

# NUTRI-TALK—NUTRITION MEDLEY

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## ASPARTAME – HEALTHY SWEETENER OR CARCINOGEN?

By: MARK KASMER, M3

While most of American consumers are indulging in carbonated beverages, such as soda, powdered soft drinks and flavored water; hot chocolate; chewing gum; candy; desserts; yogurt; and tabletop sweeteners flavored by the artificial sweetener aspartame, there are some that are hesitant to believe the

United States Food and Drug Administration's label on the sweetener's health efficacy – safe. Many studies have been done confirming the health efficacy of aspartame; many studies have been done demonstrating the carcinogenic potential of aspartame. The FDA has



sided with the studies confirming the health efficacy of aspartame as an artificial sweetener in the general use of foods – should we?

See Page 3

## DAILY VITAMINS: DO I NEED THEM?

BY: VIJAY MENON, M3

Growing up as a kid, my mom and grandma would make me take a spoon of *chali pudi* every night. This is an Indian kid's version of the Flintstone vitamins. My parents take Centrum every day and they are sure it is helping them live healthier

lives; they stopped taking *chali pudi* a long time ago. But supplements have been a fixture in our house in one form or another as long as I can remember. Recently I've wondered if there's any benefit to this daily regimen that my parents stick to and

have tried unsuccessfully to stick me to.

First, before the science of the matter, let's look at the business side. One article I read (Woo, 323S) noted that in 2004 the dietary supplement business grossed (see next page)

### Inside this issue:

Daily Vitamins	1
Benefits of Organic Food	2
Are all fats created equal?	4
Soy: Pros and Cons	5
Fish and Fish Oils	7

### Special points of interest:

- Is aspartame really safe?
- Should I take vitamins each and every day?
- Which fats are bad for me? Which are good for me?
- Soy must be good for me, right?
- Salmon is good for the heart!

## DAILY VITAMINS...CONTINUED

\$20.3 BILLION! My parents buy the Centrum Advanced Formula, 325 tabs for \$19.99, so they buy about 3 bottles of Centrum a year. Approximately 25% of Americans take multivitamins/minerals (MVMs) on a daily basis (Greenwald, et al 3145). The prevailing assumption is that MVMs prevent chronic diseases such as cancer and heart disease. Are my parents then spending their \$60 yearly on Centrum wisely?

The answer for the most part seems to be no. In the review articles that I have read on this topic (cited in references), the prevailing result is that there is no conclusive evidence so far that MVMs have a beneficial effect. Now, this is assuming that the person isn't chronically deficient in vitamins in the first place. Alcoholics, vegans, and the elderly all benefit from specific MVM usage; as do pregnant women benefit from folic acid supplementation and post-

menopausal women benefit from Vitamin D/calcium supplements. However, in the generalized adult population, studies so far have shown no beneficial advantage for using MVMs. (The beneficial result being tested is preventing common cancers such as prostate and breast cancers and prevention of cardiovascular disease, from the use of supplements such as Vitamin E and beta-carotene).

Once again, the results so far have been *inconclusive*. Not a definite no and not a definite yes. There is a



long-term randomized, controlled, double-blind study entitled the Physicians' Health Study II that is focusing on the effect of specific vitamins/MVMs in a population of 15,000 healthy male physicians over the age of 55. "PHS II is unique in several respects. PHS II is the only primary prevention trial in apparently healthy men testing the balance of benefits and risks of vitamin E on cancer and CVD. In addition, PHS II is the only primary prevention trial in apparently healthy men to test the balance of benefits and risks of vitamin C, multivitamins, as well as any single antioxidant vitamin, alone and in combination, on cancer, CVD, and eye diseases. Finally, PHS II is the only trial testing a priori the hypotheses that beta-carotene and vitamin E may reduce the risks of prostate cancer."

Until these results come out, I'll advise my parents, and patients, to spend their money more wisely.

### Editor's Note:

*The American Medical Association endorses the use of a daily multivitamin.*

### References:

[Christen WG](#), [Gaziano JM](#), [Hennekens CH](#). Design of Physicians' Health Study II—a randomized trial of beta-carotene, vitamins E and C, and multivitamins, in

prevention of cancer, cardiovascular disease, and eye disease, and review of results of completed trials. [Ann Epidemiol](#). 2000 Feb;10(2):125-34.

