# Face the FATS

eart disease, stroke, breast cancer, prostate cancer, colon cancer, obesity. Is there any illness that hasn't been blamed on too much fat?

It's now clear that fat is not a monolithic enemy. The only exception: When it comes

to obesity, all fats are suspect because all are equally high in calories. And when it comes to cancer, no fats appear to be at fault, though some fatty foods, like red meats, may be.

"Red meat is associated with colon and prostate cancer, but probably not because of its fat," says epidemiologist Edward Giovannucci of the Harvard School of Public Health.

That leaves heart disease and stroke, where it's not how much fat that matters. It's how much of which fat.

"It's become clearer which kinds of fat are desirable and which aren't," says William Connor of the Oregon Health & Science University in Portland.

Here's the latest on fats and cardiovascular health. The story may be more complicated than it was ten years ago, but it's also more encouraging.

## BAD FATS: SATURATED & TRANS

"There's a new fat to fear," warned "The New Bad Fat," an article in the March 2002 issue of *Marie Claire* magazine. "Read on to find out when cheesecake can actually be your healthiest choice!"

A slice of cheesecake (which can have a day's worth of saturated fat) is better than frosted yellow cake, the article claimed, because it has less *trans* fat. That's the wrong message, say researchers.

"It would be a great tragedy to worry so much about *trans* that people forget about saturated fat," says Connor. Most *trans* fat is created when manufacturers turn liquid oils into more solid fats like shortening and margarine. Saturated fat occurs naturally in nearly all fatty foods, but mostly in meats, dairy products, and tropical oils like

palm kernel and coconut.

The evidence against both fats is so strong that it's foolish to play one against another.<sup>1</sup> "It's not a question of choosing which artery-clogging fat to avoid," says Meir Stampfer of the Harvard School of Public Health. "People should cut down on both saturated and *trans* fat."

It's easy to see where the confusion started. "Technically, trans is worse than saturated fat, because saturated fat raises both LDL ['bad'] cholesterol and HDL ['good'] cholesterol, while trans only raises LDL," explains Alice Lichtenstein of the U.S. Department of Agriculture Jean Mayer Human Nutrition Research Center on Aging at Tufts University in Boston.

"But if you have to target one fat for modification, there's a greater potential for change by cutting saturated fat."

That's because only two percent of our calories come from *trans* fat, while sat fat contributes 13 percent. Avoiding sat fat is a tough job because it's in so many popular foods, from pizza and hamburgers to steak, tacos, ice cream, lasagna, and cheese.



What's more, notes Stampfer, *trans* fat is largely dispensable. "We can't get rid of all saturated fat, but most *trans* doesn't have to exist."

"Arguing about whether one fat is worse isn't a practical discussion," says Lichtenstein. "The message needs to be loud, it needs to be clear, and it needs to be unequivocal: Limit your intake of both saturated and *trans* fats."

### BETTER FATS: MONOS & POLYS

In the early 1970s, corn oil was king. Researchers had just confirmed that highly *polyunsaturated* fats (like corn, soy, and sunflower oil) could lower total cholesterol. (We call them polys, but all fats are really a mixture of polys, monos, and sat fat. See "Oil in the Family," p. 7.)

In contrast, highly *saturated* fats (like butter and beef) raised cholesterol, while highly *monounsaturated* fats (like canola and olive oil) were neutral. (Monos are neutral when researchers compare them to carbohydrates. But if you substitute monos for saturated fats, monos will lower your cholesterol.)

"After corn oil lowered total cholesterol in the Los Angeles Veterans Administration Diet Study, some researchers recommended that everyone take a tablespoon or two a day," says Connor.

But by the 1990s, the pendulum had swung towards monos. In part, the enthusiasm was fueled by lavish conferences for researchers and the media sponsored by the olive oil industry. The science looked promising, too.

"People got very excited about monos because, unlike polys, they didn't cause oxidation of LDL in test-tube studies," explains Lichtenstein. Oxidized LDL is more likely to clog arteries.

