

FISH IS HEALTHY EATING!

In this issue, information about the health benefits of eating fish, whitefish in particular, has been collected. There is a growing appreciation for fish in the diet. What was once "brain food" has been found helpful in reducing heart disease risk, stroke risk, even artery damage from smoking. Especially interesting is exciting new research just coming out about Omega-3's action on autoimmune diseases and even depression and cancer (see page 6).

Also included are two articles that address a health risk — contaminants such as mercury in fish. Recent testing results have found mercury remarkably low in Lake Superior whitefish, and contaminants at a 10-year low.

Whitefish is a mild flaky fish that lends itself to almost any preparation. It can be prepared as a soup or a salad dish. It can be steamed, poached, baked, grilled, smoked, boiled, even made into a pie and lends itself to many different cuisines. A

selection of recipes is included, along with tips for cleaning, filleting and storing your newfound treasure.

Where can you get tribal Great Lakes fish products? Many fishers sell to wholesalers who in turn sell to the public. Other fishers run their own businesses. Just ask around your community or the community you are visiting to locate tribal fish. Even if you can't get tribal fish, you can still ask where your fish is from.

American Heart Association recommends two meals of fish per week

Healthy people should eat omega-3 fatty acids from fish and plant sources to protect their hearts, according to updated American Heart Association recommendations published in the Nov. 18, 2002, Journal of the American Heart Association.

"Omega-3 fatty acids make the blood less likely to form clots that cause heart attack and protect against irregular heartbeats that cause sudden cardiac death.

Since 2000, the American Heart Association's dietary guidelines have recommended that healthy adults eat at least two servings of fish per week, particularly fish such as mackerel, lake trout, herring, sardines, albacore tuna and salmon. These fish contain two omega-3 fatty acids — eicosapentaenoic and docosahexaenoic acids (EPA and DHA). A third kind, alpha-linolenic acid, is less potent. It comes from soybeans, canola, walnut and flaxseed and oils made from those beans, nuts and seeds.

Depending on their stage of life, consumers need to be aware of both the benefits and risks of eating fish. Children and pregnant and nursing women may be at increased risk of exposure to excessive mercury from fish but also are generally at low risk for CVD. Thus, avoiding potentially contaminated fish is a higher priority for these groups.

For middle-aged and older men, and postmenopausal women, the benefits of eating fish far outweigh the risks within the established guidelines.

Although the mechanisms responsible for omega-3 fatty acids' reduction of CVD risk are still being studied, research has shown:

- Decreased risk of sudden death and arrhythmia.
- Decreased thrombosis (blood clot).
- Decreased triglyceride levels.
- Decreased growth of atherosclerotic plaque.
- Improved arterial health.
- Lower blood pressure.

Great Lakes Whitefish Remarkably Low In Mercury

There has been a lot of talk in the news lately about the presence of mercury in fish. Recent newspaper articles have reported that levels of mercury in swordfish, shark, tuna and other ocean fish have levels of mercury that sometimes exceed the levels set by the U.S. Food and Drug Administration (FDA).

Whitefish from our northern waters are significantly lower in mercury than many ocean fish. This fact, coupled with the fact that they are especially high in omega-3 fatty acids, makes whitefish an ideal choice for a healthy diet.

Fishers and their customers should know that since 1991 the Chippewa Ottawa Resource Authority (CORA) has been monitoring mercury in fish caught by tribal commercial fishers. Fish collected from Lake Huron, Lake Michigan and Lake Superior and are tested for a variety of chemicals, including mercury, in an independent government lab.

Whitefish, in particular, show levels of mercury well below the FDA's "action level" of 1 part per million. None of the whitefish sampled by ITFAP in the 10 years since testing began have exceeded 0.5 parts per million. In fact, out of a total of 120 individual whitefish tested, the highest level of mercury detected was 0.14 parts per million with the average being 0.04 parts

per million — almost 100 times less than the FDA action level!

