



The Estrogen **EPIDEMIC**

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Reversing Estrogen Dominance

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ESTROGEN RISING

In 1997, zoology professor Theo Colburn sounded the alert about how environmental estrogen was impacting our health in her book, *Stolen Future*. She told chilling tales of eagles in Florida losing their instinctual desire to mate, a marked increase in birth defects among seagulls in California and epidemic die-offs of seals and dolphins throughout Europe.

But these reports of reproductive changes and the sudden loss of populations weren't limited to the animal kingdom. In 1992, Danish researchers discovered that the average human male sperm count had dropped by almost 50 percent throughout the world. At the same time, the rate of testicular cancer jumped sharply and a growing number of young boys had undescended testicles and shortened urinary tracts.

What was the common denominator in all of these cases? The glut of man-made chemicals that increase estrogen levels in the body. As a result, exposure to the thousands of estrogenic chemicals that now flood our environment threaten to turn Joe into Jane.

In fact, it is men's daily exposure to the sea of industrial chemicals that mimic feminizing estrogens that may well be at the root of the disturbing trends affecting male reproductive health. These chemicals trick the body, short-circuiting hormone systems and threatening the very basis of male sexuality.

Estrogen, in and of itself, isn't the bad guy. In fact, many men are surprised to hear their bodies naturally produce and circulate small amounts of estrogen that help to provide hormonal balance and healthy body function. But hormonal balance can get thrown out-of-whack when estrogen levels begin to rise above normal levels.

There are three main types of estrogen naturally found in the human body:

- **Estrone (E1)** – This is found in both women and men (in small amounts). It's obtained from the adrenal gland and is also made, as well as stored, in fatty (adipose) tissue.
- **Estradiol (E2)** – The most active form of estrogen, it's mainly produced by the ovaries in women, and by the testes and adrenal glands in men.
- **Estriol (E3)** – This is the major type of estrogen produced by women during pregnancy with large amounts produced in the placenta. The level of this hormone continues to rise until just before delivery.

Estrone and estradiol play a key role in a man's fertility by regulating fluid reabsorption in the male reproductive tract. This is important when the sperm is transferred from the testis to the epididymis, a "holding tank" in the scrotum where sperm matures and is stored. Without estrogen, men would be infertile.

Estrogen also helps protect a man's bones and heart, and helps to improve mood. But, like those old Brylcreem ads used to say, "a little dab will do ya." Under normal circumstances, estrogen levels are kept in check by two other hormones: Progesterone and testosterone. Progesterone is another female hormone produced in

adrenal and testicular tissue. It is the precursor to cortisol, testosterone, estrogen and other hormones, and helps keep bones and blood vessels healthy. Testosterone is the male hormone made in the testes, and it is responsible for the hair on your chest, your deep voice and other male traits.

As men age, their estradiol levels gradually rise. At the same time, their progesterone and testosterone levels gradually fall, changing a man's hormone balance. These gradual changes lead to a reduction in testosterone benefits and eventually to estrogen dominance.

When estrogen levels rise too much, odd things can begin to occur. You may experience vision changes, mood swings, changes in body temperature, changes in your voice, a decreased interest in sex, low sperm levels, skin irritation and acne, reduced body hair, weight gain, stretch marks, reduced muscle mass, prostate enlargement, enlarged nipples, and a change in body odor. You may also develop type II diabetes or enlarged "breasts," a condition known as gynecomastia.

GET TESTED

If you are experiencing any of these changes, ask your doctor to check your hormone levels. Laboratory tests to determine your levels of thyroid-stimulating hormone (or TSH), luteinizing hormone (LH), testosterone, dehydroepiandrosterone sulfate, sex hormone-binding globulin (SHBG), as well as estrone and estradiol are recommended as part of a complete evaluation.

