

Obesogens and Obesogens Detox

Introduction

An obesogen is a chemical or physical agent that causes obesity in an individual. Environmental factors are sometimes referred to as " obesogens ", for example, studies have shown that exposure to particulate air pollution increases the risk of obesity, probably for cardiovascular reasons. Obesogenic factors have been suspected and then detected (e.g. butyltin derivatives) in the human body and studied by epidemiologists for a long time (Kirk, 2010).

the term was originally invented by Bruce Blumberg, a professor in the Department of Cell and Developmental Biology at the University of California at Irvine. "The word just kind of came to me," he explains. In 2003, he discovered a causal link between increased weight and tributyltin, a wood preservative applied to ship keels that remains in the ocean. While his research group was studying how certain endocrine disruptors, including tributyltin, can cause sex reversion in fish, they discovered that the chemical activated a hormone receptor called PPAR gamma, which is the master regulator of fat cell development. It regulates the fate of stromatolite multipotent stem cells to predispose them to produce fat instead of bone tissue. This study was published in 2006.

"In mice, we found that exposure to tributyltin before birth predisposes these cells to become fat cells. Despite all our interventions to make them bone cells, they turned into fat cells," explains Bruce Blumberg. Although we can't verify the results of this finding in humans for safety reasons, we know that activation of PPAR gamma by the diabetes drugs Actos and Avandia causes weight gain in humans."

According to the current state of knowledge, the number of fat

cells in a person is programmed in the early stages of life. After that, the body will vigorously defend that number. To date, tributyltin is the only valid explanation for the causal link between increased weight and an endocrine disruptor. "However, we know of other chemicals that can produce fat cells, but we don't yet know how they work. Researchers are actively pursuing work in this area," says Bruce Blumberg.

The best explanation for a causal link between low-dose prenatal exposure to endocrine disruptors and the development of obesity is found in animal research. A growing body of research shows that there is a significant response to human exposure to certain chemicals and weight gain. In addition to tributyltin, here are the chemicals that scientists are concerned about.

Obesogens

There are currently twenty chemicals known to cause us to gain weight. They include:

Bisphenol A (BPA)

Bisphenol A (BPA) and phthalate we ingest from polycarbonate plastic and epoxy resin used in the manufacture of plastic food containers and the inner lining of cans and beverage bottles. Many countries have banned the use of BPA in plastic baby bottles because of concerns that exposure to BPA could affect newborns and small children. Exposure to levels of BPA in packaged foods such as bottled water, canned goods and baby food has subsequently been shown to be safe (Legeay, 2017).

Even though the chemical life span of BPA is relatively short, a lot of research is being done on it because we are exposed to it on a constant basis. Two Japanese studies published in 2002 and 2007 showed that BPA not only causes the conversion of cells into fat cells but also increases the amount of fat stored in these cells in mice.

In addition, according to a 2010 study published in *Biotechnology Letters*, it is believed that BPA and benzyl butyl phthalate, used in the manufacture of vinyl products to increase softness such as in children's toys, may cause obesity, as does tributyltin, by activating PPAR gamma receptors and producing more fat cells. According to Health Canada, touching or licking these toys does not pose a health risk; however, prolonged contact with the mouth, such as sucking on an object, can be dangerous for a young child, depending on the amount of phthalate released from the product. In January 2011, Health Canada issued new regulations limiting the amount of phthalate in products or toys intended for children.

There is growing evidence that phthalate can influence metabolism. A 2008 study published in *Toxicology* looked at fetal exposure in rats to certain types of phthalate: diisobutyl phthalate, used in plastics and nail polish; butyl paraoxybenzoate, an antifungal agent in some cosmetics that is absorbed through the skin; and perfluorinated octanoate, which comes from sources as varied as industrial waste and stain-resistant carpeting. These compounds have been found to alter the levels of insulin and leptin, which play a role in metabolic programming.

Earlier this year, a human study published in *Environmental Health Perspectives* showed that higher levels of phthalate and BPA in the blood may be associated with poor functioning of the thyroid gland that controls metabolism.

Perfluorooctane Acid (PFOA)

This affects the thyroid gland and eventually our metabolism. It is found on non-stick frying pans, inside packages of microwave popcorn, and many other microwave ready meals (Martínez-Esquivel, 2022).

Pesticides

The main culprit in this case is a pesticide called atrazine, commonly found in tap water, which slows down thyroid metabolism (Martínez-Esquivel, 2022).

Nicotine

As if you needed another reason to quit smoking! Nicotine has been singled out for promoting obesity later in life. Pregnant mothers who smoke not only increase their risk of premature delivery, but also predispose their child to obesity while growing (Schneider, 2013).

Monosodium glutamate (MSG)

MSG, a common additive in processed foods, is a known obesogen.

High fructose corn syrup is a potent obesogen, making the liver insulin resistant and affecting the hormone leptin, which increases hunger (Bautista, 2019).

Some pharmaceuticals, including the diabetes drug Avandia and SSRI drugs (commonly used to treat depression and anxiety) are also obesogenic. Even so, don't stop taking these medications without first discussing it with your doctor.

How to avoid obesogens

Follow the tips below to limit your exposure to harmful obesogens.

- Buy eco-friendly pans that are non-stick and PFOA-free. If you use a Teflon pan, avoid using a metal spatula or scrubber to clean it. If it is scratched, do not use it again as this will release the chemicals in it.
- Avoid microwave popcorn and replace it with air-popped

popcorn.