"Some researchers also argued that, unlike polys, monos don't lower HDL, the so-called good cholesterol," she adds. But those arguments have lost some credence. For one thing, it became clear that polys lowered HDL more than monos only when ingested in huge quantities.

"If you feed people reasonable amounts of polys," Lichtenstein explains, "their HDL is not much different than when you feed them monos. And even though monos didn't cause oxidation of LDL in test tubes, all bets are off in the body."

Meanwhile, researchers rediscovered that polys have more power to lower cholesterol than monos. And studies found cleaner arteries in monkeys that were fed polys than in those that were fed monos.<sup>2</sup>

"You can't make a decision based on a few animal studies," says Lichtenstein. "But it does look like monos aren't as magical as some people have claimed."

At the same time, some earlier fears about polys have dissipated.

"We've put to rest the theoretical concerns that too much polyunsaturated fat may cause cancer," says Stampfer. "We were wary of recommending too much because a diet high in polys is new for humans. But the concerns haven't really panned out."

Does that mean that people should spill out all their olive or canola oil and rush to the store for soy oil? Not quite. First of all, some dishes taste better with certain oils.

"At home, we use olive oil for salad dressing because the taste matters," says Stampfer. "We bake with canola. And we also use sesame, peanut, and safflower, depending on the dish."

Taste aside, if you're like most people, the oil you buy is just a small fraction of the fat you eat. What's in your bottled salad dressing and mayonnaise? What's in the spaghetti sauce, muffins, cookies, or other foods in your pantry?

And don't forget restaurants. What oil does your favorite Chinese takeout use? What greases the griddle when you order chicken or shrimp fajitas? What went into that spicy peanut sauce, vinaigrette, or clam sauce?

Odds are it's soy. More than 80 percent of the oil used in the U.S. is soy, though half gets partially hydrogenated in order to make margarine or shortening. A growing body of evidence suggests that it makes sense to balance all that soy by using mostly canola at home.

"I buy about three bottles of canola for every bottle of soy," says Lichtenstein. Why?

The soy oil adds cholesterol-lowering polys. But canola is the mainstay because it's very low in saturated fat and has a good dose of polys (more than olive oil). What's more, canola's omega-3 fats may help protect your heart, though the evidence is stronger for the omega-3 fats that come from fish.

### THE BOTTOM LINE

- 1. Cut your intake of saturated plus trans fat to less than 10 percent of calories, or about 20 grams a day of both combined. Of course, without trans numbers on most food labels, that's not easy (see "Trans Fat: Still Under Cover," p. 9).
- 2. At home, use canola oil as your main oil, with a variety of others for taste.
- 3. Shoot for between 1/2 and 1 gram (500 mg and 1,000 mg) a day of omega-3 fats (DHA plus EPA) from one of the following:
  - Consume seafood two to five times a week.

- If you take fish oil pills, there's no reason to take more than 1 gram a day of EPA and DHA combined. More than 3 grams may increase the risk of bleeding or hemorrhagic stroke.
- If you're a vegetarian, you can get DHA (but not EPA) from supplements made from algae. Or you can get alpha-linolenic acid from walnuts, soybeans, or flaxseed, canola, or soy oils, though the body doesn't convert much of it into EPA and DHA.

# BEST FATS: OMEGA-3S

Unlike polyunsaturated *vegetable* oils, polyunsaturated *fish* oils have always had a stellar reputation. And last April, the news got even better.

"Three new studies showed that the omega-3 fats in fish oil protected people from sudden death," says Stampfer, who co-authored two of them. (In "sudden cardiac death," which causes half of all heart disease

deaths, the heartbeat goes awry and then stops. Most victims have clogged coronary arteries.)

- Healthy men who had more omega-3 fats in their blood were less likely to die of sudden death over the next 17 years than healthy men with lower blood levels of omega-3s.3
- Healthy women who reported eating fish at least five times a week had a 45 percent lower risk of dying of heart disease over the next 16 years than healthy women who ate fish less than once a month.4

■ Men who had survived a heart attack and were randomly assigned to take fish oil supplements (1 gram, or 1,000 mg, a day) were 53 percent less likely to die of sudden death than survivors who were given a placebo.5

The last study is the most powerful because it's a clinical trial, says Stampfer. "Add that to earlier studies on humans, animals, and cell cultures and we can now say that fish oils prevent arrythmias and sudden death."