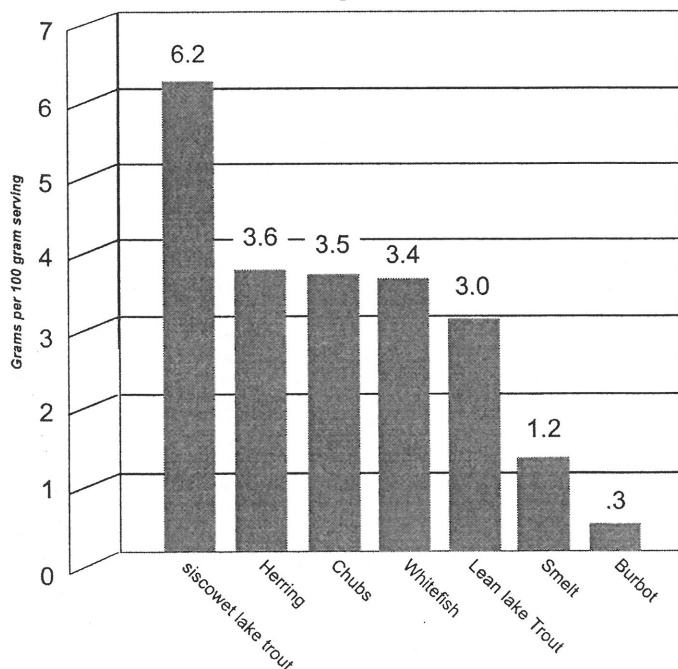
In contrast, up to 10 percent of canned tuna sampled had levels of mercury in excess of 0.5 parts per million, while a third of swordfish and shark had levels of mercury in excess of the FDA's action level of 1 part per million, according to several sources (see citations below).

Although newspaper headlines can instill uncertainty in many people, health experts continue to stress that fish are an important part of a balanced diet. Studies continue to show that certain nutrients in fish, especially omega-3 fatty acids, help to lower cholesterol and blood pressure and reduce the risk of heart attack and stroke.

For more information on CORA's fish contaminant monitoring program, contact Mike Ripley at 906-632-0072.

CITATIONS: Food and Drug Administration (U.S.). Listing of pesticides, industrial chemicals, and elements data by fiscal year, origin, sample flag, and industry/product code. Washington: FDA, June 1999. Florida Department of Agriculture and Consumer Services. Summary of mercury analyses in canned tuna, FY 1990-91 and July-September 1991.

Omega-3 fatty acid content in Lake Superior fish



Figures from Dr. Paul Addis

Testing of Lake Superior fish show lowest levels of contaminants

SAULT STE. MARIE, Mich. — Results from testing of Lake Superior whitefish and lake trout show the lowest levels in the past decade. The fish tested were collected from commercial catches in the Whitefish Bay area and analyzed at an independent laboratory.

The fish are tested as part of a long term fish contaminant monitoring program conducted by the Inter-Tribal Fisheries and Assessment Program (ITFAP) in order to determine contaminant levels in commercially caught fish. The results of these tests are then compared to levels of contaminants determined to be safe by various government agencies.

ITFAP began testing commercially harvested fish in 1991 and this past year's results are the lowest levels seen in the 10 years since the program began. Lake Superior fish were tested for a wide range of contaminants including mercury, PCBs, Dioxins and pesticides such as DDT.

All fish were well below the guidelines for commercial fish issued by the U.S. Food and Drug Administration and below the Michigan Department of Public Health's guidelines for consumption of sport fish by the general public. The state also issues special guidelines for consumption by pregnant women, women of childbearing age and children.

Even under these special, more restrictive guidelines, these test results indicate that pregnant women can eat as much Lake Superior Whitefish as they want provided that it is prepared with the skin and visible fat removed.

The Lake Superior fish tested were remarkably low in mercury especially when compared to levels of mercury found in tuna and swordfish. Levels of pesticides, such as DDT, which was banned in the United States in the 1970s, are also remarkably low in fish tested. Contaminant levels in fish from all of the Great Lakes have declined dramatically since the 1970s when regulations were put in place to reduce pollution.

These results should be encouraging for many people who enjoy eating Great Lakes fish, especially since studies show that most Americans eat a diet high in saturated animal fats. Studies show that Americans could dramatically reduce their risk of heart attack and stroke by switching to a more lean protein source such as properly prepared fish. Other studies also show that a different type of fat, omega-3 fatty acids, may actually reduce the risk of cancer. Great Lakes fish are especially high in omega-3 fatty acids in comparison to other foods.

For more information, contact Mike Ripley at (906) 632-0072.

Freshwater fish can be good source of Omega 3-fatty acids

Freshwater fish is a good source of Omega 3-fatty acids. Recent studies suggest that eating 0.5 to 1 gram of fish oil daily reduces the risk of heart disease death in middle-aged men by a whopping 40 percent. The star of the show is Omega 3-fatty acids because of its significant role in reducing the risk of heart disease.

Contrary to popular belief, not only saltwater fish offer these benefits. Oil from both freshwater and saltwater fish is the best food source of Omega-3 fatty acids. In fact, in a study during the '90s, Lake Superior fish came out ahead of chinook salmon, one of the best saltwater sources of Omega 3-fatty acids.

