Salt has played a significant role in culture, diet and health throughout human history. Salt has been used to add flavor to foods, keep foods fresh, make icy roads and sidewalks safer and was even a form of currency in Ancient Rome (the word salary comes from the Latin word salarium – the money allowed to Roman soldiers for the purchase of salt). However, you may be hearing more about it recently as increasing concerns about how much salt we consume have prompted public health efforts to reduce intakes.

**Why is sodium an important issue?**

High sodium intake is associated with increased risk of high blood pressure, a major risk factor for heart disease and stroke for those individuals who are sensitive to sodium or are predisposed to hypertension. The U.S. Department of Agriculture estimates that the average American consumes 3,400 mg of sodium a day, which exceeds current dietary guidance. The 2005 Dietary Guidelines for Americans recommend that healthy Americans consume less than 2,300 mg. Further, people who are hypertensive, middle-aged, elderly or African American should not exceed 1,500 mg (the Centers for Disease Control and Prevention estimated that 69.2 percent of U.S. adults fall within this special population). The World Health Organization recommends a maximum intake of 2,000 mg a day for adults.

It is critical to help consumers understand the importance of managing sodium intake and provide guidance on how to do so. IFIC research shows that most people are not personally concerned with their sodium intake, but they think others should be. Additionally, they know neither how much sodium they consume nor how much they should be consuming.

**What is sodium and why do we need it?**

Sodium is an essential mineral that the body is unable to make, so it must be supplied by the diet. Although the terms “sodium” and “salt” are used interchangeably, salt is composed of 40 percent sodium and 60 percent chloride; one teaspoon of salt contains about 2,300 milligrams (mg) of sodium.

In the body, sodium is necessary for fluid regulation, nutrient transport and blood pressure regulation; in food it is important for preservation, texture, stability and flavor.

For more information, check out IFIC Review: Sodium in Food and Health.

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**Keeping Food Science and Nutrition Research Bias-Free**

In recent years, there has been vigorous public debate about the susceptibility of research to biases of various kinds. We have seen articles in peer-reviewed journals, such as the Journal of the American Dietetic Association, and the Journal of the American Medical Association. There have been symposia and presentations at scientific conferences; as well as numerous mass media stories covering the issue. Government regulatory agencies have issued new guidelines and regulations for their research scientists about outside funding; the thought being that accepting non-government financial support might somehow compromise their research. To date, the overwhelming focus of the discussion has been on industry-funded science.

Most of the public debate has focused (continued on page 2)
The Story of Sodium—Part 1

much sodium they should have each day nor how much they typically consume.

However, people are interested in learning more about sodium and health, and it is important that they understand and incorporate all of the dietary and lifestyle factors, that, when coupled with reducing sodium intake, can help reduce the risk and treat hypertension. According to the National Heart, Lung and Blood Institute JNC7* report, the most effective strategies are weight reduction, adoption of the Dietary Approaches to Stop Hypertension (DASH Diet) and engaging in regular physical activity. The DASH eating plan is rich in potassium, magnesium and calcium. Sodium reduction and moderation of alcohol consumption may also play a key role in hypertension management.

Many stakeholders are exploring ways to reduce sodium.

At the federal level, the Institute of Medicine convened an expert committee examining strategies to reduce sodium intake, which is expected to release recommendations by February 2010. In addition, the Dietary Guidelines Advisory Committee, including a Subcommittee on Sodium, Potassium and Water, is in the process of developing a report based on scientific evidence-based reviews to inform the 2010 Dietary Guidelines for Americans.

The Center for Science in the Public Interest has called for increased government regulation of sodium in food products since the 1970s (the U.S. Food & Drug Administration currently regulates salt as a “Generally Recognized As Safe” substance), and the New York City Department of Health and Mental Hygiene is working with the food industry to launch a voluntary sodium reduction initiative.

Internationally, the United Kingdom’s Food Standards Agency has been encouraging voluntary reductions within food categories while running a consumer education campaign. Health Canada is developing a similar initiative.

