



ASN Publications

Do Processed Foods Lead to Poor Bone Health?

Review in Advances in Nutrition examines the effects of phosphorus, a common additive in processed foods

Just published in the January 2014 issue of *Advances in Nutrition*, the international review journal of the American Society for Nutrition, "[Increasing Dietary Phosphorus Intake from Food Additives: Potential for Negative Impact on Bone Health](#)," assesses the latest research findings to determine the impact of dietary phosphorus on bone health. According to the authors, high dietary phosphorus intake has been shown to cause bone loss in both animal and human studies.

Dietary phosphorus, found in meat, grains and dairy products, is essential for healthy bone growth. Phosphorus deficiency is extremely rare, as it is abundantly available in the natural food supply. Phosphorus additives, however, are commonly found in processed foods. They are used to enhance flavor and improve shelf life. As a result, in many countries, including the United States, phosphorus intake has been growing and is higher than the recommended daily allowance.

Excess phosphorus intake leads to an increase in parathyroid hormone concentration. Studies have shown that continuously high concentrations of parathyroid hormone reduce bone mineral density. In one human population study conducted in Brazil, for example, it was demonstrated that as phosphorus intake increased, there was a concurrent increase in the risk of bone fractures. Another study noted a link between the consumption of phosphorus additives and osteoporosis. Some studies have shown, however, that increasing dietary calcium intake may limit the negative effects of high phosphorus intake.

Consumers should also be aware that there are differences in naturally occurring dietary phosphorus and phosphorus additives. For example, phosphorus found in additives is almost entirely absorbed by the human body, whereas only 60% of naturally occurring phosphorus is absorbed. As a result, phosphorus from additives may have effects that differ from those of natural phosphorus.

According to the authors, "because of the high dietary phosphorus intake and current upward trend in consumption of processed foods in Western countries, these findings have important public health implications." Consumers, researchers, and health care providers interested in learning more will find two additional reviews addressing the effects of phosphorus on human health in the January 2014 issue of *Advances in Nutrition*: "[Phosphorus and the Kidney: What Is Known and What Is Needed](#)" and "[Assessing the Health Impact of Phosphorus in the Food Supply: Issues and Considerations](#)."

How Much Do We Really Know About Nutrition?

Review in Advances in Nutrition explains why it is so difficult to gather strong evidence to support dietary recommendations

Should dietary fats be avoided? Are vegetarians healthier than meat eaters? Will green tea help you live a longer life? Do processed carbs lead to diabetes and obesity? Is there an optimal diet? Despite decades of research and thousands upon thousands of studies, there is still no general agreement of what constitutes a complete and healthy diet. As a result, consumers looking to improve their diets will find masses of information, but not always consensus. The authors of "[Limitations of Observational Evidence: Implications for Evidence-Based Dietary Recommendations](#)," a review published in the January 2014 issue of *Advances in Nutrition*, explain why gathering strong evidence to support dietary recommendations is so difficult.

Data from randomized controlled trials are thought to provide the strongest evidence for establishing relations between diet and health outcomes. In a randomized controlled trial, eligible participants are randomly divided into two or more groups, with each group exposed to one or more different variables. A randomized controlled trial studying the health effects of green tea, for example, might give one group three cups of green tea a day, whereas the other group would be given no green tea. Researchers then track the health outcomes of each group over given points in time in order to assess the health benefits, if any, of green tea.

According to the review authors, “not all diet and health outcome relations can be practically or ethically evaluated by using randomized controlled trials.” Diet benefits or symptoms of diet-related diseases can develop over extended periods. In the case of green tea, for example, researchers might need a few decades in order to establish whether or not there was a health benefit. This type of study is generally not feasible. Moreover, many randomized controlled studies can’t be performed for ethical reasons. For example, it would be unethical to deprive one study group of an essential nutrient to compare disease outcomes with another group receiving the nutrient.

As a result of the difficulties and obstacles to performing randomized controlled trials, many dietary recommendations are supported by evidence gathered primarily from observational data, mostly what researchers call prospective cohort studies. “Although such evidence is of critical importance,” the authors note, “limitations are often underappreciated by nutrition scientists and policymakers.” Observational studies typically require study participants to recall and report what they consume. This can pose many problems, including inaccurate recall and imprecise measurement. As a result, the authors point to a number of instances in which the findings from observational studies did not mirror the findings from comparable randomized controlled studies. For example, observational studies have found a link between polyunsaturated fat intake and heart disease. Some randomized controlled studies have reported just the opposite.

In conclusion, the authors urge researchers and policymakers to be cautious in making dietary recommendations that are primarily based on observational data. Although they recognize that randomized controlled studies are not always possible, they do believe that more needs to be done to provide stronger evidence to support dietary recommendations and help reduce consumer confusion.