- Drink reverse osmosis or filtered water to reduce pesticide exposure.
- Avoid air fresheners and scented candles unless they are naturally scented with essential oils. Try a diffuser with natural oils instead.
- Open your windows as much as possible to air out the house.
- Store your food and drinks in glass or stainless steel containers whenever possible. Look for BPA-free plastics.
- Never heat plastics in the microwave because the heat releases the BPA into the food.
- Buy canned foods that say “BPA-free” on the label.
- Buy meats from your butcher that are wrapped in brown paper instead of plastic.

Obesogens detox

The two simplest actions are to reduce our daily exposure and improve the body’s detoxification and elimination systems while seeking to lose body fat and maintain a healthy body fat percentage between 9 and 14% for a man and 12 to 20% for a woman all year round.

Our advice to eliminate toxins: move more and sweat

For example, it is fundamental to move more during the day and to do sports even if you don’t like it, because it allows us to evacuate chemical molecules from our body and also to avoid their storage in fat. Indeed and as we have seen above, the chemicals are fat-soluble, which means that they are easily stored in our fat reserves.

During a rapid weight loss as is often the case in the spring when people eat better it is common that an excessive release of chemical molecules is released into the bloodstream along with the release of fat reserves, affecting thyroid function,

appetite regulation and hormonal function! This is the reason why we need to move more, sweat, do sports. The whole of our metabolism works and evacuates more quickly the toxic molecules.

Our dietary advice to avoid endocrine disruptors:

- Wash fruits and vegetables before preparation/consumption.
- Store your leftovers in glass containers
- Never reheat in a microwave in plastic packaging.
- Eat vegetables and fruits in season (also for reasons of food intolerance),
- Limit imported fruits and vegetables, especially those from Mexico, Spain or Eastern European countries where legislation on the use of pesticides is much more permissive and laxer at the moment.

Obesogens Detoxification Systems And Nutripure Supplements

The majority of detoxification processes take place in the liver. Our liver is a filter of our blood. So everything that circulates in the blood either after digestion or during a release (stress, sport etc) passes through the liver. In terms of detoxification the liver has 2 phases.

Phase 1 a large family of enzymes called cytochrome P450 that oxidize, reduce and hydrolyze molecules. These actions aim to remove or add an electron to the toxic molecules and thus make them more soluble in water thus facilitating their elimination by the kidneys or perspiration. These reactions require many vitamins of the B group, the presence of branched amino acids (BCAA) which will be used to manufacture glutamine, vitamin C and Coenzyme Q10.

Phase 2: After the operations of phase 1 the toxic

intermediate molecules are more oxidizing than their original version making the elimination phase dangerous for the body. Indeed during its elimination, the toxic molecule can create damage on its way. This is the reason for the existence of phase 2 which is fundamental.

Thus, according to the nature of the toxic molecule to be eliminated, the liver can send the molecule for elimination or make it pass in phase 2. During this phase 2, the liver associates a molecule with the toxic molecule. We speak then of reaction of conjugation.

Which detox food supplements to use?

This phase requires a number of amino acids (glycine, taurine, glutamine, cysteine) as well as vitamins of the B group, selenium and magnesium, omega 3 and other molecules. In fact there are 8 different detoxification processes. The most important are sulfation, methylation, glucuronidation, acetylation and conjugation with glutathione, depending on the association of an amino acid with cofactors (vitamins, zinc, magnesium, selenium).

It is easy to understand the importance of a balanced diet and a daily intake of good quality proteins in the right quantity and, depending on the needs and circumstances, the use of certain food supplements.

Indeed, the intense use of detoxification functions linked to the quantity of toxic molecules and endocrine disruptors that we absorb, often leads to deficiencies in cofactors (B vitamins, minerals..). Consequently, the capacity to eliminate toxic molecules and thus an increased risk of accumulation of these molecules, increases in relation to the deficiencies in cofactor. In the same way, an insufficient protein and thus amino acid intake increases this risk.

Things are getting a little more complicated since we know

today that not everyone has the same detoxification capacities genetically. Thus, in some people, these capacities are greater despite a bad diet and a bad lifestyle.

For others it is totally the opposite and the slightest deficiencies in vitamins, magnesium, and other micronutrients or amino acids (proteins) will have much more rapid and important repercussions in their capacity of detoxification and thus in their health.

What food supplements to eliminate toxins

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In the light of these different explanations our food supplements can help you to support the detoxification processes of the body in addition to your diet and physical activity necessary to evacuate the toxic molecules from the body:

- 2 capsules of Multivitamins Provides vitamins of the B group, C, selenium, magnesium and Q10 (for the functioning of mitochondria)
- 2 capsules of Magnesium+B6+Taurine Covers the recommended intake in addition to the multivitamin.
- 3 capsules of Omega 3 Improve the functioning of the liver.
- 30 to 60g/day of Whey Isolate Provides protein rich in BCAA and cysteine
- 10gr of Glycine with the evening meal: direct contribution of this rare amino acid in the diet.
- BCAA + GLUTAMINE during the training: facilitates the maintenance of a functioning of the liver post effort and improves the muscular recovery and the intestinal functioning.

The richness of micronutrients in our diet, as well as the good health of our gut and microbiota, are extremely important factors for the enzymatic functioning of our liver and

ultimately for our ability to eliminate our waste.

Some fruits, vegetables have powerful actions in phases 1 and 2 of detoxification of your liver while having an important action at the intestinal level: this is the case of the cruciferous family (broccoli, cabbage, cauliflower and their lacto-fermented version or sprouted seeds), onions and garlic, raspberries, blueberries, rosemary, turmeric, ginger or cloves, green tea ...

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