Exactly how fish oils work isn't certain. The leading theory: When the heart is under severe stress, a key fish

fat stabilizes heart cells, which allows the heart to maintain its regular beat. (That fat is likely to be eicosapentaenoic acid, or EPA. DHA, or docosahexaenoic acid, is the other key fish fat.)

"When there's trouble, EPA is released from the cell membrane and it suppresses the extra heartbeats," says Oregon's William Connor.

At higher doses, omega-3 fats may

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### FISHING FOR OMEGAS

The simplest advice is to eat at least two servings of seafood a week to lower your risk of sudden cardiac death. But if you want to make sure you're getting enough omega-3 fats, shoot for between 1/2 and 1 gram (500 mg and 1,000 mg) a day.

In general, fattier fish are richer sources, but some—like farmed catfish are relatively low in omega-3s. Farmed fish are higher in fat than their wild

cousins, but most of the extra fat is unsaturated, so it's not a real threat to your heart.

For most species, our serving size is six ounces of cooked fish because that's a typical portion served at seafood restaurants. To get that much when you're cooking at home, start with about eight ounces raw.

| Fish                               | Total<br>Fat | Omega-3<br>Fats* | Fish   | Total<br>Fat | Omega-3<br>Fats* |
|------------------------------------|--------------|------------------|--|--------------|------------------|
| (6-oz. cooked, unless noted)       | (grams)      | (grams)          | (6-oz. cooked, unless noted)                               | (grams)      | (grams)          |
| Salmon, Atlantic, farmed           | 21#          | 3.7              | Perch, ocean   | 4            | 0.6              |
| Salmon, Atlantic, wild             | 14           | 3.1              | Cod, Pacific   | 1            | 0.5              |
| Sardines, in sardine oil (3 oz.)   | 13           | 2.8              | Tuna, fresh  | 2            | 0.5              |
| Salmon, coho, farmed               | 14#          | 2.2              | Crab, blue (3 oz.)   | 2            | 0.4              |
| Trout, rainbow, farmed             | 12#          | 2.0              | Haddock  | 2            | 0.4              |
| Salmon, coho, wild                 | 7            | 1.8              | Catfish, wild  | 5            | 0.4              |
| Herring, kippered (3 oz.)          | 11           | 1.8              | Fish sticks (6)  | 21#          | 0.4              |
| Trout, rainbow, wild               | 10#          | 1.7              | Cod, Atlantic  | 1            | 0.3              |
| Swordfish                          | 9            | 1.4              | Crab, Dungeness (3 oz.)                                    | 1            | 0.3              |
| Sardines, in tomato sauce (3 oz.)  | 10           | 1.4              | Shrimp (3 oz.)   | 1            | 0.3              |
| Herring, pickled (3 oz.)           | 15           | 1.2              | Catfish, farmed  | 14#          | 0.3              |
| Oysters (3 oz.)                    | 4            | 1.1              | Tuna, light, canned (3 oz.)1                               | 1            | 0.2              |
| Mackerel, canned (3 oz.)           | 5            | 1.0              | Clams (3 oz.)  | 2            | 0.2              |
| Pollock                            | 2            | 0.9              | Crayfish, farmed (3 oz.)                                   | 1            | 0.1              |
| Flounder or sole                   | 3            | 0.9              | Lobster (3 oz.)  | 1            | 0.1              |
| Whiting                            | 3            | 0.9              |  |              |                  |
| Rockfish                           | 3            | 0.8              | * Includes EPA and DHA only. <sup>1</sup> canned in water. |              |                  |
| Halibut                            | 5            | 0.8              | # Includes 3 to 5 grams of satura                          | ted fat (mos | t other fish     |
| Sardines, in vegetable oil (3 oz.) | 10           | 8.0              | are lower).  |              |                  |
|                                    |              |                  |  |              |                  |

0.7

0.6

3

1

Sources: USDA and (for sardines in sardine oil) Amer. J. Clin. Nutr. 66: 1029S, 1997.

