

Raymond Peat, Ph.D.

The Science Behind The Dangers of Polyunsaturated Fats

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*Transcript starts when Dr. Peat joins the interview. Parts that don't belong to Dr. Peat were summarized.

Josh: *Hey Ray, glad you're on the show.*

Today we're going to talk about Polyunsaturated fatty acids and of course, as you know, you've done way more researching on this subject than most people. It's quite a controvertial topic, because a lot of people are promoting that you need oils, or eating seeds. So I wanted on our show get your approach because we've studied you for years; it's definitely grey i think for a lot of people. We have a lot of questions and we want to get in as much as we can, but I want a brief introduction to kinda who you are and why you do what you do.

Ray: Ok. I was starting to study brain physiology in 1968, when I went to the University of Oregon, and I've found that the best scientists were working in reproductive physiology. So, even though the brain was my center of interest, I did my PhD work on reproductive physiology, in particularly, female aging. And, studying the effects of estrogen and the changes with aging, I saw that the old and animals actually had more estrogen stimulation in their tissues than younger animals. And it was working basically like contraceptive pills, to prevent fertility after middle age. And I noticed that the uteruses under the influence of aging and estrogen, typically were darkened and contained the brown pigment. And that got me interested in how that pigment develops through aging, estrogen excess, or radiation (that's another thing that can cause it), or deprivation of oxygen. So I started studying this pigment which is called lipofuscin, or age pigment, and saw that it had been studied quite a lot. In the 1930s and 40s they found that they were killing their animals by feeding them too much of the seeds, that were rich in the polyunsaturated Fats, or fish. In some cases such as mink, they were being killed by an excess of fish in the diet. But even horse meat was killing animals like mink, which were carnivorous (if the horses had eaten flax or linseed, their fat was toxic to the carnivorous animals). And in animals that ate too much of the unsaturated fats, they developed yellow-fat disease (in mink, it developed paralysis fairly quickly at the hind quarters, and then it would kill them). And it turned out that their fat tissue was inflammed and waterlogged, and eventually it would turn yellow or brown. And that's the same pigment that appears in the uterus that has been over-exposed to estrogen or in the skin of an old person that has been exposed to sunlight, and the brain. All the organs develop this pigment with aging, but it develops in proportion to the amount of the unsaturated fats in the diet. The essential toxic effect of it is that it consumes oxygen even faster than the unoxidized unsaturated fatty acids. It acts as an enzyme equivalent, directly wasting energy and the oxygen, producing some hydrogen peroxide in the process and a variety of toxic effects. But oxygen wasting is really an essential factor. It also poisons in more direct ways the respiratory enzymes and the cellular clean-up systems, the proteolytic enzymes that should remove defective proteins. And that's seen in the brain of Alzheimer's patients; they accumulate a lot of these highly polyunsaturated oils such as EPA and DHA, and in the process, these fats inactivate the enzymes which should remove the toxic proteins such as the prion protein that is associated with all of the brain-degenerative diseases. And similar things have different effects in different tissues; in cancer for example, the proteolytic enzymes are also inhibited, but cancer cells have pretty

strong defense against lipid peroxidation, so it takes a very high level of lipid peroxide to kill cancer cells (where it will damage heart cells and brain cells very easily).

Josh: *So we kinda jumped ahead, which is good, because that's what people want to hear about. Because a lot of people want to know about these fats. Why we don't rewind a little so people understand, there are more than three but our diets consist mainly of proteins, carbs and fats. We're going to be talking more on fats, but maybe just for the lay listening, can you explain the role of proteins, carbs and fats in the body before going into the PUFAs?*

Ray: Well, the basic structure of the body is built of proteins. The function of the protein is, partially, to produce energy and replicate itself. But the functional and structural proteins are the reason why we have to eat protein constantly. The fats, we can synthesize our own saturated and unsaturated fats. When we synthesize the highly unsaturated fats ourselves, from eating either sugar or protein, the longer unsaturated fats are called mead acid (and the derivatives of that). The sugars are able to produce energy, and so make it unnecessary to convert protein to energy. But in the absence of sugar or fat, we can easily convert protein into fat and sugar to produce energy.