The food industry has voluntarily been reducing the amount of sodium in its products incrementally and often without fanfare because consumers tend to shy away from products advertised as low- or reduced-sodium. Only 13 percent of consumers say they would choose a product indicating “low-sodium” compared to other front-of-pack claims or no claims, according to IFIC research.

A work in progress...

It is important to keep in mind that achieving a balanced, healthful diet means more than focusing on just one nutrient. The Dietary Guidelines recommend including all five food groups and abundant amounts of fruits, vegetables, whole grains and low-fat or fat-free dairy products while maintaining flexibility and variety. For more information (and CPE credit for dietitians), explore the IFIC Foundation learning module, Helping Consumers Get the “Big Picture”: Practical Approaches to Promoting a Healthful, Balanced Eating Pattern.

Be sure to read next month’s issue of Food Insight, which will include tips for managing sodium intake.

*The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)

The Science of Dietary Sweeteners Containing Fructose

The Journal of Nutrition published a timely Supplement in June 2009, featuring the research papers presented at “The State-of-the-Science on Dietary Sweeteners Containing Fructose” Workshop co-sponsored by the International Life Sciences Institute, North America and the USDA, Agricultural Research Service. The Journal of Nutrition Supplement includes papers presented at the Workshop addressing the chemical composition and properties of dietary sweeteners that contain fructose; the amount of fructose in the American diet; the metabolism of fructose in the human body; and, the strength of the existing data linking dietary fructose intake and risk for overweight, cardiovascular disease, and other disorders. Some of the Workshop papers address consumer concern about sugars and fructose in the diet; how fructose and other sugars are presented in the media; and, the resulting consumer confusion about fructose and other sugars in the diet. The purpose of the papers is to clarify the existing data about fructose, identify the gaps in the data, and to help both scientists and consumers understand issues surrounding fructose in the food supply.


http://jn.nutrition.org/content/vol139/issue6/
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**Keeping Food Science and Nutrition Research Bias Free**

commentary, in six journals ((American Journal of Clinical Nutrition (AJCN Vol 89, No. 5, 1285-1291, May 2009), Journal of the American Dietetic Association, Nutrition Reviews, Food Science, Nutrition Today, and Journal of Nutrition). ILSI NA has identified eight principles to serve as ground rules for industry-sponsored research. The paper, “Funding Food Science and Nutrition Research: Financial Conflicts and Scientific Integrity,” also issues a challenge to the broader scientific community to address all bias issues. It is a dynamic document positioned as a first step to stimulate ongoing discussion and refinement.

The principles proposed in the paper suggest that when engaging in public/private research relationships, all relevant parties shall:

1. Conduct or sponsor research that is factual, transparent, and designed objectively; according to accepted principles of scientific inquiry, the research design will generate an appropriately phrased hypothesis and the research will answer the appropriate questions, rather than favor a particular outcome;
2. Require control of both study design and research itself to remain with scientific investigators;
3. Not offer or accept remuneration geared to the outcome of a research project;
4. Prior to the commencement of studies, ensure that there is a written agreement that the investigative team has the freedom and obligation to attempt to publish the findings within some specified time-frame;
5. Require, in publications and conference presentations, full signed disclosure of all financial interests;
6. Not participate in undisclosed paid authorship arrangements in industry-sponsored publications or presentations;
7. Guarantee accessibility to all data and control of statistical analysis by investigators and appropriate auditors/reviewers;
8. Require that academic researchers, when they work in contract research organizations (CRO) or act as contract researchers, make clear statements of their affiliation; require that such researchers publish only under the auspices of the CRO.