Tuna, white, canned (3 oz.)1

Scallops

ned in water.

at (most other fish

### YOU DON'T EAT FISH

Experts recommend that people eat seafood at least twice a week to get the omega-3 fats that can protect against sudden cardiac death. But what if you eat little or no seafood? While the U.S. government has no advice, it's reasonable to shoot for a combined 1/2 to 1 gram (500 mg to 1,000 mg) of EPA plus DHA a day. Here's what will—and won't-get you there.

Fish oil pills. "The best alternative to seafood is to get both DHA and EPA from fish oil pills or from fish oil that's been added to other foods," says omega-3 expert Bruce Holub of the University of Guelph in Canada. But be careful.

Fish oil pills can cause side effects like belching and nausea. And getting more than a combined three grams (3,000 mg) of EPA and DHA a day from foods and supplements may raise the risk of hemorrhagic stroke, says the Food and Drug Administration. Most fish oil pills contain only 0.18 grams (180 mg) of EPA and 0.12 grams (120 mg) of DHA, so it would take more than ten capsules a day to exceed three grams.

**Designer eggs.** Some companies now feed fish oil, algae, or flaxseed to their hens to raise the omega-3s in their eggs. But most brands of "omega-3 eggs" have very little DHA. Eggland's Best eggs, for example, have only 0.05 grams (50 mg) apiece, while Gold Circle Farms eggs have just 0.15 grams (150 mg) each. Neither has EPA, which may be essential to protect against sudden cardiac death. And the eggs still contain cholesterol and saturated fat, both of which can raise your risk of heart disease.

**DHA supplements.** "You can take DHA supplements that are made from algae, though they're rather costly," says Holub. Each capsule has 0.1 grams (100 mg), and a bottle of 30 capsules can cost \$10 or more. Another problem: DHA supplements made from algae have no EPA.

"There is internal conversion between EPA and DHA, so eating one may mean you get both," explains William Connor of the Oregon Health & Science University. "But we don't have evidence from studies on people that taking DHA is as good as taking both."

Alpha-linolenic acid. Alpha-linolenic acid (found in canola, soy, and flaxseed oils) is an omega-3 fat that our bodies can convert into EPA and DHA. But it's difficult to measure how much gets converted. In some studies, people convert almost none. In others, they convert more (though not necessarily as much as they'd get from eating fish).

Still, says Holub, if you eat no fish or fish oil, getting alpha-linolenic acid by using an oil like canola is better than nothing. "Your cardiovascular protection may go up, though not nearly as much as with fish oils or fish."

—David Schardt

also protect the heart by lowering triglyceride levels and preventing blood clots, though that wouldn't explain why they stave off sudden deaths.

In any case, the take-home message is to eat more seafood. The American Heart Association now recommends at least two servings per week, preferably of fatty fish (see "Fishing for Omegas," p. 5).

If you don't eat seafood, there are other options (see "If You Don't Eat Fish"). Among them: alpha-linolenic acid, an omega-3 that's largely found in flaxseed, canola, and soy oils as well as flaxseeds, walnuts, and soybeans.

In some animal studies, alphalinolenic acid prevents irregular heartbeats as well as fish oils do.6 And most studies find that people who consume more alpha-linolenic acid have a lower risk of heart disease than people who consume less.7-9

"The evidence for alpha-linolenic acid isn't as compelling as it is for fish oils," says Bruce Holub of the University of Guelph in Canada. "But alpha-linolenic may have a beneficial effect, so why take chances by using an oil that has none?"

Both soy and canola are good sources of alpha-linolenic acid, but soy has more linoleic acid (an omega-6 polyunsaturated fat). And too much linoleic may keep omega-3 fats from doing their job. "That makes canola a better source of omega-3s than soy or other oils," says Connor.