[Huang HY](#), [Caballero B](#), [Chang S](#), [Alberg A](#), [Semba R](#), [Schneyer C](#), [Wilson RF](#), [Cheng TY](#), [Prokopowicz G](#), [Barnes GJ 2nd](#), [Vassy J](#), [Bass EB](#). Multivitamin/mineral supplements and prevention of chronic disease. [Evid Rep Technol Assess \(Full Rep\)](#). 2006 May;(139):1-117.

[Greenwald P](#), [Anderson D](#), [Nelson SA](#), [Taylor PR](#). Clinical trials of vitamin and mineral supplements for cancer prevention. [Am J Clin Nutr](#). 2007 Jan;85(1):314S-317S.

[NIH Consens State Sci Statements](#). 2006 May 15-17;23(2):1-30.

Woo, Jason JY. Adverse event monitoring and multivitamin-multimineral dietary supplements. [Am J Clin Nutr](#) 2007 85: 323S-324

## **Benefits of organic food** By: Linda Lee, M3

There seems to be a tacit consensus that foods which are labeled "organic" are better and healthier than those that are produced the alternative way. A patient came into the clinic and asked whether she should consider making all her baby food with organic produce and if in fact it would be better for her child. It seemed like an idea worth investing in considering that many are paying more for foods that are labeled organic. Organic is defined as foods that are produced with certain standards. For example, with fruits and vegetables, it means that they are grown without the use of pesticides, artificial fertilizers, human waste, or sewage. It also means that they have no ionizing radiation exposure or any additives. For animals, it's a similar idea. Any livestock that is labeled as organic are reared without use of antibiotics and growth hormones. Even the land in which the food was grown had to be free of chemicals for a number of years to be considered organic. The USDA has strict regulations on what can be deemed as organic foods. With all these regulations, one has to wonder if going organic is really worth the cost.

Organic food could cost up to 65% more than other regularly processed food. A meta-analysis was done in 2002 on all the past studies associated with the health benefits of organic and found no proof that organic foods offer greater nutritional values, consumer safety or any distinguishable difference in taste. See Page 4

## ASPARTAME—CONTINUED

Aspartame is the second most used artificial sweetener in the world, next to saccharin. It is found in over 6000 products, from flavored water to desserts and chewing gum. It is metabolized by the body into 3 constituents – aspartic acid, phenylalanine, and methanol. The United States FDA originally approved limited use of aspartame in solid foods in 1981, extended to soft drinks in 1983, and finally approved as a general sweetener in 1996.

While most hold the US FDA's approval as a "clean bill of health", Ralph G. Walton, MD, professor and chairman of the Department of Psychiatry at Northeastern Ohio University's

College of Medicine, conducted an analysis of all the medical studies—164 of them at the time—dealing with human safety as it relates to the use of aspartame. 74 of the studies were sponsored by the aspartame industry and 90 of them were non-industry-sponsored studies. Dr. Walton found that of the 74 studies sponsored by the aspartame industry, 100 percent of them claimed no health problems associated with aspartame use. Of the 90 non-industry-sponsored studies, all but seven of them identified health concerns with aspartame use. Interestingly, of the seven studies that did not find problems, the FDA had conducted six. Critics

suggest that since a number of FDA officials eventually went to work for the aspartame industry, these six studies should be considered industry-sponsored research as well.

One of the most recent and extensive studies, published in 2005, not included in Dr. Walton's review of studies was performed by the European Ramazzini Foundation of Oncology and Environmental Sciences in Bologna, Italy. It concluded that aspartame was responsible for an increased incidence of malignant tumors in rats with a significant positive trend in males and females, an increased incidence in lymphomas and leukemias in males and females,

an increased incidence of transitional cell carcinomas in females and increased incidence of malignant schwannomas of peripheral nerves with a positive trend in males.

In April 2007, the FDA responded the above-mentioned European

*Aspartame: A sweetener with a dark side. Read inside for more.*

study. The FDA's response – "FDA finds no reason to alter its previous conclusion that aspartame is safe as a general purpose sweetener in food." Unfortunately, the combination of seemingly well-designed studies with dichotomous results has led the FDA to

choose a side based on criteria outside of simply study results. To refute the European study, the FDA stated that they were not provided complete study data and of the study data they received they found flaws. Likewise, the European study claimed to find similar flaws in many of the previous studies done, many of which were used as the baseline for the FDA's

original approval of aspartame, first in 1981. Which holds true? At this time, it's hard to tell. But, with the amount of aspartame saturating our daily food products in the US, it's only a matter of time before we uncover the truth about the health effects of aspartame.