Fish from a cold-water environment, like lake herring, lake trout, salmon and whitefish, are especially high in Omega-3 fatty acids. The Lake Superior study also found that Lake Superior chub, lean lake trout, fat lake trout (sisowet), smelt, whitefish, and burbot (loesch) are all good sources of the fatty acid.

Omega-3 fatty acids are the sort

of fat found in flax and canola oil. Omega-3 fatty acids reduce heart disease risk by reducing platelet activity (blood clotting). This works in two ways. Overactive platelet activity may help to accelerate the build up of plaque on the arteries. Further, blood clots formed by blood platelets may become stuck in a plaque-narrowed artery and trigger a heart attack.

In a recent study of Lake Superior fish, some species were also found to be an excellent source of monounsaturated fats, like the fat found in olive oil. This sort of fat reduces blood cholesterol.

A healthy diet also includes some Omega 6-fatty acids, a polyunsaturated fat not as beneficial as Omega 3-fatty acids. This is the sort of fat found in safflower or soybean oil. Although Omega-6 fatty acids reduce blood cholesterol, they can increase platelet activity.

Since reduction of clotting is the key step to preventing heart disease, food scientists recommend that individuals eat less Omega-6 fatty acids and more Omega-3 fatty acids.

Keep in mind we do need some Omega-6 fatty acids: it does help lower blood cholesterol, and also reduces lipoproteins to help prevent atherosclerosis and heart disease.

It is best to eat a variety of oils in moderate quantities, with a diet heavier on Omega-3 fatty acids than other fats. The best way to get these oils is to eat two meals per week of fish rich in Omega-3 fatty acids, prepared without additional oil.

Fish that is baked, broiled, or grilled is best. The health benefits of fish are greatly reduced by battering and frying the fish.

So, many commercial species of Great Lakes fish offer the health benefits of Omega 3-fatty acids, monounsaturated oils, and Omega 6-fatty acids, both of which are needed for a healthy diet.

The information in this article about fish oil and human health is from two publications written by Paul B. Addis, Ph.D., a food scientist with Minnesota extension Service, Department of Food Science and Nutrition, University of Minnesota.

Amino acid in fish may help artery damage from smoking

Researchers found that vitamin C and taurine, an amino acid in fish, reversed abnormal blood vessel response associated with cigarette smoking, according to a Jan. 7 American Heart Association release.

Taurine is found in many foods but is most abundant in fish. Taurine is present even in mild, white fish, not just fatty fish. The taurine supplement used in the study is equivalent to that found in one serving of fish.

"When blood vessels are exposed to cigarette smoke it causes the vessels to behave like a rigid pipe rather than a flexible tube, thus

the vessels can't dilate in response to increased blood flow," said David J. Bouchier-Hayes, M.D., senior author of the taurine study and professor of surgery at the Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin.

This is a condition called endothelial dysfunction. Endothelial dysfunction is one of the earliest signs of the atherosclerosis, which is a major cause of heart attacks and stroke.

Bouchier-Hayes and colleagues recruited 15 healthy smokers aged 20 to 37 and 15 healthy non-smoking volunteers. The smokers were

given either two grams per day of vitamin C for five days or 1.5 grams per day of taurine. Smokers then waited for a two-week "wash-out" period and switched therapies for five more days.

Researchers assessed blood vessel functioning by flow mediated dilation which takes ultrasound images of blood vessel diameter in the arm after a tourniquet is placed on the forearm. Greater diameter after flow mediated dilation assessment indicates good endothelial function. The researchers reported that taurine restored normal vessel function according to flow mediated dilation measurements.

FRESH FISH 101

Fish is a highly perishable food. If your shopping trip is more than an hour, pack your fish in a cooler. Indicators of fresh fish include eyes which are clear and bulge a little. Whole fish and fillets should have firm, shiny, moist flesh. Fresh fish should smell fresh and mild, not fishy. All fresh seafood should be kept at 32° F, and should feel cold to the touch.

Keep seafood cold before it is prepared. Store it in the coldest part of the refrigerator at a temperature close to 32° F. Fish kept at 40° F will lose quality faster. Fish can be stored with ice in the refrigerator. Wrap dressed fish or fillets in a moisture-proof paper or plastic wrap. Fish that is not prepackaged should be washed under cold, running water and patted dry with an absorbent paper towel prior to wrapping. In general you should use fresh or defrosted seafood in one or two days.