Josh: *So, obviously we're going to be talking more about fats. This is kinda the source of why we are here, you talked about their role. Why do you think there's such a misconception about healthy versus non-healthy fats?*

Ray: The misconception started very quickly in the 1940s, when the agricultural chemists found that they could fatten their animals faster if they poisoned their metabolic systems with an anti-thyroid drug. And they would get fat on very little food. Then, that turned out to leave a carcinogenic residue in the meat. So, they found out that corn and soybeans contained these polyunsaturated fats that would suppress the respiration of the animals and make them get fat on very little food. But in the process they found that they were getting these yellow-fat diseases and brain degenerations (degeneration of the gonads, infertility, and so on). And the function of Vitamin E in the 1930s had been identified as an anti-estrogen. But, I mentioned that estrogen accelerates the breakdown of these fats. And they saw a connection between excess estrogen and excess polyunsaturated fats, and began using Vitamin E as an antioxidant rather than an anti-estrogen. So, the new definition of Vitamin E became very important because the agricultural industry was turning to the very fattening diet of high-polyunsaturated oil foods such as corn and soy beans. So, to protect against the very toxic effects that killed their animals prematurely, they would use Vitamin E. So, it became known as an antioxidant rather than an anti-estrogen. And the medical people noticed that the cholesterol was lowered in the process of eating a lot of these polyunsaturated fats. And that led to the spreading of the marketing of unsaturated fats to the human food supply, rather than just for the fattening of farm animals. And since people didn't want to gain weight on the least amount of food, they needed a new reason for selling their fats to humans. And, lowering cholesterol became the excuse in humans. But the agriculturists knew all through the 1940s that corn and soy oils were very fattening, and eventually, very toxic. But since they sold their animals as soon as they reached a marketable size, they didn't care (if they died later; they were killing them before they had the chance to die of the degenerative diseases).

Josh: *So, nowadays when we're talking about, most people have misconceptions about what fats are in our diet. Maybe can you give us just what your thoughts are and what the fats are in the current diet today?*

Ray: People are still talking about Essential Fatty Acids, as if they were almost a vitamin. When I was a kid in school, whenever a nutritionist would mention the unsaturated fatty acids, they would say "possibly essential", or would mention the controversy as to whether they were essential or not. In 1929, two researchers working for the agricultural industry (the Burrs) claimed that the Linoleic Acid and Linolenic Acid (which are now called the Essential Fatty Acids) that they were essential nutrients. Previously, several researchers had demonstrated that animals could live perfectly without those if they were given vitamin-rich food, protein-rich food. And, in fact, some German researchers found that animals didn't develop cancer (something like 99% of cancers), when animals were deprived of Linoleic and Linolenic Acids. But the Burrs ignored the previous existing evidence that these fats are not essential. They produced skin diseases and gonadal defects when they deprived the animals of these two fatty acids. But, at that time, only two of the B Vitamins were known. About three years later one of these researchers put one of his fatty acid-deficient rats in a chamber to measure its oxygen consumption and found that when it was deficient in Essential Fatty Acids it was metabolizing 50% faster than normal, burning calories at a tremendous rate. And so its nutritional requirements were very high, but they were giving it just the same diet that they would feed ordinary animals. And in the 1940s, the Burrs never followed up on the meaning of that, but researchers found that Vitamin B6 deficiency causes exactly the symptoms that were blamed on the Linoleic Acid deficiency. So they fed their animals the diet that the Burrs had used to demonstrate the so-called essentiality, and created the symptoms that the Burrs have produced. Then they gave the animals only extra Vitamin B6 and cured the condition. So, what the Burrs had demonstrated was that the Essential Fatty Acids slows metabolism, making them need less food, and so prevented a deficiency on a deficient diet. But given a diet without those fats, but with adequate Vitamin B6, there were no symptoms produced. But when the oil industry wanted to market their products (the metabolism-suppressing fatty acids), they simply ignored the fact that the Burrs' work had been totally invalidated. And, now, 70-80 years later, they are still citing the work of the Burrs as the evidence that fatty acids (Linoleic and Linolenic) are essential. But now, for 65 years, it's been perfectly established that they are not essential.

Jeanne: *I'm just going to ask besides the Omega 3 and 6, which are Linolenic Acid and Linoleic Acid, for the listeners, where else on the food supply do we consume these Polyunsaturated Fatty Acids?*

Ray: Well, all natural foods contain small amounts of some of the Polyunsaturated fats. Like, coconut oil, contains about 1%, and beef, lamb, milk and cheese contain a couple percent, depending on what they ate. But the really risky sources, for example when you get above the equivalent of about a teaspoon full of the Polyunsaturated fats per day, per person. Four grams a day is where the breakdown of those PUFAS starts showing an increased incidence of cancer and other degenerative diseases. And if you don't specialize in the foods that are naturally low in those fatty acids, you increase your risk of all of the toxic or degenerative influences. And the foods that are richest in these unstable and potentially toxic oils are grains, seeds, nuts, vegetables in general, and all of the animals which are not ruminants, which have eaten the vegetable Polyunsaturated fats. So that horses, rabbits, chickens, pigs, which are not ruminants, will reflect in their tissues pretty exactly what they've been eating as they grew up. And fish eats algae; smaller organisms that have eaten algae get a very high concentration of these Polyunsaturated.