### References

1. "Aspartame: Diet-astrous Results." Rebecca Ephraim, RD, CCN. <http://www.westonaprice.org/modernfood/aspartame.html>
2. FDA Statement on European Aspartame Study. April 20, 2007. [www.cfsan.fda.gov/~lrd/fpaspar2.html](http://www.cfsan.fda.gov/~lrd/fpaspar2.html)

3. "First Experimental Demonstration of the Multipotential Carcinogenic Effects off Aspartame Administered in the Feed to Sprague-Dawley Rats." Soffritti et al. Environmental Health Perspectives. Volume 114. Number 3. March 2006.

## ORGANIC FOOD...CONTINUED

There is also the concern of synthetic pesticides and the negative effects they potentially pose. Another study showed that 77% of conventional foods carry pesticides while organic, although grown pesticide free, has about 25% pesticide contamination. This might be alarming for some, but there was another study done that showed that the potential health effects of pesticide residues are nonexistent. Many of the pesticides used have to go through vigorous tests and be approved by the EPA (environmental protection agency). In fact this article made a point of saying that most pharmaceutical drugs have a higher toxicity level than any pesticide used, and people take those drugs willingly.

Statistically speaking, organic foods are now available in 20,000 natural food stores and the market for organic foods has grown 20% in the past decade increasing to \$23 billion in annual sales. It's been deemed as a fad, healthier, cleaner, and safer. But studies have shown, despite all these changes in the handling of the produce, it doesn't have that much of a beneficial health effect. However, organic systems do have other benefits that are not directly related to the person eating it. Studies have shown that organic farms do not release synthetic pesticides which can cause damage to the local wildlife. Pesticides in concentrated form can have severe anti-cholinergic effects on those that use it. Organic farms can also sustain a diverse ecosystem and they use less energy and produce less waste than traditional farmers. One study found a 20% smaller yield from organic farms using 50% less fertilizer and 97% less pesticide. So although the nutritional aspect may not be all that beneficial, organic farming and foods might still be worth investigating.

### References:

Mader, et.al. (2002). "Soil Fertility and Biodiversity in Organic Farming". *Science* 296: 1694–1697.

Canadian Food Inspection Agency, Food Safety Directorate, Food Microbiology and Chemical Evaluation. 2004. Report On Pesticides, Agricultural Chemicals, Environmental Pollutants and Other Impurities in Agri-Food Commodities of Plant Origin: Processed Fruit and Vegetables, 2003–2004

Linda A. McCauley, et.al. (2006). "Studying Health Outcomes in Farmworker Populations Exposed to Pesticides". *Environmental Health Perspectives* 114.

Trewavas, Anthony (March 2001). "Urban myths of organic farming". *Nature* 410: 409-410.

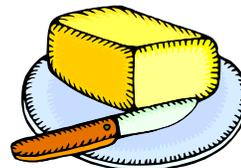


## Are all fats created equal? By: Connie Jung, M3

The low-fat diet has long been purported by doctors to help with weight loss, improve cardiovascular health, and prevent cancer. However, recent data indicates that the assumption that all fats are bad fats is misleading. The Women's Health Initiative Dietary Modification Trial published by the *Journal of the American Medical Association* in 2006 found that a low-fat eating pattern did not necessarily result in weight loss, reduce coronary heart disease, or

decrease incidence of breast and colon cancer as previously thought. Furthermore, a study published in the *New England Journal of Medicine* indicates that diets higher in protein and fat (like Atkins or South Beach Diets) are not associated with an increased risk of coronary heart disease.