The article is laid out in several parts, covering: the historical context of industry funding of research; definitions (including a list of possible sources of bias, showing that conflicts of financial interest are one of many such sources); existing checks on bias, such as formal peer review, peer pressure from outside the scientific journal network, government regulatory oversight, academic policies, science journalism, etc; the proposed guiding principles; a section exploring the import and implications of the principles; a challenge to the broader scientific community to deal with all potential biases; and, a listing of issues not dealt with in the paper. In the paper’s conclusion, the authors state that:

“In the end, management of conflicts of interest, and, for that matter, management of scientific biases altogether is a matter of consensus building, not enforcement. And if our choice is to indulge in more of the self recriminations that have gone on for far too long already, or to construct a workable start to a solution, the path is obvious ... the interpretation of health research and the promotion of public policies resting on that research are far too important for us not to address and try to manage the myriad potential biases that can intrude.”

http://www.ajcn.org/cgi/content/abstract/89/5/1285

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### Protein and Weight Management

**Introduction**

Outside of the necessity of eating protein and the benefits attributed to foods that contain high-quality protein including low-fat dairy, lean meats, eggs, and soybeans, new studies suggest that there are some emerging and unique health benefits that deserve to be explored. The May 2009 issue of Food Insight introduced the Power of Protein series and provided some background about protein, including daily protein needs and some common dietary sources. This article will focus on the potential health benefits of protein related to weight management.

**How Protein Can Help with Weight Management**

Protein may have an effect on an individual’s ability to manage their weight in a variety of ways, by: 1) increasing levels of satiety; 2) maintaining lean body mass thus possibly increasing energy expenditure; and, 3) aiding overall dietary compliance. While each of these individual relationships to protein and weight management is being studied independently, their inter-relationship to each other likely contributes to protein’s association with weight maintenance.

**Protein and Satiety**

Researchers have defined the term *satiety* as “the feeling of fullness or lack of interest to eat following a meal.” The term satiety as it relates to protein can be used to describe the potential effect of individual ingredients such as whey, casein, or soy, the effect of foods such as meats, poultry, fish, dairy, beans, etc., or of *entire meals*. In 2002, the IOM Dietary Reference Intake report on protein suggested that protein has a more satiating effect than fat or carbohydrates-the other macronutrients. This suggests that small increases in protein consumption that

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**Protein and Weight Management**

are offset by decreases in fat or carbohydrate consumption may help increase feelings of fullness after a meal. It is theorized that if satiety is experienced, then weight loss may occur secondary to reduced calorie consumption over time.

Additionally, some studies suggest that different forms of protein, such as whey, or casein found in milk, may have differing affects on satiety. Whey protein is digested faster and causes a quick increase in circulating amino acids, while casein is digested more slowly and provides a more consistent release of amino acids.

These circulating amino acids have an effect on certain hormones that influence appetite. Research shows that whey protein has a more rapid effect on hormones that affect appetite, and therefore may help increase satiety after a meal. Other studies have shown that soy protein has satiating effects similar to whey and casein. However, proteins are often consumed together from foods like milk and fortified cereals, drinks and bars, so more research that takes into account the matrix of nutrients that may be consumed in a given meal needs to be conducted before further conclusions can be drawn.

In addition to the short term satiating effects in the studies that have been conducted thus far, more recent research is also evaluating the effect of protein on lean body mass and energy expenditure.

The amount of lean muscle mass versus body fat that an individual may carry also has an effect on the base level of daily calories that are needed for body maintenance (e.g., blinking, breathing, breaking down food) and repair (e.g., building new cells and tissues). The ratio of lean muscle mass to fat mass that an individual may possess also has an effect on weight maintenance. Because lean muscle mass is more metabolically active than fat, a higher lean muscle mass to fat mass ratio translates to increased total energy expenditure. Therefore, fluctuations in lean muscle mass can affect overall energy balance.

The expanded role for protein and weight management may be emerging. Just as the body is complex, so too is the relationship between protein and weight loss. Future research will continue to evaluate the role that protein may play in increasing satiety and total energy expenditure and maintaining lean body mass, which likely act in synergy along with increasing physical activity and managing energy intake to improve weight management.

Currently, the best advice for healthy individuals is to consume a colorful diet rich in whole grains, fruits, vegetables, and fiber. Additionally, eating a wide variety of proteins, including lean meats, fish, beans, soy, and low-fat and fat-free dairy products will help ensure optimal intake of both essential and non-essential amino acids.