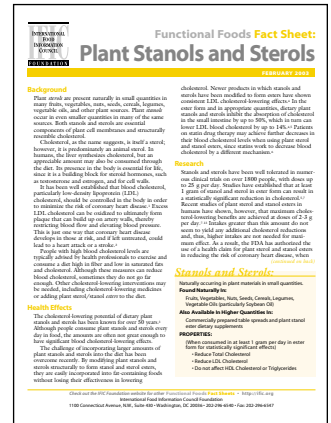
You could be missing out! Have you registered on IFIC.ORG yet? You can receive new and updated food safety and nutrition information simply by going to IFIC.ORG and customizing your news. It's that simple!



# New IFIC Foundation Publications

## Functional Foods Fact Sheet: Plant Stanols and Sterols

To help improve understanding of emerging research on foods and food components and their potential health benefits, the International Food Information Council (IFIC) Foundation released the second in a series of referenced Functional Foods Fact Sheets. The *Plant Stanols and Sterols Fact Sheet* contains information on the health effects and dietary sources of plant stanols and sterols and research and references on plant stanols and sterols. A "bottom line" section summarizes the research and current recommendations. Links to several informational Web sites are also included. Future fact sheets will provide information on soy protein, omega-3 fatty acids, and pre- and probiotics. You will find the stanol and sterol fact sheet as well as the antioxidant fact sheet on the IFIC Foundation Web site at: <http://ific.org/functional>.



## Newly Revised Healthy Eating During Pregnancy Now Available

The very popular *Healthy Eating During Pregnancy* is completely updated and redesigned. Developed in partnership with the March of Dimes, the brochure brings readers the most recent scientific facts about nutrition during pregnancy, including appropriate weight gain, vitamin and mineral supplementation, and other issues of interest to health professionals and women.

The brochure can be accessed in PDF or text format on the IFIC Foundation Web site at <http://ific.org>. Search for *Healthy Eating During Pregnancy*.



# New IFIC Foundation Publications

Below are the newest releases from the IFIC Foundation. Single copies of most publications are available free-of-charge. For a comprehensive listing of publications or for bulk prices, please request the IFIC Foundation Publications List below.

**Publications List (MI-4010)**

A complete list of publications and *Food Insight* reprints available from the IFIC Foundation.

**Fish & Your Health (EB-2095)**

This brochure takes a look at the benefits of fish and seafood in a healthful diet. Provides information on the impact of omega-3's and seafood consumption for the general consumer, children and issues on guidance for pregnant women. Favorably reviewed by the American Academy of Family Physicians Foundation.

**Children's Nutrition and Physical Activity Teaching Set (MI-4200)**

A teaching set designed to help kids ages 9-15 understand the importance of combining nutrition and physical activity. The set features a 22" x 34" two-sided color poster highlighting the Physical Activity Pyramid alongside the Food Guide Pyramid. Set includes the "Ten Tips to Healthy Eating and Physical Activity for You" brochure, reproducible slick, and poster. Please send \_\_\_\_ copies at \$3.50 and \$1.50 shipping handling. Enclosed is a check for \$\_\_\_\_\_.

**Caffeine and Women's Health (EB-2040)**

Revised and updated brochure providing current scientific facts about caffeine and women's health, including such topics as pregnancy and osteoporosis. This referenced document was developed in partnership with the Association of Women's Health, Obstetric and Neonatal Nurses.

**IFIC Review: Understanding Food Allergy (IR-3070)**

This referenced white paper offers the latest scientific information on food allergy. It provides an overview on how to distinguish a food allergy from other sensitivities to food.

**Antioxidant Fact Sheet (MI-4250)**

The first in a series of referenced materials on various food components and their potential health benefits, the Antioxidants Fact Sheet contains information on the health effects, research, references, and dietary sources of antioxidants; a "bottom line" section summarizes the research and current recommendations.

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