What appears to be more important is the type of fat consumed rather than the overall amount. With regard to



heart disease, although low fat diets encourage reduced consumption of saturated and trans-fats, both of which have been shown to increase the incidence of coronary heart disease, they also over-

look the benefits of mono and poly-unsaturated fats on increasing HDL and decreasing LDL. In addition, omega-3 fatty acids, found in various kinds of fish, have been recently (see P. 6)

# SOY: PROS AND CONS

BY: AISHA AHMED, M3

Native to east Asia, Soy has been consumed for more than five thousand years. Soybeans are high in fiber, low in carbohydrate and nutrient dense, and are increasingly become a part of the Western diet. Soy products have been marketed claiming a protective effect against chronic diseases such as coronary heart disease and certain cancers. However, research has suggested that soy may express toxicity. Safety concerns include expression of goitrogenic, estrogenic, and anti-nutrient activity for soy products.

Soy contains naturally occurring phytoestrogen components known as isoflavones<sup>1</sup>. Although there are several different types of isoflavones, most dietary sources contain three major

chemical forms of isoflavones, genistein, daidzein, and glycitein and to a lesser extent, coumestrol<sup>2</sup>. Dietary sources of isoflavones include most members of the Fabaceae (Legume) family. High



levels of genistein and daidzein are found in prairie turnip or Psoralea. Along with soy, other legumes such as kudzu and its processed derivatives such as tofu also are a rich source of isoflavones. Other foods containing isoflavones are chick pea, alfalfa beans and peanuts. Dietary isoflavone content depend on the amount of soy consumed, and range from 100 mg isoflavones a day in soy rich diets to marginal in soy depleted western diets<sup>3</sup>. It is widely believed that the isoflavone content allows soy to display both health benefits and potential risks.

Thyroid peroxidase (TPO) is a necessary enzyme used for thyroid hormone synthesis. Some naturally occurring flavonoids, including genistein and daidzein

are inhibitors of TPO activity<sup>4</sup>. In the case of absent iodide, genistein and daidzein act as suicide substrates for TPO by binding to the active site, creating anti-TPO which is a major thyroid auto-antigen leading to thyroid autoimmunity and also ultimately to goiter development<sup>5</sup>. It is important to note that iodine deficiency is synergistic with soy in

*Soybeans are high in fiber, low in carbohydrate and nutrient dense...*

*However, research has suggested that soy may express toxicity.*

causing anti-thyroid effects, and that studies have shown goiters were reversed upon supplementation with iodine<sup>6</sup>. Today, many soy based infant nutrition formulas are supplemented with iodine to prevent any anti-thyroid effects.

Because of the structural similarity to endogenous estrogen, soy isoflavones have been used for the treatment of post-menopausal

symptoms. However, recent studies have caused caution against soy products. In one study, genistein was found to cause uterine adenocarcinoma in adult mice<sup>7</sup>. Also, when soy derived isoflavone genistein was given to rats with already formed mammary tumors, an increase in weight of estrogen-dependent adenocarcinomas was found, along with a higher percentage of proliferative cells in tumors and increased uterine weights<sup>8</sup>. It has been shown, therefore, that soy isoflavones may be estrogenic developmental toxic

cants with genistein being carcinogenic in rodents and maybe in humans. Nevertheless, it is interesting to note that another study postulates that genistein acts more like a selective estrogen receptor modulator (SERM) than estrogen itself and behaves like raloxifene or EVISTA (FDA approved drug for treatment and prevention of osteoporosis)<sup>9</sup>. This suggests that soy isoflavones may have the beneficial effects of estrogen

without the negatives.

Besides the isoflavones, there are some other compounds present in soybeans that may have an antinutritional effect. Proteases such as Kunitz trypsin inhibitor and Bowman-Birk inhibitor exert their antinutritional effect by causing pancreatic hypertrophy and hyperplasia, leading to growth inhibition<sup>10</sup>.

Another soy component, lectin binds to

glycoprotein receptors on the intestinal mucosal epithelia, and interferes with absorption of nutrients<sup>11</sup>. Both protease inhibitor and lectin are heat labile and are inactivated by cooking. Finally, phytic acid has been regarded as an antinutritional factor due to its interference with the availability of certain metals such as zinc and iron.

See Next Page

## SOY...CONTINUED

However, a USDA study showed that serum concentrations of zinc and iron did not reveal any significant difference in level upon soy protein consumption<sup>10</sup>.

Soy has been consumed in major parts of the world for centuries, despite the toxic effects noted above. Two factors may cause for the discrepancy between findings in the lab and real life effects. The first is that when taken in isolation, compounds behave differently than when taken as whole. Secondly, 'the dose makes the poison' and at high enough concentrations, anything may express adverse effects. Nevertheless, one must not dismiss the abundance of data both promoting and cautioning soy products, and adequate consideration must be taken when making a decision regarding soy.

