

Probiotics Fight Flame Retardant Toxins in Your Body

Analysis by [Dr. Joseph Mercola](#)

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STORY AT-A-GLANCE

- › Prenatal exposure to polybrominated diphenyl ethers (PBDEs) from household items is linked to lower cognitive and physical development scores in children up to 6 years old
- › Supplementing with *Limosilactobacillus reuteri* (LR) helps maintain a healthy gut microbiome, counteracting the neurobehavioral and endocrine disruptions caused by PBDEs
- › Studies in mice show that maternal LR supplementation prevents PBDE-induced growth delays, behavioral issues and metabolic imbalances in offspring, especially in females
- › Choose flame-retardant-free products, avoid polyurethane foam and maintain a clean home with HEPA-filter vacuums and wet cleaning methods to minimize toxin buildup
- › Support your microbiome by eliminating mitochondrial toxins, incorporating *Akkermansia* supplements, optimizing probiotic intake timing and using natural progesterone to mitigate endocrine disruptions

Did you know that the flame retardants in your home's electronics and other items could be affecting your child's brain development? A study published in *Environmental Health Perspectives* discovered that prenatal exposure to polybrominated diphenyl ethers (PBDEs) is associated with lower cognitive and physical development scores in children up to 6 years old.¹

These persistent organic pollutants (POPs) don't just disappear; they build up in your environment and even in your body. Research involving mothers from Lower Manhattan

revealed that higher levels of PBDEs in cord blood are directly linked to significant delays in mental and motor skills in their children.² This means that the very substances meant to protect your home are undermining your child's future.

However, there's a promising solution on the horizon. Studies published in Archives of Toxicology show that supplementing your diet with the probiotic *Limosilactobacillus reuteri* (LR) helps counteract the negative effects of PBDEs. By maintaining a healthy gut microbiome – the community of bacteria in your digestive system – probiotics like LR help prevent the neurobehavioral and endocrine disruptions caused by these toxic pollutants.³

Understanding the dangers of PBDEs and the benefits of probiotics empowers you to take proactive steps for your child's health. By incorporating probiotics into your routine, you help protect your child's neurodevelopment from the pervasive threats of environmental toxins.

Exploring the Role of Probiotics in Mitigating PBDE Effects

PBDEs are notorious for their ability to disrupt the endocrine system, particularly affecting thyroid and reproductive health. These compounds, used extensively as flame retardants, persist in the environment and accumulate in human tissues, posing significant health risks.

PBDEs interfere with the normal functioning of your endocrine system, which is responsible for hormone regulation. They alter your gut microbiome, a key component of overall health, by reducing microbial diversity and richness. This disruption leads to a cascade of health problems, including metabolic disorders and neurodevelopmental issues.

Your gut-brain axis, a communication network linking your gut and the central nervous system, is particularly vulnerable to such disruptions, leading to long-term effects on both physical and mental health. PBDEs, due to their lipophilic nature, accumulate in fatty tissues and cross the placental barrier, affecting fetal development.

Once in your body, they mimic or block hormones, leading to imbalances that affect growth, metabolism and brain development. The alteration of the gut microbiome further exacerbates these issues, as a healthy microbiome is essential for nutrient absorption, immune function and mood regulation. When your microbiome is compromised, it leads to systemic inflammation and increased susceptibility to various diseases.

Probiotics Shield Offspring from Harmful Effects of PBDE Exposure

The Archives of Toxicology study explored how giving pregnant mice LR could protect their offspring from the negative impacts of PBDEs. The research focused on understanding whether LR supplementation during pregnancy could counteract the developmental, behavioral and metabolic disruptions caused by PBDE exposure in the offspring.⁴

The study used mice, where pregnant mothers were exposed to PBDEs. The offspring of these mice were then monitored for various health aspects as they grew. The researchers aimed to see if the probiotic could prevent or reduce the harmful changes typically caused by PBDEs, particularly looking at differences between male and female offspring.⁵

The findings revealed that maternal LR supplementation effectively protected the offspring from several PBDE-induced issues. For instance, male mice exposed to PBDEs usually experienced delays in body weight gain. However, those whose mothers received LR did not show these delays, indicating that the probiotic helped normalize their growth.⁶

Similarly, female mice typically had delayed tooth eruption due to PBDE exposure. With LR supplementation, these delays were either prevented or significantly reduced.⁷

Behaviorally, the study found that PBDE exposure led to increased hyperactivity and repetitive digging behaviors, especially in female offspring. Mothers that received the

probiotic had female offspring that did not exhibit these exaggerated behaviors, maintaining more typical activity levels. Additionally, these female mice showed better glucose tolerance and more balanced insulin-to-glucose ratios, which are important for metabolic health.⁸

While both sexes showed improvements, the protective effects against behavioral disruptions and metabolic imbalances were more significant in females.⁹ The study also delved into the biological mechanisms behind these protective effects. It was found that LR supplementation altered the gut microbiome in a way that counteracted the negative changes caused by PBDEs.

