Chewing the fat

Dr. Proodian's Health Corner

By. Dr. James Proodian

Before beginning this week's health article, I would like to personally wish you a happy and healthy New Year. For 2005, I look forward to bringing you more information that can make a positive difference in your overall health, both through this column and the free health seminars that I provide to companies and other organizations in the area. This excellent article on fats was written by David R. Seaman, DC, MS, DABCN, DACBN, FACC, and is one that I fully endorse. Please pay particular attention to the "Food Focus" section, which provides some common sense pointers on eating healthier. — JP

In general, people are confused about fats, and for many, the confusion has escalated to a level of total fat fear . Numerous people believe that the fat in their diet is killing them — and they are probably correct, except their fear is misplaced. In other words, most people are afraid of the wrong fats. To understand the nature of fats, we basically need a "fat coach," and the best are lipid chemists. Only a PhD in lipid chemistry is adequately trained to discern between the facts and fiction regarding fats. Fortunately for us, an easy-to-read text, Know Your Fats, has been written by Mary Enig, PhD, a lipid chemist.[1] The great majority of the information contained in this article can be found in Know Your Fats, a book that I strongly recommend for everyone.

Fat Facts

The category of lipids includes both fats and oils. Fats are solid at room temperature, while oils are liquid. So, butter and margarine are considered fats, while olive oil is obviously an oil. All lipids are made up of collections of molecules called triglycerides, which consist of three fatty acids that are attached to a three-carbon glycerol molecule (ie, a three-carbon glycerol plus three fatty acids equals a triglyceride). We eat triglycerides, which can be measured in a blood test. The triglyceride and cholesterol portion of a blood test seem to strike a chord of fear like no other for most patients. Unlike triglycerides, cholesterol is not a lipid, but a special alcohol molecule called a sterol.

There are three dif ferent types of fatty acids that can attach to glycerol and create a triglyceride. We have saturated, monounsaturated, and polyunsaturated fatty acids. All fatty acids are made up of carbon, hydrogen, and oxygen molecules and are connected by covalent bonds, which are represented as single, double, or more lines between two molecules. Concerning fatty acids, the term saturated, monounsaturated, or polyunsaturated refers to the number of bonds between the carbon molecules in the fatty acid that can contain less than five carbons or more than 20 carbons.

Saturated fatty acids contain only single bonds between carbon molecules, while a monounsaturated fatty acid will have only one double bond in its structure, as compared to polyunsaturated fatty acids that contain two or more double bonds.

Stearic, palmitic, and lauric acids are commonly consumed saturated fatty acids. Stearic and palmitic acids are found in both animal and seed oils. Corn oil is 14% saturated, saf flower oil is 8% saturated, sunflower oil is 12% saturated, and olive oil is 16% saturated. [1] Lauric acid is found lar gely in coconut and palm kernel oils and is known to be an anti-inflammatory . Animal fats do not contain lauric acid, but do contain palmitic and stearic acids, as well as other saturated fatty acids.

Oleic acid contains 18 carbons and one double bond, making it a monounsaturated fatty acid (MUFA). Olive oil is 71% oleic acid. Many people mistakenly believe that MUF As are found exclusively in olive oil or similar vegetable/fruit sources. In fact, nearly one third to one half of the fatty acids in animal fats are oleic acid; beef tallow (48%), butter (29%), chicken (36%), egg yolk (50%), human milk (36%), and lard (44%). [1] Total MUF As in chicken, duck, turkey , and goose fat ranges from 42% to 57%.[1] It is clearly inappropriate to state that animal fats are saturated, and therefore, somehow dangerous to our health. Additional MUF As are palmitoleic acid found in animal products and macadamia nuts, and cetoleic acid found in fish.[2]

Linoleic acid (LA) is a polyunsaturated fatty acid (PUF A) that contains 18 carbons and two double bonds, and is referred to as an omega-6 (n6) fatty acid. LAis the primary fatty acid in most seeds and grains. Alpha-linolenic acid (sometimes called linolenic acid) contains 18 carbons and three double bonds, and is referred to as an omega-3 (n3) fatty acid. ALA is found in green vegetables and flaxseeds. Arachidonic acid (AA) is made from LA and is found in the fat of animals (domestic or human) that subsist largely on grains or animals that eat grains. Like linoleic acid, AA is an n6 fatty acid. Arachidonic acid is the precursor to proinflammatory eicosanoids, such as prostaglandin E2 (PGE2) and thromboxane A2 (TXA2).[2]

Eicosapentaenoic acid (EP A) and docosahexaenoic acid (DHA) are made from ALA, and are found in the fat of animals that subsist lar gely on vegetation and/or animals that eat vegetation. Like alpha-linolenic acid, EPA and DHA are n3 fatty acids. EPA is the precursor to anti-inflammatory eicosanoids, such as prostagiandin E3 (PGE3) and thromboxane A3 (TXA3).[2]

Fallout:

The fats that lead to disease are the omega-6 fatty acids, which we consume in both the unrefined state and in a partially hydrogenated form.