Thaw fish in the refrigerator, a 1-pound package should thaw in about 24 hours. You can also thaw it under cold running water or place it in cold water changed every 30 minutes or in your microwave followed by cooking. Wash your hands before preparing seafood or other foods and avoid cross contamination of raw fish with ready-to-eat foods and thoroughly clean utensils and food preparation surfaces.

FISH PREPARATION 101

Grilling and barbecuing

If using whole fish, cut gashes through the skin to allow the heat to penetrate. Brush with oil, butter or marinade to keep the fish moist during cooking. Place over a preheated grill or barbecue, or under a salamander. Place 2 to 4 inches from the source of heat. Cook for 5 minutes for 1/2 inch thickness of fillet; 6 minutes for 3/4 inch; 9 minutes for 1 inch and 11 minutes for 1 1/2 inch.

Poaching

Poached fish is cooked in a seasoned liquid held at just below boiling point. The simmering temperature for water is usually 200°F.

Fillets should be placed in a simmering liquid. This effectively "seals" the fish and stops the juices from escaping and coagulating into a white coating on the cut surface of the fish. Fish may be shallow or deep poached. When fish is shallow poached the cooking liquid barely covers the fish and it is usually used to make a sauce.

Times given below are for cuts of fish placed in hot poaching liquid: 8 minutes for 1/2 inch thickness of fillet; 10 minutes for 3/4 inch; 12 minutes for 1 inch and 13 minutes for 1 1/2 inch.

Steaming

Place the seasoned fish in a perforated steamer or on a heatproof plate over a saucepan of gently boiling water. The fish must be covered tightly during cooking. Time: 3 minutes for 1/2 inch thickness of fillet; 7 minutes for 3/4 inch; 11 minutes for 1 inch and 14 minutes for 1 1/2 inch.

Baking

Dry: Score the surface of the fish with a sharp knife and place in a well-oiled dish. Baste with lemon if desired. Always baste the fish throughout cooking, until the fish is browned and tender. Bake at 350°F.

In liquid: Cover with liquid such as tomato, milk or stock-based mixture. Cook at 190 degrees Celsius using the times listed below.

Foil baking: Cut the foil or greaseproof paper large enough to wrap individual fillets, steaks or whole fish. (If you wish, sauté the fish briefly before placing it on the paper or foil). Season the fish with salt and pepper, fresh herbs, onion, tomato, lemon, orange or mushrooms. Grease the foil and bring the edges of the foil or paper together and fold tightly. You can also brush the paper with lightly beaten egg white to make sure the package is air tight. Bake at 425°F using times as below.

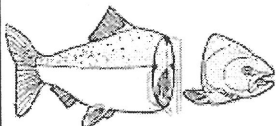
Bake fresh fish: 8 minutes for 1/2 inch thickness of fillet, 11 minutes for 3/5 inches, 15 minutes for 1 inch, and 20 minutes for 1 1/2 inches.

Cooking Frozen Fish

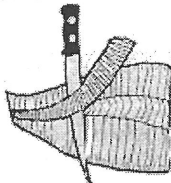
For best results, frozen fish should be cooked while it is still frozen or icy (before it starts to drip). This poses no real problem as fish can be cooked from a frozen state by adapting the recipe slightly and cooking for longer at a slightly lower temperature. As a general 'rule of thumb' allow an extra 10 minutes for each 1 inch of thickness of fillet.

CLEANING GREAT LAKES FISH

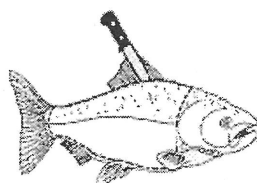
1. Low levels of halogenated hydrocarbons tend to accumulate in fatty parts of the fish and should be removed.



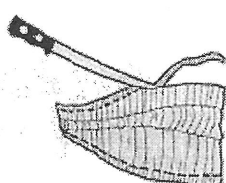
4. Trim fat along top center of the fillet.



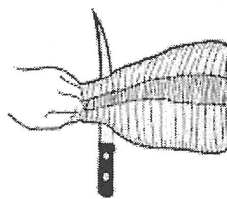
2. Carefully fillet the fish with a sharp, long-bladed knife.



5. Trim fat along edges of fillet.



3. Skin the fillets, holding the tail section firmly. Run the blade between the skin and the meat along the table surface.



6. Bake, broil or barbecue fish on a rack to allow fat to drip off.



More good news from new omega-3 research

Recent research reveals that omega-3 fatty acids may help combat heart disease, but also rheumatoid arthritis, depression and breast cancer other cancers, migraines, panic attacks.