### References:

Knight DC, Eden JA. A review of the clinical effects of phytoestrogens. *Obstet Gynecol.* 1994;87:897-904.

Murphy PA. Phytoestrogen content of processed soybean products. *Food Technol.* 1982;36:60-64.

Munro et al. Soy Isoflavones: A safety review. *Nutritional Reviews.* 2003;61(1-33).

Divi RL, Chang HC, Doerge DR. Anti-thyroid isoflavones from soybean: isolation, characterization, and mechanisms of action. *Biochem Pharmacol.* 1997;54:1087-1096.

Doerge DR, Sheehan DM. Goiterogenic and estrogenic activity of soy isoflavones. *Env health persp.* 2002;110:349-353.

Shepard et al. Soybean goiter. *N Engl J Med.* 1960; 262:1099-1103.

Newbold et al. Uterine adenocarcinoma in mice treated neonatally with genistein. *Cancer Res.* 2001;61:4325-4328.

Allred CD et al. Dietary genistein results in larger MNU-induced, estrogen-dependent mammary tumors following ovariectomy of Sprague-dawley rats. *Cardinogenesis.* 2003;0:1981.

Setchell KDR. Soy Isoflavones- benefits and risks from nature's selective estrogen receptor modulators (SERMs). *J Am Col Nutr.* 2001;20:354s-362s.

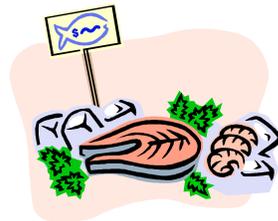
Liener IE. Possible adverse effects of soybean anticarcinogens. *J Nutr.* 1995;3:744s-750s.

Liener IE. Implications of antinutritional components in soybean foods. *Crit Rev Food Sci Nutr.* 1994;34:31-67.

## ARE ALL FATS...CONTINUED

lauded for their effects on reducing heart disease deaths. Studies show that diets with fat intake derived primarily from non-hydrogenated unsaturated fats such as olive and canola oil, nuts, and seeds, as well as whole grains as the main form of carbohydrates and plenty of fruits and vegetables offer significant protection against heart disease.

And while more research is needed to substantiate the link between good fat consumption and decreased incidence of cancer, a low fat diet can no longer be looked at as the preferred method for weight loss in overweight or obese patients. A low-fat diet has not shown significant advantage over a high-fat, low-carbohydrate diet, as long as the right proportions of good fats are consumed. A high-fat, low-carbohydrate also prevents people from substituting fats with simple carbohydrates such a white bread or pasta, which also lead to certain health ramifications. Therefore, while it is important to stress the negative effects saturated and unsaturated fats have on heart disease, obesity, and cancer incidence, good fats derived from plant sources cannot be overlooked as a crucial part of an overall healthy and balanced diet. These new recommendations, together with regular exercise, limited alcohol intake, and smoking cessation should be a part of routine adult health maintenance.



### References:

Prentice RL, Caan B, Chlebowski RT, et al. Low-fat dietary pattern and risk of invasive breast cancer: the Women's Health Initiative Randomized Controlled Dietary Modification Trial. *JAMA* 2006; 295:629-42.

Halton, Thomas L., Willett, Walter C., Liu, Simin, Manson, JoAnn E., Albert, Christine M., Rexrode, Kathryn, Hu, Frank B. Low-Carbohydrate-Diet Score and the Risk of Coronary Heart Disease in Women. *N Engl J Med* 2006; 355: 1991-2002

Frank B. Hu; Walter C. Willett. Optimal Diets for Prevention of Coronary Heart Disease. *JAMA* 2002 288: 2569-2578

Jenkins DJ, Kendall CW, Augustin LS, et al. Glycemic index: overview of implications in health and disease. *Am J Clin Nutr* 2002; 76:266S-73S.

## **FISH AND FISH OILS: HEALTH BENEFITS AND RISKS** By: Dr. Samuel N. Grief

Omega-3 fatty acids first received public and professional attention when epidemiologists learned that the Inuit people living in the far northern climates – who had high-energy, high-fat diets – experienced a decreased rate of heart disease. Fatty fish, a staple of Inuit diets, are rich in omega-3 fatty acids, particularly eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA). Thus, the link between a diet rich in omega-3 fats and heart disease was made.

