

Trans-fatty Acids: The Bad Fat

Background:

- Trans-fatty Acids are "Alternate forms of naturally occurring unsaturated fatty acids produced in fats as a result of hydrogenation, such as when vegetable oil becomes margarine or shortening." (Healthy People, 2006)
- "Trans-fatty acids also occur in milk fat, beef fat, and lamb fat." (Healthy People, 2006)
- Over consumption of Trans fats can increase your LDL cholesterol level (bad cholesterol). An increase in LDL cholesterol levels can elevate the threat of heart attack and coronary artery disease.
- In addition to increasing your LDL cholesterol levels (bad cholesterol), they will lower your HDL cholesterol levels (good cholesterol).
- The Food and Drug Administration recognize the health risks of Trans fats, and are beginning to take action. They have passed a by law which mandates the amount of Trans fats to be listed on the nutrition labels of all food products in the United States. Even with these changes the fast food still presents a large problem. Fast food restaurants are where Trans fats are most commonly found and they are not required to label any of their foods.
- Trans fats are "specific type of fat formed when liquid oils are made into fat into solid fats like shortening or hard margarine." (American Heart Association, 2006)
- The process of turning liquid oils into solids is called partial hydrogenation. This is done by food manufacturers to prolong the food's shelf life.
 - Hydrogenation is the process of adding hydrogen to a substance. "In hydrogenation plant oils are exposed to hydrogen at high temperature and in the presence of a catalyst. Two things result:
 - Some double bonds are converted to single bonds because hydrogen was added
 - Other double bonds are converted from cis to trans configuration." (American Heart Association)
 - These two changes cause the liquid oils to solidify and position the molecules closer to one another.
- The primary sources of Trans fats in the American diet come from fried and baked foods, such as pastries, donuts, crackers

and French fries.

- "The proportion of calories in the U.S. diet provided by total fat is about 33 percent... and trans-fat is about 2.6 percent." (Healthy People, 2006)
- "Margarines that have been formulated to contain no trans-fats are available in most U.S. grocery stores." (Healthy People, 2006)

Statement of the Problem:

- Because Trans Fats are believed to be a main contributor in the raising of LDL cholesterol (bad cholesterol), and the lowering of HDL cholesterol (good cholesterol) Healthy People 2010 have planned many objectives in an attempt to deal with the over consumption of Trans fats in the American Diet.
- Healthy People 2010 has an entire section which solely addresses "Nutrition and Overweight." Although all of the objectives do not directly address "trans fats", they are topics that are almost always affected by the consumption of Trans fats. Some of the objectives and concerns include;
 - "Increase the proportion of adults who are at a healthy weight." Currently 42% of American adults are at their proper weight (have a BMI from 18.5-25). Healthy People 2010 have set a goal to raise that level almost 20%, to 60%. (Healthy People, 2006)
 - "Reduce the proportion of adults who are obese." Currently 23% of the adult American population is considered obese (have a BMI greater than 30). Healthy People 2010 have set a goal to lower that level to 15% (Healthy People, 2006)
 - "Reduce the proportion of children and adolescents who are overweight or obese." At the beginning of Healthy People 2010 11% of all children from the ages of 6 to 19 were considered overweight or obese. The goal of Healthy People 2010 is to see this percentage drop to 5%. (Healthy People, 2006)
 - "Increase the proportion of persons aged 2 years and older who consume less than 10 percent of calories from saturated fat." Only 36% of children aged 2 years and older consumed less than 10% of calories from saturated fat at the beginning of Healthy People 2010. By 2010 Healthy People 2010 would like to see that figure almost double. (Healthy People, 2006)

- "Increase the proportion of persons aged 2 years and older who consume no more than 30 percent of calories from total fat." (Healthy People, 2006)
- "A primary concern is consuming too much saturated fat and too few vegetables, fruits, and grain products that are high in vitamins and minerals, carbohydrates (starch and dietary fiber), and other substances that are important to good health." (Healthy People, 2006)
- Healthy People 2010 recommends, "To choose sensibly, choose a diet that is low in saturated fat and cholesterol and moderate in total fat" (Healthy People, 2006)

Epidemiologic Picture of the Problem:

- "Nutritional scientist Bruce Holub says studies show just 5 grams a day of Trans fat over many years boosts the heart disease risk by 25 per cent." (CTV News, 2006)
- "Trans fats may also affect brain development in children." (CTV News, 2006)
- "Health Canada statistics indicate that people in the 15-25 age group consume an average 38g a day." (CTV News, 2006)
- The Fact Sheet on Trans Fatty Acids provided by the Canadian Government stated, "Consuming either saturated or Trans fat raises the blood levels of the so-called 'bad' cholesterol (serum LDL-cholesterol). LDL-cholesterol is a risk factor for heart disease. In addition to raising 'bad' cholesterol, Trans fat also reduces the blood levels of the so-called 'good' cholesterol (HDL-cholesterol). HDL-cholesterol protects against heart disease."
- An experiment was performed by CTV and *The Globe and Mail* "to test some fast foods to see how much of this dangerous Trans fat consumers are gulping down in take-out meals." (CTV News, 2006) Here are the Results;
 - "The KFC meal contained the highest levels of trans: A whopping 18.6 grams. At that level, if eaten daily, it could boost the risk heart disease, by almost 100 per cent.
 - The Burger King meal wasn't far behind at 13 grams of Trans.
 - Wendy's meal had just over 5 grams, lower but at a level that if consumed daily, increases your risk of heart disease by 25 per cent.
 - The lowest levels were found in the McDonald's meal with just under two grams (1.8 grams) of trans for their entire

Chicken McNuggets and fries meal." (CTV News, 2006)

- There is not much information regarding the impact of Trans fats on differentiating races and genders. It appears that Trans fats do not discriminate; they are equally harmful to all of mankind.