For some time, omega-3 fatty acid effectiveness in treating heart disease and arthritis has been well known.

"Studies supported the proposed benefits of eating omega-3 fatty acids with evidence of reduction of blood clotting and plaque formation in patients with heart disease, which is significant because heart disease ranks as the leading cause of death in the U.S. Evidence also shows omega-3 oil's anti-inflammatory benefits, which serve to combat rheumatoid arthritis," wrote the author's article, Jennifer Wu, in the Spring 2002 Edition Berkeley Medical Journal Issues.

Now, she wrote, numerous studies show a link between the increase of omega-3 fatty acids in the diets and a decreased rate of depression.

Scientists have noticed low rates of depression in countries such as Japan where people's diets consist heavily of seafood. She went on to write that omega-3 fatty acids can alleviate the symptoms associated with bipolar-depression. She cited a Harvard-McLean Hospital experiment that suggested that omega-3 in the brain produces effects similar to popular anti-depressants such as Prozac. She reported that the researchers are continuing this study, in attempt to elucidate the relationship between fish oil and depression.

Wu wrote that other health benefits already attributed to omega-3 fatty acids include smoothing blood flow, cutting women's risk of breast cancer by ridding the body of cellulite, and preventing Chron's disease.

She also reported that continuing research also shows that omega-3 oils may have preventative effects on migraines, panic attacks and possibly cancer.

Wu also said that "omega-3 acids are not by themselves the magic remedy." Fat is fat — and fat can raise cholesterol if taken in too large of quantities. "High cholesterol can result due to the increased levels of triglycerides in the blood stream. This can lead to a lowered resistance to insulin, and eventually to other health problems such as diabetes," she wrote. She reiterated Dr. Paul Addis' recommendation to prepare fish high in omega-3 fatty acids without additional oil by baking, broiling, or grilling.

She agreed with the recommendation to not take fish oil in capsule form, warning that capsules do not contain solely omega-3s, and reiterated the U.S. Department of Agriculture recommendation to consume fish at least twice a week for heart benefits of the omega-3 fatty acids.

Read Wu's article at: <http://www.ocf.berkeley.edu/~issues/spring02/fishfats.html>

Eating fish can significantly reduce women's risk of stroke

Eating fish can significantly reduce a woman's risk of the most common type of stroke, according to a study released in 2001.

The study of nearly 80,000 women found that eating fish was linked to reductions in the risk of ischemic, or clot-related, strokes, which account for 83 percent of all strokes.

Women who ate about 4 ounces of fish two to four times weekly cut their risk of ischemic stroke by 48 percent.

Slightly higher risk reductions were found in women who ate fish five or more times weekly.

Slight risk reductions were also found even in those who ate fish once a week or less.

Omega-3 fatty acids, found in most fish, have been shown to lower levels of blood fats linked to cardiovascular disease and to help keep blood from clotting.

Another study released in 2001 by

the Food and Drug Administration said pregnant women and those who might become pregnant should not eat four types of fish — shark, swordfish, king mackerel and tilefish — because they could contain enough mercury to hurt a fetus' developing brain.

Fish is widely considered part of a healthy diet. But some types of fish can harbor high amounts of mercury, an element found naturally in the environment and also a pollutant.

Omega-3 fatty acids may cut prostate cancer risk in half

By EMMA ROSS
AP Medical Writer
LONDON (AP) — Eating even moderate amounts fish rich in Omega-3 fatty acids might cut the risk of prostate cancer in half, research suggests.

Omega-3 fatty acids, plentiful in dark, oily fish, are known to fight heart disease. They also have shown promise in protecting against cancers of the colon, rectum and ovary.

Previous studies have shown fatty fish oils can impede the growth of prostate cancer cells in laboratory dishes and in animals. In another study, prostate cancer was found less frequently in men who had high levels of fatty acids in their blood.

Now, a study published in 2001 in The Lancet Medical Journal, found that Swedish men who ate greasy fish only occasionally or not at all were twice as likely to develop prostate cancer as those who made it a moderate or large part of their diet.

Dr. Regina G. Ziegler, a nutritional epidemiologist at the National Cancer Institute, was cautious about the Swedish findings. The study was financed by the Swedish Cancer Society, The John D. and Catherine T. MacArthur Foundation and the Swedish Council for Planning and Coordination of Research.

"It's a provocative study," said Ziegler, who was not involved with the research.

"But there could be other dietary patterns that go along with eating very little fish that could be at work here." People who seldom or never eat fish tend to substitute with more red

meat, Ziegler said, and scientists believe animal fat — butter, cream, beef, pork and processed meats — may encourage prostate cancer.