It's important to know your hormone levels. But, be aware that abnormal results are only part of the puzzle. It's also important to know the reason for your estrogen excess. There are a number of factors that can temporarily or chronically elevate your estrogen levels. Here are the most common:

- **Older age** – As mentioned earlier, aging can lead to decreased levels of testosterone and an increase in estrogen levels, especially if you are overweight or obese.
- **Medications** - This includes estrogen-containing drugs, steroids, ulcer medications such as cimetidine, some antibiotics (tetracycline, ampicillin, etc.), anti-fungal medications and antidepressants. Since there are other medications that can cause this effect, it's best to check with your pharmacist.
- **Obesity** – Fat cells, especially those in the abdominal region, have the ability to produce an enzyme known as aromatase. This plays a role in converting testosterone into estrogen, thus changing the hormonal balance.
- **Illness** – Certain tumors of the testes, adrenal and pituitary glands, liver and lung; cirrhosis (liver disease); or kidney and thyroid disease may elevate estrogen levels.
- **Recreational Drugs** – The use of anabolic steroids, marijuana, cocaine and other drugs can affect hormone levels.

- **Alcohol** – Drinking excessively can increase the body's conversion of testosterone into estrogen, especially in fat cells. It can also block the liver from effectively eliminating excess estrogen.
- **Environmental exposure** – The breakdown products from certain pesticides, chemicals and herbicides have the potential to cause estrogen-like effects in the body. There is even some concern regarding hormone-enhanced food products; people with elevated estrogen levels may be wise to choose hormone-free foods.

HIDDEN HORMONES

Synthetic estrogens, known as xenoestrogens (pronounced “zeeno”-estrogens), saturate your daily environment. And, most of the time, you don't even know it until it's too late. In fact, if you're having trouble losing weight, struggling with metabolic syndrome or battling prostate cancer (despite having no family history of the disease), these hormones may already be wreaking havoc with your health.

Unlike our natural estrogenic hormones that do their jobs and move on, these xenoestrogens aren't as easy to turn off. They cause cellular functions to change, often with undesirable results. And a growing number of studies show that surprisingly low levels of these estrogen imposters can be enough to trigger health changes. Here are some surprising places where xenoestrogens commonly lurk.

Food: The food we eat can be a significant source of environmental estrogens. Many of them can be found in the meat and milk products you've been consuming for years. Beef producers give their livestock estrogen and growth hormones so they will grow faster and gain the maximum amount of weight before they go to slaughter. Dairy cows are also given hormones so they will produce more milk. But even if livestock wasn't deliberately pumped full of hormones, their meat and milk would still contain xenoestrogens since soy and corn—two crops often used as animal feed — can be heavily sprayed with pesticides, herbicides and fertilizers, all of which contain estrogenic chemicals. These two crops are also the most likely agricultural crops to be genetically modified.

The fruits and vegetables we eat aren't any safer. According to the Agency for Toxic Substances and Disease Registry, polycyclic aromatic hydrocarbons (PAHs) are the by-products of the incomplete burning of coal, gas and oil, and are used to make many of the pesticides sprayed on food crops. Studies show that PAHs can cause tumors through inhalation, via food, or through prolonged contact with the skin. PAHs are also known xenoestrogens and they easily bind to estrogen receptor sites on our cells and can trigger male breast growth, as well as contribute to prostate and other types of cancer.

Food additives may also be adding to your estrogen overload. Italian researchers recently screened 1,500 food additives and found that two had estrogenic properties. The first is propyl gallate, a preservative used in baked goods, shortening, candy, dried meats, pork sausage, mayonnaise and dried milk. The second, 4-hexyl resorcinol, is used to prevent shrimp and other shellfish from discoloring.

Plastics: Plastics are ubiquitous in our environment. From our cars to our TVs to the plastic bags at the grocery store, this unbreakable, do-all material has truly changed society. And, while plastic can be useful and convenient, it can also have a detrimental impact on your health.