A brief primer about fats is included here to refresh the reader. There are two main categories of fat: saturated and unsaturated. Saturated fats, found mostly in foods of animal origin such as beef, pork, poultry and dairy products, are linked to an increased risk of heart disease. Among the unsaturated fats, there are also two types: polyunsaturated and

monounsaturated. Polyunsaturated fats are found for the most part in vegetables, such as corn, soybean, and a variety of seeds. Monounsaturated fats are found in some specific food products (olives, peanuts, avocados). A specific kind of polyunsaturated fat, known as omega-3 fat, is found in larger quantities in flaxseed, soybean, canola, walnut

oil, and most importantly fish. Fish with high omega-3 fat content include: salmon, mackerel, herring, and sardines. To a lesser extent, trout, tuna and shellfish also contain omega-3 fats. These fats are good for you, and you will see why shortly.

Researchers have investigated fish oils for quite a while. In 1989, a study published in the well-known European-based medical journal *Lancet* showed how adding 6-12 ounces of fatty fish to one's diet per week significantly decreased a person's risk for recurrent heart disease and death. Another study published in 1999 in the medical journal *Circulation* confirmed fish oils' value at reducing the rate of recurrent heart disease, hospitalizations related to heart disease and death. Lastly, in 2002 a review of all published trials



between 1966-1999 relating to fish oils was undertaken and published. The review concluded that consumption of only 1-2 ounces of fatty fish or equivalent amount of fish oils per day will reduce rates of fatal heart attack, cardiac death and overall mortality.

Fish oils are now available through many retail pharmacies and health food stores. The number of different brands is growing, and it may be hard to determine which brand is best for you. Here are some pointers:

- Look for DHA/EPA content. More is better. The maximum intake per day should be 4000 milligrams (mg) or 4 grams per day

- Compare prices. Some products are cheaper, but the amount of DHA/EPA is so small, you must take many more daily, thus increasing the cost and inconvenience

- Don't buy any product unless you know the source. Contaminants may be inadvertently included in products manufactured abroad

- Look on the label for the word "standardized", your assurance that you will be getting the exact amount of fish oils per capsule

- Lastly, no other vitamin or nutrient is necessary to help absorb fish oils in your gut. Thus, no need to buy products containing additional vitamins or minerals.

Fish oils do have risks, albeit minor. They should be used with caution, perhaps not at all, in pregnant or breast-feeding women. People with fish aller-

gies should avoid fish oils. Side effects of fish oils may include: eructation (fishy burps and belching), infection, flu syndrome, dyspepsia (mild indigestion), taste perversion, back pain, and rash. Increased bleeding is theoretically a risk of fish oils, but the Food and Drug Administration (FDA) has reviewed studies on fish oils and bleeding tendencies and concluded that there is no increased risk to individuals who con-

sume up to 3 grams per day of fish oils.

A lot of press has been generated surrounding specific fish and their content of mercury, dioxins and PCBs. Fish oils do not contain any of these substances.

Summary recommendations regarding fish and fish oils are as follows:

In patients without documented heart disease:

- Eat a variety of (preferably oily) fish at least twice a week (500mg/wk of EPA/DHA)

- Include oils and foods rich in alpha linolenic acid, the substance found in many vegetables that is a known precursor to DHA/EPA (food examples include: flaxseed, canola, and soybean oils; flaxseed and walnuts)

See Last Page

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## FISH AND FISH OILS...CONTINUED

In patients with documented heart disease:

- Consume approximately 1 gram/day of EPA + DHA, preferably from oily fish
- EPA + DHA supplements (600mg of DHA/EPA per day) could be considered in consultation with your physician

In patients with very high triglyceride levels (above 500mg/dl):

- Consume 2-4 grams/day of EPA + DHA provided as capsules under a physician's care

### **Editor's Note:**

Tuna, while healthy in small quantities, should be limited in women of child-bearing age (no more than 12 ounces

per week) and in pregnant women (no more than 6 ounces per week) due to potential for mercury exposure.

Children should also consume no more than 6 ounces per week of tuna.

Other fish known to have higher mercury content include shark, king mackerel and swordfish. These fish should be enjoyed no more than once a month, if at all. (SG)