"Is the fish really protective, or is red meat causing the cancer?" Ziegler cautioned.

Also, Swedish men eat a lot of oily fish, so there weren't many in the group who ate very little of it. That means that although the study involved thousands of men, the effect seen was driven by a small number of men with unusual eating habits.

With such a small sample, it is difficult to rule out the possibility that it was not the fish itself, but something else about the men who were not big fish eaters, Ziegler said.

Prostate cancer strikes about 21 out of every 100,000 men worldwide, according to the World Health Organization. It is most common in North America and northwestern Europe.

The study involved 6,272 men followed for about 30 years. During the study, 466 of them were diagnosed with prostate cancer, on average when they were 76 years old.

The link between the fatty fish and a reduced frequency of prostate cancer was even stronger after the results were adjusted to account for the influence of other eating habits, a genetic predisposition to prostate cancer and smoking, drinking and exercise habits, the study said.

"We're only talking about a moderate intake. This would be about two or maybe three servings a week. That is very manageable," said one of the researchers, Alicja Wolk, professor of

New research on Omega-3 Fatty Acids suggests it is helpful for inflammation and autoimmune diseases

In December 2002, the Center for Genetics, Nutrition and Health, Washington, D.C. reported that omega-3 fatty acids have anti-inflammatory properties and might be useful in the management of inflammatory and autoimmune diseases.

The report found omega-3 as the most potent of the fatty acids, particularly omega-3 fatty acids from fish.

The report said that diseases omega-3 fatty acids might help — coronary heart disease, major depression, aging and cancer, arthritis, Crohn's disease, ulcerative colitis and lupus erythematosus — all have something in common. They are all characterized by an increased level of interleukin 1 (IL-1), a proinflammatory cytokine.

There have been a number of clinical trials assessing the benefits of dietary supplementation with fish oils in several inflammatory and autoimmune diseases in humans, said the report, including rheumatoid arthritis, Crohn's disease, ulcerative colitis, psoriasis, lupus erythematosus, multiple sclerosis and migraine headaches.

Many of the placebo-controlled trials of fish oil in chronic inflammatory diseases reveal significant benefit, including decreased disease activity and a lowered use of anti-inflammatory drugs, said the Washington report.

In another study published in "Prostaglandins, Leukotrienes and Essential Fatty Acids,"* researchers found two reasons that omega-3 fatty acids decrease inflammation in rheumatoid arthritis: the ability to modulate the immune system and the ability to decrease the inflammatory response through the production of hormone-like compounds called prostaglandins.

*Prostaglandins Leukotrienes and Essential Fatty Acids, 1991 Dec., 44(4):201-10.

Turn your diet around with fish

Americans eat 17 times as much Omega-6 fatty acids as they eat Omega-3 fatty acids, which is very unhealthy. Usually the Omega-6 fatty acid is eaten in the form of vegetable oils. Ideally, people should eat five times as much Omega-3 fatty acids as Omega 6-fatty acids. One of the best ways to get Omega 3-fatty acids into the diet is to eat fish twice a week without using additional oil. Many freshwater fish, such as lake herring, lake trout, lean lake trout, fat lake trout (siscowet), and whitefish, are especially high in Omega-3 fatty acids.

Origins of the whitefish

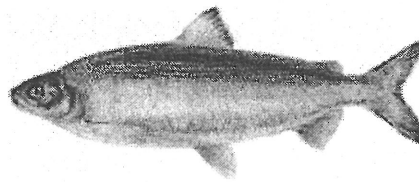
The Anishinabe have more than one story about the creation of the whitefish. In all that I have heard, the whitefish came from the brain of a woman. Sometimes she falls and breaks her head open in her own folly; her life is put to better use than she made of it by creation of the whitefish. More recent versions have been associated with the formation of the Crane Clan, and the oldest with the formation of the Great Lakes. Here is one of the oldest, of which I know only a fragment:

Long ago, Nanabush took the head of a bad woman and cracked it on the ice. The Great Lakes waters held back by the ice pack were freed to fill the basin, taking with them the brains of the woman, which became the whitefish, filling the Great Lakes with its bounty.

— J. Dale, Editor

WHITEFISH RECIPES

OLD AND NEW



Whitefish is a mild, tasty fish that holds together well. It can be steamed, poached, boiled and baked. It can be made into soups, chowders, salads, spreads. It is good fresh, smoked, even powdered. A local favorite is whitefish sausage, made with lots of pepper. Although whitefish makes a delicious fish fry, frying is not recommended in order to realize all the health benefits.