One compound in plastic that has made news lately is Bisphenol A (BPA). Originally developed in the 1930s for its ability to mimic estrogen, BPA was a drug candidate for menopausal women with low estrogen levels. While it never made it as a drug, chemists discovered that, when you string BPA together into a long chain, it makes a very resilient plastic known as polycarbonate. This launched BPA as a leading ingredient in consumer products, bringing this estrogen mimic into every home. It's so pervasive that a government study found BPA exposure in 95 percent of the study participants.

Now after decades of use, scientists realize that BPA migrates into food and water just waiting for us to consume it. Once we do, BPA becomes trapped in our fatty tissue, where it can accumulate for decades. According to the National Toxicology Program, exposure to even low levels of BPA caused precancerous tumors, urinary tract problems and early puberty in both men and women.

More recently, another plastic, polyethylene terephthalate (PET), was found to leach an unknown estrogenic substance into water bottles. The German scientists conducting the study tested 20 brands of mineral water and found that 60 percent of them tested positive, with estrogenic levels twice as high as water in glass bottles.

But these harmful chemicals don't just come from plastic water bottles. These estrogenic chemicals can leach out of plastic food containers and plastic wrap right into the foods we eat.

Personal care products: If you use shampoo, shaving cream, deodorant or aftershave, it's likely you are exposing yourself to estrogenic chemicals on a daily basis. One type of estrogen mimic called nonylphenols are created during the breakdown of certain chemicals found in shampoos, hair dyes and shaving cream.

Nonylphenols are persistent in the environment, making them a health risk which can affect fertility and reproductive development in both men and women. Long-term exposure also encourages the proliferation of breast tissue, ultimately leading to a higher risk of developing breast cancer—a disease that can affect men as well as women. The health and environmental threat is so serious that 14 European and Scandinavian countries phased out the use of all alkylphenols.

Parabens are another type of xenoestrogen lurking in your bathroom. These preservatives are slowly being phased out of personal care products, but many manufacturers still use them in all sorts of products—even though studies show they have estrogenic potencies comparable to bisphenol-A. Avoid any products that contain methyl-, ethyl-, propyl- or butyl-parabens.

Phthalates (pronounced “thay-lates”) are another class of estrogen mimics. Found in men's colognes, deodorants, hair gels and body lotions, long-term exposure is suspected of causing damage to the kidneys, liver and reproductive or-

gans. Check the ingredient label and avoid any product that contains dibutylphthalate or diethylphthalate.

One product packed with estrogenic chemicals is your sunscreen. In a widely-publicized study, Swiss researchers at the University of Zurich tested six common chemicals in sunscreen and found that five of the chemicals (benzophenone-3, homosalate, 4-methyl-benzylidene camphor (4-MBC), octyl-methoxycinnamate and octyl-dimethyl-PABA) behaved like strong estrogens and caused cancer cells to grow more rapidly than normal.

Water: While bottled water can be a primary source of BPA, the water you get from your tap can contain other estrogenic chemicals. Products — including personal care products and pharmaceutical drugs—that go down the drain, pesticide run-off and hormone-disrupting chemical by-products released into rivers and lakes by irresponsible manufacturers all contribute to the xenoestrogens that find their way into our waterways. And municipal water treatment plants don't always remove these gender-bending chemicals from the water we drink.

CLEAN UP YOUR DIET

Because there are so many of these estrogen mimics in the items we buy, use and eat every day, it might seem fruitless to try and avoid them. But you can significantly lower the amount of estrogen you are exposed to by exercising some consumer smarts. And the first place to start is with the foods you eat.

In a perfect world, everyone could afford to buy organic food for all of our dietary needs. But, even if you can't go 100 percent organic, you can still lessen your intake of xenoestrogens by knowing what to look for at your regular supermarket. Look for meat, poultry and eggs that are raised without the addition of hormones. These foods should be labeled as natural or should specify that they were raised without hormones. You can also find hormone-free milk, labeled as containing no rBGH.

According to the Environmental Working Group, many popular fruits and vegetables contain unhealthy levels of estrogenic pesticide residue. But knowing when to buy organic and when to buy conventional can save you a bundle. Here is a list of the most—and least—contaminated offerings in the produce aisle.