Give Fat A Chance

Healthy human populations consume varying amounts of fat. Healthy desert nomads consume 10% of calories from fat, while Greenland Eskimos consume 50% or more calories from fat. [1] So, it is ridiculous to arbitrarily state that Americans are to eat no more than 30% of calories from fat, and to simultaneously claim that anything higher is detrimental to our health. In 1930, Americans consumed an average of 124g of fat per day (48% saturated, 40% MUF A, and 12% PUFA). In 1985, we averaged 164g of fat per day (38% saturated, 41% MUF A, and 21% PUFA). When calculated as a percentage, this translates into a 21% decrease in saturated fatty acids, a 2.5% increase in MUF A and a 75% increase in PUF A.[1] And much of the increase in MUFA and PUF A has come in the form of laboratory-derived fatty acids known as partially hydrogenated fatty acids, which are found in nearly every packaged food in the supermarket and in every deep-fried food from both fast food and regular restaurants.

For some extraordinarily odd reason, saturated fat is still blamed for driving heart disease and cancer , even though our nation's consumption of saturated fats has dropped significantly in the past 75 years. In short, natural saturated fat is not to blame for any health problem. Palmitic and stearic acids are the most commonly ingested saturated

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fatty acids, and its consumption has been associated with a lowering of heart disease-promoting lipoprotein(a) and an elevation of HDL cholesterol, the so-called good cholesterol.[1] Clearly, natural saturated fatty acids are important in human health and this is exemplified by the fact that our bodies regulate the synthesis if our diet is lacking.[1]

Lauric acid is another natural saturated fat that is found in coconuts. Lauric acid is a natural antibiotic, which is one of the reasons it is also found in human mothers' milk.[1] Regarding mother's milk, consider that 50% of calories come from fat, 45%-50% of which is saturated (18% of which is antimicrobial lauric and capric acids), 35% MUFA, and 15-20% PUFA.[1] Clearly, we humans are designed to deal with a healthy dose of saturated fat.

In summary, natural saturated fatty acids do not cause disease; they offer a preventive effect. The fats that lead to disease are the omega-6 fatty acids, which we consume in both the unrefined state and in a partially hydrogenated form. The partially hydrogenated variety of fatty acids, or trans fats, were developed by the food industry to prevent rancidity of packaged foods, thus extending their shelf life. Trans fats are lethal to the human system; their consumption being associated with numerous metabolic insults, such as the following:[1]

- elevation of LDL cholesterol and a lowering of HDL cholesterol;
- elevation of serum cholesterol by 20%-30%;
- elevation of the atherogenic lipoprotein(a);
- disruption of cell membrane fluidity;
- elevation of insulin levels;
- reduced levels of testosterone.

Clearly, trans fats are a nightmare and should be avoided. Any food that contains partially hydrogenated oils should be thrown into the garbage. Our nation's cholesterol problem is likely to be largely driven by the excess consumption of trans fatty acids. We also consume too much omega-6 fatty acids in their non-trans form. We get linoleic acid from the same packaged goods as the trans fats and additionally through the consumption of salad dressings and other foods that contain soybean oil. Indeed, about 70% of the oil used in the United States is soybean oil.1 Some 53% of soybean oil is linoleic acid and only 8% is linolenic acid, for a ratio of almost 7:1 n6 to n3 fatty acids. A healthy ratio of n6:n3 is 3:1 or better.[2] The average American n6:n3 ratio ranges about 20-30:1, which is known to be highly inflammatory and a cause of most chronic diseases.[2,3]

Food Focus

We need to drop the consumption of all packaged foods, as well as grains and grain/flour products. With this effort, we will reduce the over consumption of trans fatty acids and linoleic acid. Our food focus should be vegetables, fruits, grass-fed beef and lamb, chicken, wild game, omega-3 eggs, and fresh fish. Foods should be cooked in coconut oil, which can be added to smoothies. Olive oil should be used to make salad dressings. Green tea should be the nonwater beverage of choice, and we should drink about a half-gallon of water per day. I also suggest supplementing with a multivitamin, magnesium (500-1,000 mg/day), calcium (500-1,000 mg/day), EPA/DHA (1-2 g/day), and coenzyme QIO (100 mg/day). Most patients who follow this approach will lose weight and free themselves of chronic aches and pains. Even patients with rheumatoid arthritis, fibromyalgia, chronic headaches, allergies, and chronic fatigue have experienced significant improvements.

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