By maintaining a healthier balance of gut bacteria, LR helped stabilize the gut-brain axis. This stabilization played a key role in preventing the neurobehavioral and metabolic issues typically induced by PBDE exposure.¹⁰

Overall, the research provides strong evidence that probiotic supplementation during pregnancy helps safeguard offspring from the detrimental effects of PBDEs. These findings highlight the role of probiotics as a protective strategy against environmental pollutants that disrupt long-term health.

How to Reduce Your Exposure to PBDEs

Since flame retardants are ubiquitous, taking steps to reduce your exposure is essential to protecting your health. Below are helpful tips to guide you:¹¹

- 1. Shop smart** — Check the label before buying any furniture, mattresses and other household goods, and choose items that indicate no added flame retardants. As you replace PBDE-containing items around your home, select those that contain naturally less flammable materials such as leather, wool and organic cotton instead.
- 2. Be careful when buying products made for children, like car seats** — Stay away from those labeled that they meet California TB 117 flammability standard, as they likely contain flame retardants in the foam.

3. Don't buy products made with polyurethane foam.

4. Clean your home regularly – Flame retardants leach from products and linger in your **household dust**. Use a vacuum cleaner with a HEPA filter to remove house dust. Wet mop your hard floors regularly, which will prevent dust from accumulating. Wipe furniture with a wet or microfiber cloth. The small fibers of a microfiber cloth cause the dust to cling to it, while a wet cloth will attract and hold dust better than a dry one.

Tips to Protect Your Health from PBDEs

Addressing health risks of PBDE exposure and its effects on offspring involves a strategic approach to enhance your gut health and mitigate environmental toxins. The steps that follow will enhance your gut microbiome's ability to counteract the harmful effects of PBDE exposure, promoting better developmental, behavioral and metabolic health for your offspring and improved overall health for you as well.

1. Support gut health by eliminating mitochondrial toxins and eating healthy carbs – Your diet plays a pivotal role in maintaining a healthy gut microbiome. Beneficial gut bacteria thrive in an oxygen-free environment, which requires adequate cellular energy to maintain.

However, modern factors like seed oils, which are rich in **linoleic acid** (LA), and toxin exposure compromise mitochondrial energy production, limiting your ability to maintain a gut environment with little to no oxygen present.

Addressing the root cause – mitochondrial function and colon oxygenation – is essential for the success of any **gut health intervention**. Once you've reduced your exposure to mitochondrial poisons like LA, endocrine-disrupting chemicals and electromagnetic fields (EMFs), consuming healthy carbohydrates is instrumental to your gut health journey.

Introduce white rice and whole fruits to nourish beneficial bacteria before considering vegetables, whole grains and starches. Avoiding high-fiber diets initially

is important if your gut microbiome is compromised, as excessive fiber will increase endotoxin levels. If your gut health is severely compromised, focus on easily digestible carbohydrates like dextrose water for the first week or two. Sip it slowly throughout the day to support gradual gut healing.

- 2. Incorporate Akkermansia supplementation** – The beneficial oxygen-intolerant bacteria *Akkermansia muciniphila* is essential for a healthy microbiome, but many people have few to none at all. However, it's important to eliminate all seed oils from your diet for at least six months before starting an *Akkermansia* supplementation program.

This preparatory period allows your body to recover mitochondrial function and create a more hospitable environment in your colon for the beneficial bacteria. By taking these steps, you maximize the benefits of *Akkermansia* supplementation and support overall gut health.

When selecting *Akkermansia* supplements, choose those that utilize advanced, timed-release capsules or microencapsulation technology. These methods keep the bacteria dormant and protected until they reach your colon, typically within two to four hours after ingestion, ensuring that a higher number of live bacteria survive the journey through your digestive system.

- 3. Optimize probiotic intake timing** – For maximum effectiveness, take your *Akkermansia* supplement on an empty stomach, ideally first thing in the morning after an overnight fast. This minimizes transit time, allowing more live bacteria to reach your colon within two hours.