Highest in Pesticides

Apples	Peaches
Bell Peppers	Pears
Celery	Potatoes
Cherries	Red Raspberries
Grapes (imported)	Spinach
Nectarines	Strawberries

Lowest in Pesticides

Asparagus	Kiwi
Avocados	Mangos
Bananas	Onions
Broccoli	Papaya
Cauliflower	Pineapples
Corn	Peas

Eat whole foods whenever possible since processed and packaged foods are rife with preservatives. But if you can't get fresh produce, opt for frozen over canned since the lining in aluminum cans contains BPH. It's also wise to avoid artificial sweeteners and chemical flavorings when possible.

When you get your food home, store it in glass containers whenever practical since glass is the most inert material you can use. And never, ever microwave food in plastic containers since that can increase the chemicals that leach into your food.

Ditto for the water you drink. Storing it in a glass pitcher or bottle will prevent the migration of estrogenic chemicals from plastic. But, before you store it, you need a safe, estrogen-free source of pure water. Avoid buying bottled water and make sure you use either a countertop or faucet-mount water purifier certified to remove pesticides, pharmaceuticals and other contaminants.

SHOP SMART

Reduce the amount of estrogen you are exposed to with these smart shopping tips:

- Check the ingredient labels on all of your personal care products. Avoid those containing parabens, phthalates, artificial colors or synthetic fragrances.
- Look for a sunscreen that relies on zinc oxide or titanium dioxide to block UV rays instead of estrogenic chemicals.
- Use only natural cleaning products in your home.
- Switch to unbleached paper goods. Bleaching paper can produce dioxin, an estrogenic toxin with extremely harmful health consequences.

ANTI-ESTROGEN SUPPLEMENTS

Eliminating xenoestrogens from your home and pantry can help prevent future exposure. But what about the excess estrogen that is already circulating throughout your body? The following dietary supplements can help by either directly thwarting the conversion of testosterone to estrogen, preventing xenoestrogens from binding to estrogen receptors or by enhancing your immune system against estrogen-related illness.

Alpha Lipoic Acid: Alpha lipoic acid (ALA) is a vitamin-like antioxidant, sometimes referred to as the "universal antioxidant" because it is soluble in both fat

and water. ALA increase the effectiveness or potency in other antioxidants. It can cross the blood brain barrier while others cannot. ALA can easily reach all parts of the liver when other nutrients have difficulty. This keeps the liver healthy, enhancing its ability to corral and remove excess estrogen.

One of the most beneficial effects of ALA is its ability to regenerate other essential antioxidants such as vitamins C and E, coenzyme Q10 and glutathione. The evidence is especially strong for the ability of ALA to recycle vitamin E.

Bioperine: You probably know this nutrient as common black pepper. Yet bioperine promotes enhanced nutrient absorption. According to one recent study, bioperine increases absorption by as much as 57 percent. This spice-derived nutrient may also improve chronic obesity-related inflammatory conditions linked to elevated estrogen levels.

Calcium D-Glucarate: Found in apples, oranges, grapefruit and cruciferous vegetables, calcium D-glucarate is a nontoxic form of glucaric acid. Researchers at M.D. Anderson Cancer Center in Houston, Texas, found that calcium D-glucarate could significantly decrease hormone-dependent cancers, especially prostate cancer. Further research showed that it did this by regulating estrogen metabolism.

In addition to balancing the testosterone: estrogen ratio, calcium D-glucarate also helps eliminate toxins and wastes from the body. But, while it is found in many fruits and vegetables, supplementation is the best way to make sure you get enough to keep estrogen levels in check.