Domers: fisherman's special

In the old days, the fishing boats were steam powered. For lunch, the fishermen used to fillet whitefish or herring and wrap them up in newspaper with onions and butter. Then they would soak the newspaper and put them on a stove that was heated with the steam. The "stove" was called a dome, hence the name "Domers."

Today we use tin foil and put them on the barbecue grill.

— From Bucko Teeple

Wawa Whitefish : Making domers at home

1 whole whitefish or walleye, dressed salt and pepper
3 small potatoes
1 onion

Preheat oven to 225°F for whitefish, 250°F for walleye. Wash fish cavity and salt. Stuff with potatoes and onion. Wrap with salt water soaked newspaper until there is 1/2 inch covering. Bake 2-3 hours.

Powdered fish

Anishinabe living in the bush did not have access to refrigerators. They found ways to preserve their catch by smoking or even powdering their fish. First, a stand was constructed using green wood. The stand had a series of parallel sticks to hold the fish in place and was placed over a low fire.

Fish were gutted and rinsed. They were not beheaded or boned. A cut was made from the back of the head down through the tail. In this way, the fish could hang on the sticks over the fire. The fish were smoked all through the day and night. A lot of the fat dripped down into the fire.

When ready, the fish would be taken off, skinned and beheaded. When iron skillets became available, Anishinabe used them. The remaining flesh and bones were placed in the heavy skillet and reduced to a powder (including the bones) by pushing the contents back and forth while holding the skillet over the edge of the fire, requiring a certain amount of patience.

The powdered fish could be easily stored — it's great mixed with fresh blueberries. It could be used in cooking for making stews, soups and pies.

(I learned this method from Pat and Rebecca Shewaybick of Webikwe, Ontario. They were using Menominee that day, very similar to whitefish. They are fine people committed to a traditional way of life. They still live and work in the bush, and make beautiful and functional clothing and beadwork in the old way. Visitors may see them selling their fine things at pow wows during the summer,

and their goods are worth every penny.
— J. Dale, Editor)

Fish Pie

Use your favorite pie crust recipe.

Filling:

1 c whitefish, boned and cooked
2 c mashed potatoes, including seasoning, butter and milk

1 egg, beaten
1 small onion, chopped and sauteed
1 tsp garlic powder

Mix together and put in pie crust. Bake at 350°F until crust is golden brown. Serve hot. (Recipe by Vicky Johndrow)

Whitefish with Leek Risotto

1 c Arborio rice
4 c bottled clam juice (option: fresh or canned chicken broth)
4 Anchovies, finely chopped
1/2 tsp chopped fresh rosemary
1/4 tsp dried rosemary
1/2 tsp chopped fresh sage
1/4 tsp dried sage
4 7 oz pieces whitefish fillet or bass fillet pieces

6 lg leeks sliced into thin rounds
3 tbsp lemon juice
1 tsp dijon-style mustard
1/3 c extra-virgin olive oil

Preheat oven to 350°F. Place rice, 3 cups clam juice, anchovies, rosemary and sage in a 9-by-12 baking dish. Cover and place in oven for 30 minutes. Remove from oven, place leeks on the rice and arrange whitefish on top, skin side up. Give a turn of the peppermill. Cover and replace in oven for 15 minutes. Meanwhile, combine remaining clam juice, lemon juice and mustard in a small saucepan and place over medium heat on the stove. Bring to a boil and cook until reduced by half. Remove from heat and pour into a blender. Put blender on medium speed and slowly drizzle in the oil. To serve, arrange whitefish on a platter surrounding a mound of risotto. Spoon a little sauce over the fish and serve the remainder on the side.

Whitefish Baked with Fiddlehead Ferns

1/2 c White wine
2 tbsp Dijon mustard
4 whitefish fillets (about 7 oz each)
Salt and white pepper to taste
1/2 tsp thyme
3/4 lb fiddlehead ferns or asparagus
1 md onion; finely diced
2 tbsp unsalted butter

Preheat oven to 375° F. Combine wine and mustard in a 3-inch deep baking dish just large enough to hold the whitefish fillets in 1 layer. Place the whitefish in the wine and sprinkle with salt, pepper and thyme. Place the onions and fiddleheads on top, cover the dish and place in the oven for 20 minutes. Remove baking dish from the oven. Arrange a bed of onions and fiddleheads on a platter and place the fish on top. Swirl butter into the cooking liquid and pour over the fish.
Serve immediately.