If you consume your probiotic with food, the transit time extends to over eight hours, likely killing the bacteria before they reach your colon. To enhance the survival rate of beneficial bacteria, wait at least one to two hours after taking your probiotic before eating.

- 4. Consider natural progesterone** – One of the best ways to counteract the effects of flame retardants is to supplement with natural progesterone. This is because flame

retardants are endocrine-disrupting chemicals that mimic or interfere with the action of estrogen in your body. Using a natural anti-estrogen compound like progesterone helps mitigate the side effects of estrogen.

How to Use Progesterone

Before you consider using progesterone, it is important to understand that it is not a magic bullet, and that you get the most benefit by implementing a Bioenergetic diet approach that allows you to effectively burn glucose as your primary fuel without backing up electrons in your mitochondria that reduces your energy production. My new book, "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy," covers this process in great detail.

Once you have dialed in your diet, an effective strategy that can help counteract estrogen excess is to take transmucosal progesterone (i.e., applied to your gums, not oral or transdermal), which is a natural estrogen antagonist. Progesterone is one of only three hormones I believe many adults can benefit from. (The other two are DHEA and pregnenolone.)

I do not recommend transdermal progesterone, as your skin expresses high levels of 5-alpha reductase enzyme, which causes a significant portion of the progesterone you're taking to be irreversibly converted primarily into allopregnanolone and cannot be converted back into progesterone.

Ideal Way to Administer Progesterone

Please note that when progesterone is used transmucosally on your gums as I advise, the FDA believes that somehow converts it into a drug and prohibits any company from advising that on its label. This is why companies promote their progesterone products as "topical."

However, please understand that it is perfectly legal for any physician to recommend an off-label indication for a drug to their patient. In this case, progesterone is a natural

hormone and not a drug and is very safe even in high doses. This is unlike synthetic progesterone called progestins that are used by drug companies, but frequently, and incorrectly, referred.

Dr. Ray Peat has done the seminal work in progesterone and probably was the world's greatest expert on progesterone. He wrote his Ph.D. on estrogen in 1982 and spent most of his professional career documenting the need to counteract the dangers of excess estrogen with low-LA diets and transmucosal progesterone supplementation.

He determined that most solvents do not dissolve progesterone well and discovered that vitamin E is the best solvent to optimally provide progesterone in your tissue. Vitamin E also protects you against damage from LA. You just need to be very careful about which vitamin E you use as most supplemental vitamin E on the market is worse than worthless and will cause you harm not benefit.

It is imperative to avoid using any synthetic vitamin E (alpha tocopherol acetate – the acetate indicates that it's synthetic). Natural vitamin E will be labeled "d alpha tocopherol." This is the pure D isomer, which is what your body can use.

There are also other vitamin E isomers, and you want the complete spectrum of tocopherols and tocotrienols, specifically the beta, gamma, and delta types, in the effective D isomer. As an example of an ideal vitamin E, you can look at the label on our vitamin E in our store. You can use any brand that has a similar label.

You can purchase pharmaceutical grade bioidentical progesterone as Progesterone Powder, Bioidentical Micronized Powder, 10 grams for about \$40 on many online stores like Amazon. That is nearly a year's supply, depending on the dose you choose.

However, you will need to purchase some small stainless steel measuring spoons as you will need a 1/64 tsp, which is 25 mg and a 1/32 tsp, which is 50 mg. A normal dose is typically 25 to 50 mg and is taken 30 minutes before bed, as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

If you are a menstruating woman, you should take the progesterone during the luteal phase or the last half of your cycle, which can be determined by starting 10 days after the first day of your period and stopping the progesterone when your period starts.

If you are a male or non-menstruating woman, you can take the progesterone every day for four to six months and then cycle off for one week. The best time of day to take progesterone is 30 minutes before bed as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

This is what I have been personally doing for over a year with very good results. I am a physician so do not have any problems doing this. If you aren't a physician, you should consult one before using this therapy, as transmucosal progesterone therapy requires a doctor's prescription.

Sources and References

- [1, 2 Environmental Health Perspectives January 4, 2010, Volume 118, Issue 5, Pages 712-719](#)
- [3, 4, 5, 6, 7, 8, 9, 10 Archives of Toxicology November 9, 2024](#)
- [11 Toxic-Free Future, Top Tips for Avoiding Toxic Flame Retardants at Home](#)