Solutions to the Problem:

- The American Heart Association provided the following guidelines regarding the consumption of trans fats;
 - "Use naturally occurring, unhydrogenated oil such as canola or olive oil when cooking or making salad dressings at home.
 - Look for processed foods made with unhydrogenated oil rather than partially hydrogenated or saturated fat.
 - Use margarine as a substitute for butter, which is high in both saturated fat and cholesterol. However, choose soft margarines (liquid or tub varieties) over harder stick forms that contain more Trans fatty acids. Shop for margarine with no more than 2 grams of saturated fat per tablespoon and with liquid vegetable oil as the first ingredient. Look for those labeled "trans-fat free."
 - Limit the saturated fat in your diet. If you don't eat a lot of saturated fat, you usually won't be consuming a lot of Trans fatty acids. Try replacing some meat in your diet with vegetable alternatives such as beans.
 - Eat commercially fried foods and commercial baked goods infrequently. Not only are these foods very high in fat, but also that fat is also likely to be partially hydrogenated, meaning it has a lot of Trans fatty acids. French fries, doughnuts, cookies and crackers are examples of foods that are high in Trans fatty acids.
 - Commercial shortening and deep-frying fats will continue to be made by hydrogenation and will contain Trans fatty acids until efforts to have restaurants change their practices are successful. That's just one more reason to eat fried fast food infrequently, and to ask every restaurant you eat in, including fast-food restaurants, to use Trans fat-free oils.
 - When you eat out, ask about the trans fat content of foods on the menu." (American Heart Association, 2006)
- The Canadian Government has also released a statement on how to reduce the consumption of trans fats;
 - "*Canada's Guidelines to Healthy Eating* advises Canadians

to choose lower fat dairy products, leaner meats and foods prepared with little or no fat. Canadians can significantly reduce their intakes of saturated and *Trans* fats by avoiding commercially fried foods and high fat bakery products. Eating more vegetables and fruit, whole grain breads and cereals, peas, beans, lentils and nuts, will also result in lower intakes of both saturated and *trans* fats." (Health Canada, 2006)

- Healthy People has also released a set of recommendations regarding the consumption of trans fats;
 - "Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *Trans* fatty acid consumption as low as possible.
 - Keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
 - When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
 - Limit intake of fats and oils high in saturated and/or *Trans* fatty acids, and choose products low in such fats and oils." (Healthy People, 2006)

Internet Resources:

(2004, November). Fact Sheet on Trans Fats. Retrieved March 11, 2007, from Health Canada Web site: http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2004/2004_trans_e.html

Trans Fatty Acids and Soybean oil Fact Sheet . Retrieved March 11, 2007, from Talk Soy Web site: <http://www.talksoy.com/health/tTransfattyAcids.htm>

(2003, July). What Every Consumer Should Know About Trans Fatty Acids . Retrieved March 11, 2007, from U.S. Food and Drug Administration Web site: http://www.fda.gov/oc/initiatives/transfat/q_a.html

Bibliography:

Favaro, A (2006, June 13). Charting the trans fat content in common fast foods. Retrieved March 21, 2007, from CTV News Web site: http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20060609/tansfat_charts_060612/20060613/

Herman, R (1999, November 15). TRANS FATTY ACIDS AND CORONARY HEART DISEASE . Retrieved March 21, 2007, from HSPH's Nutrition Source Web site: <http://www.hsph.harvard.edu/reviews/transfats.html>

(2003, July 9). HHS To Require Food Labels To Include Trans Fat Contents Improved Labels Will Help Consumers Choose Heart-Healthy Foods. Retrieved March 11, 2007, from United States Department of Health and Human Services Web site: <http://www.hhs.gov/news/press/2003pres/20030709.html>

Nutrition and Overweight. Retrieved March 11, 2007, from Healthy People 2010 Web site: <http://www.healthypeople.gov/Document/HTML/Volume2/19Nutrition.htm>

Trans Fat Overview. Retrieved March 11, 2007, from American Heart Association Web site: <http://www.americanheart.org/presenter.jhtml?identifier=4776>

Trans Fatty Acids. Retrieved March 11, 2007, from American Heart Association Web site: <http://www.americanheart.org/presenter.jhtml?identifier=3030450>

Trans Fatty Acids, Plasma Lipid Levels, and Risk of Developing Cardiovascular Disease. Retrieved March 11, 2007, from American Heart Association Web site: <http://www.americanheart.org/presenter.jhtml?identifier=1728>

Back to Betty C. Jung's Web site	http://www.bettyjung.net/
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Trans-fatty Acids: The Bad Fat (Handout)

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Where to find out more;

- <http://www.americanheart.org/presenter.jhtml?identifier=4776>
- <http://www.healthypeople.gov/Document/HTML/Volume2/19Nutrition.htm>
- http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2004/2004_trans_e.html