Chrysin: Chemically, chrysin is known as 5,7-dihydroxyflavone—a naturally occurring polyphenol found in passionflower, honey and propolis (the resinous “glue” bees use for hive construction). Numerous studies show that chrysin prevents the conversion of testosterone to estrogen. As a result of this blocking action, testosterone levels are raised. It is reported that the absorption of chrysin is enhanced when it is taken with bioperine. As an added bonus, Chrysin quells inflammation and inhibits COX-2, the enzyme that triggers pain and swelling. But this is definitely a “man’s nutrient.” Because of chrysin’s ability to boost testosterone levels, it should not be taken by women.

Milk Thistle: The liver is responsible for removing excess estrogen from the body, so any compromise in liver function—such as excessive alcohol use or long-term drug use—can aggravate hormone imbalances. Silymarin, a compound in milk thistle, improves liver function, bolstering the organ’s ability to metabolize estrogen. It also binds to estrogen receptors. As a result, xenoestrogens are not able to act on these receptors.

N-Acetyl Cysteine: This popular supplement is often used by bodybuilders to boost muscle. But it’s also a powerful antioxidant. N-Acetyl-cysteine (commonly called N-A-C or simply NAC) is made from the amino acid cysteine joined to an acetyl group, and it donates the amino acid cysteine to help form the antioxidant glutathione. What’s more, NAC helps the liver process excess levels of hormones, including xe-

noestrogens.

Researchers have recently started to look at NAC's ability to prevent estrogen-driven breast cancer in both men and women. While research is in its early stages, scientists think it may be a promising candidate for preventing hormone-driven cancers by protecting against estrogen-triggered free radical damage to DNA throughout the body.

Phosphatidylcholine: Phosphatidylcholine is one of the major components of cell membranes, making it essential for keeping cells intact. It also helps prevent estrogen-related cancers by promoting healthy estrogen metabolism in the liver. This nutrient enables the liver to convert estradiol—the stronger form of estrogen—into the more benign estrinol.

Resveratrol: This super-antioxidant comes from grape skins and is abundant in red wine. Over the past few years, resveratrol has skyrocketed to stardom as a supplement capable of battling both heart disease and cancer. But several studies show that resveratrol also fights estrogen overload because of its structural similarity to the female hormone.

A study conducted at Northwestern University in Chicago, Illinois, found that resveratrol prevents estradiol from binding to estrogen receptors. Other studies show that this potent polyphenol also undermines estrogen in another way: By blocking the metabolic formation of estrogen in the first place. Plus, resveratrol fights the free radical damage that can damage your DNA.

But, while this unique polyphenol is well-absorbed by the body, its beneficial effects don't last long, making it difficult to get resveratrol's healthful properties just by drinking moderate amounts of red wine. Fortunately, adding a high-quality resveratrol supplement to your daily regime can bridge the gap, creating a cumulative and beneficial impact on your health—without the adverse side effects of alcohol.

Zinc: This water-soluble trace mineral is found in nearly every cell in our bodies. It is highly concentrated in our bones, skin, hair, nails, eyes, and in the prostate and testes. An integral component of more than 200 enzymes, zinc is involved in thousands of bodily functions—from muscle protein synthesis and cell growth to wound healing. It's probably involved in more bodily functions than any other mineral.

Zinc plays a critical role in balancing hormones. It is necessary to maintain normal serum testosterone. Inadequate levels prevent the pituitary gland from releasing lutenizing and follicle stimulating hormones, which stimulate testosterone production. Most importantly, zinc inhibits the aromatase enzyme that converts testosterone into excess estrogen.

Whether you are suffering the feminizing side effects of estrogen dominance or want to protect against them, taking care with the foods you eat, the water you drink and the products you buy can help you avoid the excess estrogens that permeate our environment. But adding anti-estrogenic supplements to the equation can truly help you reign in estrogen levels—and rediscover the man you are meant to be.

