

Study Shows How High-Fat Diets May Promote Breast Cancer Spread

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STORY AT-A-GLANCE

- In mice, a high-fat diet made it easier for breast cancer to spread by activating clotting cells, increasing inflammation, and altering blood vessels in ways that help tumor cells settle in new tissue
- Mice on high-fat diets had nearly five times more cancer cells in their lungs, even when their tumors were the same size as those of mice on a standard, very low-fat diet
- A high-fat diet increased fibronectin, which acts as "molecular glue" helping cancer cells attach to blood vessels, while fat tissue in the obese mice released inflammatory compounds that worsened this buildup
- Switching the mice to a standard diet for just seven days significantly reduced clotting activity, fibronectin buildup, and the number of cancer cells lodging in the lungs
- Eliminating vegetable oils and reducing total fat intake to 30% to 40% of daily calories may help lower inflammation

Metastatic breast cancer is the stage where the disease becomes deadly — not because of the original tumor, but because cancer cells travel and take root in distant organs. Most women aren't warned about the silent changes in their body that make this spread more likely. Fewer still are told that what they eat may play a role.

Your bloodstream, immune system, and fat metabolism constantly communicate. And when that communication goes wrong, it may set the stage for more aggressive disease. For women with triple-negative breast cancer, this connection is especially urgent.

This form of cancer moves fast, resists conventional treatments, and often returns with little warning. What's missing from the conversation is how quickly your internal environment shifts in response to food. That shift doesn't just affect weight or cholesterol.

It may alter how your blood clots, how your vessels behave, and how likely it is that stray cancer cells will survive the journey from one organ to another. That's what research from the Spanish National Cancer Research Center set out to investigate.¹ Their findings point to a mechanism, so far shown in mice, that links diet to how readily cancer cells spread.

High-Fat Diets May Create the Perfect Environment for Breast Cancer to Spread in Mice

A study published in Nature Communications explored how a high-fat diet sets the stage for breast cancer to spread, focusing on triple-negative breast cancer, one of the most aggressive subtypes.² Researchers tracked how dietary fat altered the body's internal environment in mice, leading to the formation of what they call "pre-metastatic niches" — places where cancer cells are more likely to settle and thrive.

- **Researchers looked at the link between obesity, diet, and aggressive breast cancer outcomes** — Researchers fed mice a diet where 60% of calories came from fat for 12 to 20 weeks. Compared to mice on normal diets (standard chow with only about 4% to 6% of calories from fat), these animals showed a triple threat: stickier blood, more of a glue-like protein called fibronectin, and leakier blood vessels in their lungs.

Together, these changes created a perfect storm that made it easier for cancer cells to travel and take hold.

- **Mice on high-fat diets had far more cancer cells settle in their lungs** — The high-fat diet didn't just grow tumors faster; it helped more cancer cells settle in the lungs. Even when tumor sizes were the same, mice on the high-fat diet had nearly five times more cancer cells in their lungs than mice on the standard diet.

Most of those cells were isolated, single cells — meaning they had freshly arrived and were in the early stages of forming new tumors. The authors note this effect appeared in aggressive, highly metastatic breast cancer models but not in a low-metastatic one, so the high-fat diet amplified spread mainly when the tumor was already prone to it.

- **High-fat diets made blood-clotting cells more sticky and aggressive** — Platelets, which normally help stop bleeding, became hyperactive. They released more clotting chemicals, changed shape to form more projections, and started binding not just to injured tissue but to tumor cells and blood vessel walls. These platelets acted like bodyguards for cancer, helping it move and survive in places it shouldn't.
- **Tumor cells stuck more easily to blood vessels in mice fed high-fat diets** — In the lungs of high-fat diet mice, tumor cells had an easier time attaching to blood vessel walls. Platelets helped cancer cells slip between the vessel lining and surrounding tissue, making it easier for tumors to seed new areas. This process was significantly higher in the high-fat group.

Cancer Gets a Boost When Your Blood Gets Sticky

Fibronectin, a sticky protein that acts like molecular glue, was found in far higher amounts in the lungs and platelets of mice on a high-fat diet. It made it easier for cancer cells to latch on and stay in place. Platelets not only carried more fibronectin but also took it up more readily, and they interacted more with tumor cells where cancer cells were arriving.

- **Fat cells in obese animals secreted high levels of a compound that worsened fibronectin buildup** — The animals' fat tissue pumped out more of an inflammatory chemical called tumor necrosis factor-alpha (TNF- α) that made platelets build up even more fibronectin.
- **A one-week switch to a healthier diet was enough to reduce many of these changes** — When mice were taken off the high-fat diet for just seven days, platelet activity dropped, fibronectin levels in platelets normalized, and fewer cancer cells homed to the lungs. These findings suggest diet may influence cancer behavior quickly.
- **Women whose blood clotted faster had cancer come back sooner** — In an observational analysis of 82 women with triple-negative breast cancer, those with the fastest clotting times (the top quarter on a test called aPTT) had an estimated average time to relapse about 3.4 years shorter than the other patients (8.5 vs. 11.9 years). Their diets and fibronectin levels weren't measured, so it doesn't show that diet caused faster clotting.

