

In these cases medical intervention is needed via stomach pumping, blood transfusion, or dialysis.

Claim 3: The product will help “neutralise nasty free-radical”.

Detox tonics and supplements often claim to contain high level of antioxidants to help neutralise free-radicals in your body.

Free-radicals are made in the body and can cause cell and DNA damage, but they also play an important role in our immune system protecting against bacteria and viruses.

The body makes its own antioxidants using the food in our normal diet. Additional antioxidants are removed by the kidney.

Where can I find out more?

To find out more about the evidence behind detox products visit www.senseaboutscience.org/detox.

For more information about chemicals, peer review, or Voice of Young Science please visit www.senseaboutscience.org.

To speak to a scientist contact Sense About Science on 0207 478 4380.

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Things to know about detox products



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1. Shampoos, cleansers and moisturisers

These products bind to substances e.g. make-up on the skin's surface, but will come off when you wash. They can't help your body remove excess substances and are no better than other shampoos/cleansers/moisturizers and may be more expensive.

2. Detox patches

Putting a detox patch on your skin may make the covered area sweat more. While very, very small levels of chemicals may be excreted in the sweat, it won't have any discernable effect on the amount of chemicals in your body.

3. Detox tonics/supplements

Detox tonics can't improve your liver or kidney function. Some of the herbs in them may be metabolized more quickly e.g. St John's Wort, but this is because your body recognizes them as a poison and attacks them.

If you have too high a dose some of these supplements can cause illness and even death. There is also a risk that they affect how other substances are processed e.g. the contraceptive pill or other medicines so they don't work as effectively.

4. Detox diets

Detox diets are often recommended after periods of excess. The best diet you can have at anytime is a normal, balanced diet.

Debunking detox

The Anti-Detox Promise
Your body is capable of removing most potentially harmful chemicals you will encounter in your daily life.

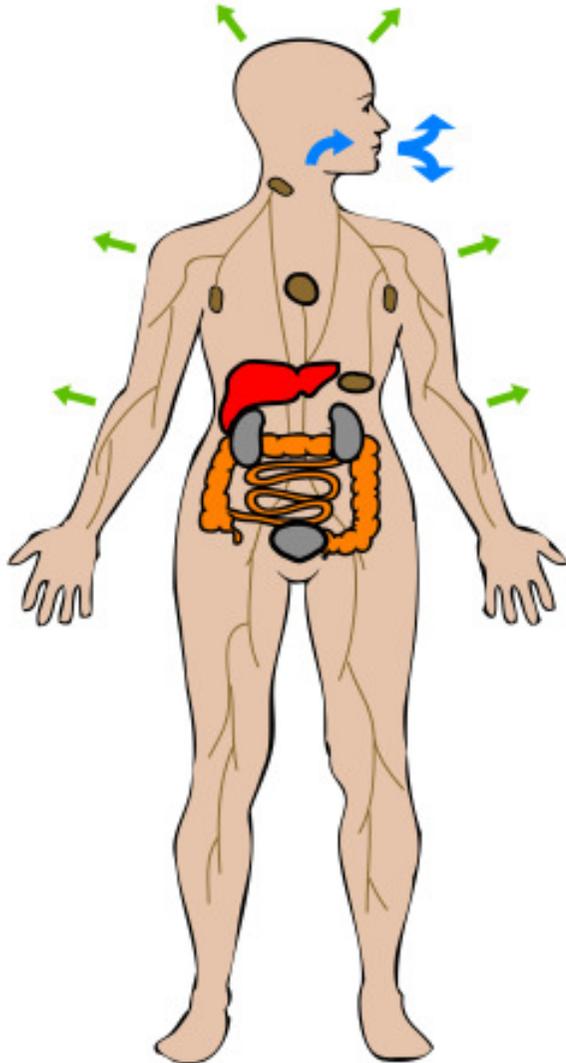
The multi million pound detox industry sells products with little evidence to support their use. These products trade on claims about the body which are often wrong and can be dangerous.

We at Voice of Young Science think it's time to challenge the detox myth and bring you the Anti-Detox Promise.

This leaflet was compiled by VoYS, a network of early career researchers whose mission is to stand up for science in public www.senseaboutscience.org/voys

Why is the concept of detox wrong?

Detox products claim to help you counteract a busy lifestyle by removing 'toxins' that have built up in your body. The human body has evolved to get rid of unnecessary substances through your liver, kidneys, and colon. It isn't possible to improve their function without medical assistance.



Your skin is a protective barrier, which very few chemicals can penetrate. Detox products applied to your skin can't get into the body and will have no effect on your internal systems.

Your liver contains enzymes which convert toxic substances into less harmful ones. These are then dissolved in water and removed in your urine. Unless damaged, your liver is able to cope with everyday life. For example it will clear an almost lethal dose of alcohol in 36 hours (we don't recommend trying this).

Your gut is a hostile environment and prevents many harmful bacteria from entering the body. The colon is responsible for ejecting unwanted solid matter from the body. Products that claim to cleanse the colon don't help this process and may harm its protective membrane.

Your kidneys act as a sieve; any essential chemicals are reabsorbed and any unwanted chemicals are naturally excreted in your urine within a few hours to prevent them building up in your body.

The lymphatic system is a network of tubes in the body returning fluid (lymph) and blood cells that have leaked into your tissues back to the veins. Bacteria and viruses are filtered from the lymph by the lymph nodes. Another lymph organ, the spleen, filters bacteria and viruses from the blood. The system circulates continuously. It isn't possible to 'stimulate it' as detox products claim.

For maximum effectiveness after a period of indulgence, just follow three simple steps:

- 1. Have a glass of water to help you rehydrate.**
- 2. Eat a balanced diet.**
- 3. Get a good night's sleep.**



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Frequently made claims by detox products

Claim 1: Toxins have built up in the body and need to be flushed/cleansed from it

The terms 'toxic' or 'toxins' are used to imply that a chemical is causing you harm. In reality all chemicals can be toxic and it is the dose that is important e.g. one 400µg Vitamin A tablet may be beneficial but taking 20 of these at once could damage your liver.

Most chemicals do not accumulate in the body – they are removed by the liver and kidney. Many of the detox products which claim to flush the body of chemicals contain diuretics, which increase the amount you urinate. This just removes water and some salt. In extreme cases diuretics can cause your salt levels to become depleted causing cramping or in the worst cases a coma. You may achieve temporary weight loss by dehydration (as with a sauna) but this is only in the short term as you will regain weight as you rehydrate.

Claim 2: Your 'eliminary organs' should be detoxified.

'Eliminary organs' as used by detox products refers to the liver, kidney and digestive system. These organs don't need to be cleansed unless you have consumed a dangerous dose of a substance to the extent that they are overwhelmed e.g. a drug overdose. (PTO)