Josh: *I assume there's a lot average people listening. People overdoing seeds, nuts and I don't think people realise why the seeds of the plants produce these Polyunsaturated Fatty Acids. Could you be a little more specific with the*

vegetables?

Ray: If you think of where corn (or soybeans) normally grows, in let's say, IOWA; the corn produces its seed, and the seed sits on the ground for a few months, during the winter, and has to begin sprouting when the weather is still fairly cool. So that the seed is basically kept in refrigeration all through the winter. And then, when it starts to warming up a little, it sprouts, and produces a new plant. It contains enough Vitamin E that under this refrigerated situation, these Polyunsaturated fats are stable enough, that then, the seed is still alive (if you kept the seed warm all winter, at say, the temperature of the human body, these oils would react with oxygen and the seed would be dead by spring time). Since the enzymes have to become active, when the temperature is maybe 40° F or 50° F in the spring, if the oils were completely saturated, they would be like butter in the refrigerator at 40° F: hardened and imobile. So the unsaturated fats are still liquid and mobile at the refrigerator temperature. If a fish lives at, let's say, 20° or 30° F, they can stand very cold temperatures if they have very polyunsaturated fats (that act as an antifreeze). The fish, if it contained saturated fats, would be stiff, like a cube of butter at refrigeration at 40° F. So the organism needs mobile fats, which are stable at low temperatures, simply to function at those low temperatures. But if you look at the fish in the Amazon river, where the water is up around 90° F, these fish have fats that are just about as saturated as butter, because their unsaturated fats would oxidize and degenerate if they were living at that temperature. If you grow soybeans in the tropics, soy oil then is practically as saturated as butter. The unsaturation is a defense to maintain mobility at a molecular level. But it requires an antioxidant, as well as low temperature for the cell to survive using those unstable oils. In one experiment, when I was studying the effects of these in cells, I just put a rubber hose in a bottle of safflower oil and put the other end in a cup of water, you could see the water rising in the rubber hose because the oil was consuming oxygen just like I had an animal at the bottle respiring. The oil respire as it degenerates and consumes oxygen. And, in your body, at 98° F, that happens even faster than at room temperature.

Josh: *So, for the listeners, are you more in favour of vegetables like squashes or root vegetables that have less, we could say very little, Polyunsaturated Fatty Acids in them. And you are not in favour of vegetables like greens, spinach, lettuce, kale and things like that?*

Ray: Yeah. The leaves are very good and important sources of magnesium and Vitamin K. But you have to take into consideration the high proportion of polyunsaturated fats. So, for calories, squashes and root vegetables are safer as a major source of calories. But fruits are even better, because their tissue contains a higher concentration of minerals than the starchy vegetables.

Josh: *Science is fascinating. It's very challenging for us. And I can imagine for the lay person. But those are some of the conclusions that we've come to in the course of working with vegetables and getting results. So I just want to bring that up so the listeners can get an understanding of where you're at.*

Ray: Yeah. Potatoes are more like a fruit, or an outright protein (in the total nutritional value) because they contain practically no fat. It's good to have some kind of animal fat with potato. Some of the roots are very starchy, but potatoes happen to be a very balanced vegetable.

Jeanne: *In regards of Omega 3s, they produce non-inflammatory prostaglandins. I wanna get your take on that, do we need Essential Fatty Acids to produce prostaglandins and fight inflammation or is that untrue?*

Ray: Some of the recent work on the anti-inflammatory effect of the fish oil, or the Omega -3 fats, shows that they accumulate with aging, for example in the brain. And Alzheimer's or Dementia patients have a much higher level of these in the brain. They spontaneously oxidize into, not only toxic anti-metabolic, anti-brain-tissue substances (the neuroprostanes for example), but, in the process of oxidizing, they suppress the immune system too. It's an across the board toxic effect. But when you look at the immune system, suppressing the cells that produce inflammation, you get an interruption of an existing inflammatory process. Several researchers have found that it's only the oxidized form, the broken down form of the fish oils, that has the anti-inflammatory effect. When you prolong the feeding with this anti-inflammatory effect, you start seeing that immunodepression is the longer range effect. The present extreme advocacy of fish oil for its anti-inflammatory effect is very similar to what the X-Ray industry was doing 80 years ago, even as recently as 1950s and 60s; they were still treating arthritis, acne, psoriasis, ringworm, anything with an inflammatory component, with X-rays treatment, because it's immediate effect is to create these lipid peroxides, which are anti-inflammatory, immediately immunosuppressive in the long run, and toxic in many ways, eventually.