So far, though, too much linoleic acid doesn't seem to be a problem. "In our study of women, fish oils were protective regardless of how much linoleic acid the women consumed," says Stampfer.

Just keep in mind that researchers are still waiting for final answers.

"I use canola and soy to get a balance of monos and polys and a balance of alpha-linolenic and linoleic acid, rather than put all my eggs in one basket," says Tufts University's Alice Lichtenstein. "That's my best guess until things are sorted out."

<sup>&</sup>lt;sup>1</sup> Circulation 102: 2284, 2000.

<sup>&</sup>lt;sup>2</sup> Arterioscler. Thromb. Vasc. Biol.15: 2101, 1995.

<sup>&</sup>lt;sup>3</sup> New Eng. J. Med. 346: 1102, 1113, 2002.

<sup>&</sup>lt;sup>4</sup> J. Amer. Med. Assoc. 287: 1815, 2002.

<sup>&</sup>lt;sup>5</sup> Circulation 105: 1897, 2002.

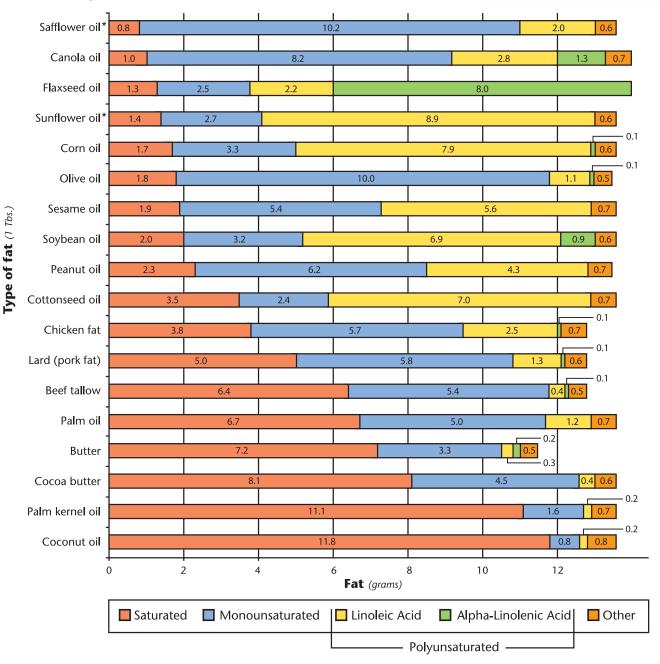
<sup>&</sup>lt;sup>6</sup> Circulation 99: 2452, 1999.

<sup>&</sup>lt;sup>7</sup> Am. J. Clin. Nutr. 74: 612, 2001.

<sup>&</sup>lt;sup>8</sup> Am. J. Clin. Nutr. 69: 890, 1999. <sup>9</sup> Brit. Med. J. 313: 84, 1996.

# Oil in the Family

All fats are a mixture of saturated, monounsaturated, and polyunsaturated fatty acids (though we usually call them by the name of the fatty acid they have the most of). Look for the least saturated (red), and a good mixture of everything else. Polys (yellow and green) lower cholesterol, while monos (blue) only lower cholesterol if you eat them in place of saturated fats. Alpha-linolenic acid (green) is an omega-3 polyunsaturated fat that may protect the heart. Canola, soy, and flaxseed oil are good sources. Many researchers recommend a mix of alpha-linolenic acid and linoleic acid (yellow). (Linoleic is a polyunsaturated omega-6 fat.) If you don't want the details, just stick with canola for cooking. It's among the lowest in saturated fat and it has a good mix of alpha-linolenic and linoleic acids.



\* Safflower and sunflower oils can be high in polys or monos. Most safflower oil sold in bottles is the high-oleic (high-mono) variety shown here, but some brands that are sold in health food stores are the high-linoleic (highpoly) variety. The sunflower oil sold in bottles is usually high in polys (as shown here), but most chips and other packaged foods that are made with sunflower oil use the high-mono variety.

Sources: USDA Nutrient Database for Standard Reference (Release 14), the National Sunflower Association, and the Flax Council of Canada.