How Your Diet May Influence Your Internal Environment

If you've been eating a high-fat diet, especially one high in vegetable oils, research like this suggests it may be shaping your internal environment in ways that matter. But this isn't just about fat. It's about the kind of fat, the ratio of carbs to fat, and how those fats alter your blood and tissues. The encouraging part is that in this study, the changes in mice reversed quickly.

The study showed that within just one week of dietary change, harmful platelet activity and fibronectin buildup dropped significantly in mice. That suggests what you eat may have a faster effect than many people assume. If you're someone who's already had breast cancer, has a family history of it, or just wants to reduce your cancer risk, I strongly recommend taking these four steps. If you're being treated for cancer or have had cancer, work with your oncology team before making major changes to your diet.

1. **Shift your macronutrient balance — more carbs, less fat** — A **high-fat diet**, defined in the study as 60% of daily calories from fat, disrupts how your body burns glucose and instead forces it to rely on fat for energy. That imbalance may contribute to the kind of changes seen in this study.

I now recommend keeping fat intake between 30% and 40% of your daily calories. (Note that this is a different range from the diets tested in the study, which compared 60% fat with about 4% to 6% fat.) That means prioritizing healthy, digestible carbs like whole fruit, cooked root vegetables, white rice, and small amounts of well-tolerated whole grains, as long as your gut is healthy and you tolerate them.

2. **Eliminate vegetable oils from your diet** — The real problem isn't just fat. It's **linoleic acid** (LA), a polyunsaturated fat found in vegetable oil and nearly every processed and restaurant food. High LA intake can disrupt mitochondrial function and may weaken your immune system. Your goal is to keep your total LA intake within 2 to 5 grams per day. LA is still an essential fat, so don't aim for zero.

To do this, eliminate canola, corn, soybean, safflower, sunflower, and grapeseed oil. Use grass fed butter, ghee, or tallow instead. Even olive and avocado oil should be used sparingly, as they are often cut with cheaper vegetable oils and contain high amounts of monounsaturated fat, which may cause similar mitochondrial stress.

3. **Track what you eat — and what's in it** — You're probably eating more LA than you think. Use the Food Buddy feature in the PAX app, with its Seed-Oil Sleuth tool, and enter your typical daily foods. Then look at the grams of LA. That's your baseline. From there, reduce high-LA foods and swap them for options with better fat profiles. For example, instead of sautéing vegetables in canola oil, cook them with ghee. Instead of store-bought salad dressing, use lemon juice and grass fed butter.
4. **Get serious about inflammation** — The research showed that fat tissue in obese mice released high levels of a powerful inflammatory chemical that triggered fibronectin buildup in platelets. That suggests excess body fat may help create an

environment that favors cancer spread.

If you're carrying **extra weight**, especially **around your midsection**, focus on gentle daily movement like walking (ideally about an hour a day), increasing your carb intake from healthy sources, and reducing inflammatory triggers. This isn't about crash diets. It's about restoring **balance in your metabolism** so your body functions optimally.

FAQs About High-Fat Diets and Cancer

Q: How does a high-fat diet increase the risk of cancer spreading?

A: In mice, a high-fat diet triggered a series of changes that supported cancer spread. It activated clotting cells, increased vascular leakiness in the lungs, and increased fibronectin, a sticky protein that helps cancer cells latch onto blood vessels and form new tumors. These changes made it easier for cancer cells to settle in the lungs. Whether the same happens in people hasn't been tested.

Q: What role do platelets play in cancer progression?

A: Platelets, which normally help your blood clot after injury, became hyperactive in mice on a high-fat diet. They started sticking to cancer cells and blood vessel walls, creating landing zones where tumor cells could settle. (Researchers have proposed that platelets may also shield tumor cells from immune attack, but this study didn't test that.) This interaction helped cancer cells attach, migrate through blood vessel walls, and take root in new tissues.

Q: Can changing your diet really make a difference?

A: In mice, yes. The research showed that mice who switched from a high-fat diet to a standard diet for just seven days had significantly less clotting cell activity and fibronectin buildup. This quick dietary change also lowered the number of cancer cells settling in their lungs, although the mice also lost weight, and this hasn't been tested in people.

Q: Why are vegetable oils especially harmful when it comes to cancer spread?

A: Vegetable oils like soybean, corn, safflower, sunflower, and canola are high in LA, a polyunsaturated fat that can disrupt mitochondrial function and may drive inflammation. High LA intake builds up in your tissues over time. Note that this study didn't test vegetable oils or LA specifically.

Q: What are the most effective steps I can take to lower my risk right now?

A: Start by reducing your total fat intake to 30% to 40% of daily calories, eliminate vegetable oils, and increase your intake of healthy, digestible carbohydrates like fruit, white rice, and root vegetables. Use Food Buddy in the PAX app to monitor your LA intake and keep it within 2 to 5 grams per day. Even short-term changes may influence the biological processes that support cancer spread. If you have or have had cancer, talk with your oncology team first.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified health care provider before making changes to your health regimen.

Sources and References

- ^{1, 2} [Nature Communications April 2, 2025](#)