Josh: *Ray, with all the diets available, can you give us 5 keypoints on why you feel that PUFAs are so dangerous. And then maybe some alternative fats that are much more beneficial for our bodies?*

Ray: Olive oil is pretty safe because it has a great variety of antioxidants, even though it's 10% PUFA. I recommend not eating more than maybe a couple teaspoonfuls per day, just because of that PUFA content that eventually can build up. But the toxicity of the PUFAs will depend on your total calorie intake, because if you use it for fuel as fast as you eat it, then it's going to have relatively small harmful effects. It's when you put into storage and let it really decompose and have its long range effect on your fat tissue and brain tissue, that's when it becomes most harmful. Coconut oil has only around 1-2%, depending on the temperature where it grows, of the Polyunsaturated fats, and so Coconut oil and Butter can actually have an antioxidant effect, blocking the effects of these other breakdown products of the PUFAs, and can help to clean your tissues of the fats you ate previously. Sugar, from whatever source (but especially from fruit, because of the minerals that help to stabilize and organize the metabolism) is naturally turned into saturated fats and we immediately create an Omega -9 type of fat when we synthesize fat from sugar. And this mead acid is produced from any fat that we make ourselves. And these go on to make the multiple polyunsaturated fats that are used in a few places. And they have an anti-inflammatory effect. So, by avoiding the toxic anti-inflammatory effects, we're allowing our bodies to produce the natural anti-inflammatory mead acid series of fats (or omega -9).

Jeanne: *Is that through the intake of saturated fats?*

Ray: Yes, we can produce this from saturated fats such as cocoa butter (chocolate fat), that's stearic acid, and we can turn stearic acid into the omega -9 fat.

Josh: *For the listeners, Ray is promoting the use of saturated fats and not promoting the use of PUFAs. Could you elaborate on the storage of fatty acids in the tissues? And how with a stress reaction or low glucose levels that can actually in itself, create hormonal or hypothyroidism symptoms?*

Ray: Yeah. It's very interesting (but very few people have been researching it) that estrogen favours, in some way, the storage of these Polyunsaturated fats. And these fats favour the influence of estrogen, and activate it. So, the thing that got me interested in it in the first place, people are still working on that strange mutual

effect of estrogen and the Polyunsaturated fats. But why it happens, I don't think anyone knows. When a mammal is born, the brain and all of the tissues are, by the present standards, they're deficient in the Essential Fatty Acids, because the presence of the mead acid that we synthesize naturally is taken as an indicator of deficiency of the Essential Fatty Acids. The growth of the foetus is inhibited when you try to correct that so called deficiency by feeding the mother increased amounts of either the seed oils or the fish oils. The seed oils strongly inhibit our ability to make the mead acid, and the fish oils, one good thing about them is that they are less inhibiting of our ability to make mead acid than the seed oils are. But when 35 years ago experimentors fed pregnant mice and other animals various diets with corn oil versus coconut oil, or chocolate fat versus soy oil, and so on... They found that the unsaturated fats caused the pregnant animals to have small brained babies, which didn't learn very well. Just about a year and a half ago, some French researchers were going to demonstrate that pregnant women who were eating more of the unsaturated fats had smarter babies already developing in their uterus. They developed a way to produce a sound, and then measure the brain wave of the fetus. And they were going to demonstrate that the fetuses in the women who ate the unsaturated fats were learning quicker. But in fact, they found that they were less able to learn in proportion to the amount of Polyunsaturated fat in their diet. When they were born, they turned out to be smaller, and to have smaller brains. So it was exactly the opposite of what they predicted they would find. But it exactly agrees with what the animal researchers had found 35 years ago. One of the marketing tools of the baby formula industry is to say that their product is more like breast milk because they add the omega -3 fats to it. And their argument...there's been quite a few experiments measuring the baby's visual acuity...And they don't mention that several of the experiments showed that the visual development was slower in the babies that had the Polyunsaturated fats. But they claimed that it accelerates the development of visual accuity. And they also don't mention that some studies showed that brain damage increases the visual acuity for these gradings sensing tests.