Russian Pickled Whitefish

4 pieces of whitefish fillet (about 6 oz each)

1 onion, thinly sliced
1 tbsp mustard
1 tsp whole coriander seed
1 tsp minced garlic
1 c white wine
1/4 c vinegar
1/4 c water
2 tsp chopped fresh dill
salt and pepper — to taste

Preheat oven to 375°F. Place the whitefish in a baking dish just large enough to hold the fillets comfortably, spread the onions over the top and set aside.

Combine mustard, coriander, garlic, wine, vinegar, water, dill, salt and pepper in a small pot. Place over high heat, quickly bring to a boil and pour over the whitefish fillets. Cover the baking dish and place in the oven for 5 minutes. Remove from the oven, let cool to room temperature and place in the refrigerator. Serve chilled.

Irish Fish Pie

(also know as Cod Cobbler)

1 1/2 lb filets of cod or other white fish
2 oz butter
2 oz flour
1/2 liter milk
3 1/2 oz grated cheese
Scone topping
1 c flour
2 oz grated cheese
2 oz butter
1 t baking powder
1 pinch salt
1 egg yolk
milk

Place fish filets in the bottom of a round oven dish. Make a cheese sauce with the butter, flour, milk and grated cheese and pour over fish. Make scone dough by rubbing the butter into the flour with baking powder and pinch of salt. Add grated cheese and drop egg yolk into the mixture and add enough milk to make a workable dough. Roll out to a thickness of 1/2 inch and cut into small rounds with a scone cutter. Drop these rounds on top of the fish mixture so that they just about cover the surface and then glaze them with a little milk. Sprinkle some more grated cheese over them and bake at 450° F for 25-30 minutes or until the scones are golden brown.

Cajun Whitefish

1 tsp paprika
2-1/2 tsp salt
1 tsp onion powder
1 tsp garlic powder
1 tsp cayenne pepper
3/4 tsp white pepper
3/4 tsp black pepper
1/2 tsp thyme
1/2 tsp oregano
cooking oil
4 tsp melted butter
2 whitefish fillets

Mix all seasonings and keep extra in a dry sealed bag or jar. Heat a large skillet with cooking oil over high heat. In a small dish melt butter. Dip each fillet in butter then roll in seasonings to coat fish on both

sides. Place fish in skillet and cook until underside looks charred, turn and finish cooking. Serve with melted butter. (From Freshwater Fish Marketing Corporation; <http://www.freshwaterfish.com/english.htm>)

Whitefish Chowder

2 tbsp finely diced ham
1 bunch green onions, chopped
3 medium potatoes, peeled & diced
1 tsp salt
1/8 tsp white pepper
1 c water
1 quart milk, scalded
1 lb. Minced whitefish, thawed
4 tbsp soft butter
4 tbsp flour
1 c cream
Paprika for garnish

In large heavy pot, saute ham and onions together over medium heat until onions are soft. Add potatoes, salt, pepper and water. Simmer until potatoes are cooked. Add milk and minced whitefish. Stir to break up fish. In small bowl blend butter and flour until roux is formed. Stir mixture into chowder and cook until thickens. Add cream, don't boil. Garnish with paprika.

Whitefish Salad

2 lb smoked whitefish
2 1/2 stalks celery, strings removed
1 c sour cream; approximately
1 1/2 tsp mayonnaise, heaping
freshly ground black pepper
1 tsp snipped fresh dill *
1 tsp chopped parsley *
Garnish with sprigs of fresh dill and/or parsley

Keeping the skin of the whitefish intact and the head still attached, carefully remove the bones from the whitefish and place the meat in a mixing bowl. Dice the celery and combine with the whitefish, along with 1 cup of the sour cream, the mayonnaise, and the pepper. Add the dill and parsley and as much more sour cream as is wanted.

Stuff the mixture back into the skin of the whitefish, remaking the shape of a fish. Garnish with additional dill and parsley.

Smoked Whitefish Salad

1 pk (8 oz) cream cheese
1/2 lb smoked whitefish
2 tbsp green onions; finely chopped
1 tsp fresh dill; finely chopped
1 tsp freshly ground pepper

Mix all ingredients until well blended. Refrigerate. Serve on crackers. (From Philadelphia Cream Cheese)

Mayo-based spread

Smoked whitefish is also good mixed very well with mayonnaise, finely diced onion and garlic. Some people like to include a little dill relish or chopped dill pickles. (A tip given to me by Lothrop Fisheries. — J. Dale)

Some of the above recipes came from <http://www.recipesource.com>. Check out this site for other fish recipes as well as Native American recipes that have been submitted to the site.