SELECTED REFERENCES

- Amadasi A, et al. "Identification of xenoestrogens in food additives by an integrated in silico and in vitro approach." *Chemical Research in Toxicology*. 2009; 22:52-63.
- Bhat KP, et al. "Estrogenic and antiestrogenic properties of resveratrol in mammary tumor models." *Cancer Research*. 2001; 61:7456-7463.
- "Calcium D-glucarate." *Alternative Medicine Review*. 2002;7:336-339.
- Chen ZH. "Resveratrol inhibits TCDD-induced expression of CYP1A1 and CYP1B1 and catechol estrogen-mediated oxidative DNA damage in cultured human mammary epithelial cells." *Carcinogenesis*. 2004; 25:2005-2013.
- Coffey DS. "Similarities of prostate and breast cancer: Evolution, diet, and estrogens." *Urology*. 2001; 57:31-38.
- Eil C, et al. "The binding properties of pyrethroids to human skin fibroblast androgen receptors and to sex hormone binding globulin." *Journal of Steroid Biochemistry*. 1990; 35:409-414.
- Felty Q. "Estrogen-induced DNA synthesis in vascular endothelial cells is mediated by ROS signaling." *BMC Cardiovascular Disorders*. 2006; 6:16.
- Gehm BD, et al. "Resveratrol, a polyphenolic compound found in grapes and wine, is an agonist for the estrogen receptor." *Proceedings of the National Academy of Science U.S.A.* 1997; 94:14138-14143.
- Harris CA, et al. "The estrogenic activity of phthalate esters in vitro." *Environmental Health Perspectives*. 1997; 105:802-811.
- Hess, R.A., et al. 1997. "A role for oestrogens in the male reproductive system." *Nature*. 390:509.
- Lu R, et al. "Resveratrol, a natural product derived from grape, exhibits antiestrogenic activity and inhibits the growth of human breast cancer cells." *Journal of Cellular Physiology*. 1999; 179:297-304.
- Oettel M. "Is there a role for estrogens in the maintenance of men's health." *Aging Male*. 2002; 5:248-257.
- Om AS, et al. "Dietary zinc deficiency alters 5 alpha-reduction and aromatization of testosterone and androgen and estrogen receptors in rat livers." *Journal of Nutrition*. 1996; 126:842-848.
- Pinto B, et al. "Screening of estrogen-like activity of mineral water stored in PET bottles." *International Journal of Hygiene and Environmental Health*. 2009; 212:228-232.
- Plísková M, et al. "Effects of silymarin flavonolignans and synthetic silybin derivatives on estrogen and aryl hydrocarbon receptor activation." *Toxicology*. 2005; 215:80-89.
- Schlumpf M, et al. "In vitro and in vivo estrogenicity of UV screens." *Environmental Health Perspectives*. 2001; 109:239-244.
- Seidlova-Wuttke D, et al. "Silymarin is a selective estrogen receptor β (ER β) agonist and has estrogenic effects in the metaphysis of the femur but no or antiestrogenic effects in the uterus of ovariectomized (ovx) rats." *Journal of Steroid Biochemistry and Molecular Biology*. 2003; 86: 179-188.
- Singh PB, et al. Effects of estradiol-17beta and 17alpha, 20beta-dihydroxy-4-pregnen-3-one on different phospholipids metabolism and histological changes in ovary during reproductive growth in the catfish, *Heteropneustes fossilis*." *Journal of Environmental Biology*. 2007; 28:771-778.
- Suresh D, et al. "Studies on the in vitro absorption of spice principles—curcumin, capsaicin and piperine in rat intestines." *Food Chemistry & Toxicology*. 2007; 45:1437-1442.
- Tsai WT. "Human health risk on environmental exposure to Bisphenol-A: a review." *Journal of Environmental Science and Health*. 2006; 24:225-255.
- van Meeuwen JA, et al. "(Anti)estrogenic effects of phytochemicals on human primary mam-

mary fibroblasts, MCF-7 cells and their co-culture." *Toxicology and Applied Pharmacology*. 2007; 221:372-383.

Venugopal D, et al. "Reduction of estrogen-induced transformation of mouse mammary epithelial cells by N-cetylcysteine." *Journal of Steroid Biochemistry and Molecular Biology*. 2008; 109:22-30.

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