***Jeanne:** Replacing PUFAs with more Saturated fats can reverse a lot of things like hormonal imbalance, hypothyroidism, immune system disturbances. How that works?*

Ray: About almost 20 years ago, i had been reading and thinking about this ever since 1970, when I was doing my thesis. But i just hadn't done much with my diet. I stopped using any of the liquid cooking oils, or salad oils. But I just hadn't been extreme in my diet. But I decided to experiment by adding 1/2 to 1 ounce of coconut oil to my food, and the immediate thing that I noticed was that for about an hour and a half after eating a tablespoon or so of coconut oil, my heart was running at a higher rate, I was breathing harder and my skin was pinker. That went on for several days. And after a couple of weeks I saw that I was losing weight quickly, even though I was eating more calories per day. And for about, I guess, 30 years, I had maintained the same weight. But after 2 or 3 weeks I saw that I was heading for a lower plateau of weight. And I've stayed there ever since. Just occasionally adding a tablespoon or so of coconut oil helps activate my thyroid, in effect. Because constantly, when we draw unstored unsaturated fats, they will inhibit, in proportion to the unsaturation of the fats circulating in the blood, all functions of our thyroid system (we produce less hormone, we transport it less effectively, it enters the mitochondria nucleus less effectively). So, if you do anything to interrupt that supply of stored unsaturated fats, you will immediately, like in 20 minutes, feel the surge of respiratory activity. Hospitals, 20 or 30 years ago, started using soy oil emulsions to prevent weight loss in cancer patients. And they quickly were seeing that their immune systems were supressed; but within about 15 minutes of putting a dose of the emulsifying oil into the bloodstream, their blood sugar went up. It immediately impairs the ability to

oxidize glucose. And that's a whole line of diabetes research that isn't getting much public attention. But it's called the Randle effect or the Randle cycle. This person showed that the immediate effect of the presence of unsaturated fats is to block the oxidation of glucose (and chronically, then, you have the oxidative damage to the mitochondria, that causes permanent respiratory defects).

***Jeanne:** Why we're still seeing problems with PUFAs overconsumption?*

Ray: There's a lot of money being invested in publicizing their products. Everyone is still advertising that their baby formula contains Omega -3. But the couple of little studies that showed that just the fact of putting it in a dehydrated powdered formula, you get a tremendous oxidative destruction of the fats... (something that you wouldn't get if you ate the same fats in a fish, or gathered in breast milk).

***Josh:** Approaching the end of the interview, could you summarize 5 keypoints for the listeners?*

Ray: It promotes estrogen effects and interferes with the synthesis of progesterone and other protective steroids. And it inhibits thyroid, which really affects everything, including the ratio of estrogen to progesterone. The chronic effect of the accumulated age pigment, it's one of the powerful motors of ageing. The wasting of oxygen is characteristic of stress, ageing, PUFA poisoning, estrogen poisoning, and radiation poisoning. It actually makes you more sensitive to any mild radiation exposure. The doctors and dentists who are telling the patients that their X-Ray doses are minimal, neglect even to think about what the diet of the patient has to do with their sensitivity. But it has a great effect on how much damage you get from a given dose of X-Ray. Looking at the historical effects, the publicity picks out only what looks like a good effect. But they neglect, for example, that in Japan, the amount of fish in the diet corresponds to several types of cancer (digestive tract cancer for example), and the metastatic cancers of several types are promoted very distinctly by fish oils and Omega -3 fats. Not only the seed oils and Omega -6 fats have been known to be carcinogenic for 70 or 80 years, but now the Omega -3s are known to promote several types of cancers and metastatic cancer. Several brain diseases or degenerative conditions, besides Alzheimer's, including Lou Gehrig's disease (ALS) are promoted. The actual formation of the prion, in any of the prion diseases and Alzheimer's, resembles the Mad Cow disease. But the actual formation of the toxic prion protein is accelerated by the Polyunsaturated fats.

***Question from a listener:** Wants advice for suitable fats for metabolic type.*

Ray: Tropical foods in general are pretty safe. The nuts that grow at a very high temperature are like coconuts, very saturated in their fats. And the reason why I recommend tropical fruits is that the small amounts of fat in those are highly saturated. So, anything that lives or grows at a high temperature is gonna be safe when it gets in our body at the same high temperature.

***Josh:** Going against the common beliefs makes you feel guilty.*

Ray: One of the things I didn't mention at all was the interaction between intestinal toxins and the unsaturated fats. But that's a whole area, that's very important. The leakiness of the intestines is promoted by many things. But it's worse when you are highly unsaturated.

***Listener:** Curious about Bears and their diet high in PUFAs.*

Ray: I think they like to eat lots of berries for fattening up in the fall. But the

hibernating, I think their temperature drops quite a bit, their fat temperature's reduced during the winter. With Squirrels and other hibernators, they've seen that if they don't let them eat the PUFA nuts, if they give them saturated diets, plenty of carbohydrates, they don't hibernate. The serotonin that triggers hibernation comes up when you reach a certain point of unsaturation in your fats.

Josh: *Wrap up and closure.*