

Detoxification

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Detoxification (detox for short) is the physiological or medicinal removal of toxic substances from a living organism, including, but not limited to, the human body and additionally can refer to the period of withdrawal during which an organism returns to homeostasis after long-term use of an addictive substance. In conventional medicine, detoxification can be achieved by decontamination of poison ingestion and the use of antidotes as well as techniques such as dialysis and (in a very limited number of cases) chelation therapy.

Many alternative medicine practitioners promote various other types of detoxification such as "diet detoxification," but there is little evidence that detox diets have any health benefits. Furthermore, Sense About Science, a UK-based charitable trust determined that most commercial products' "detox" claims lack any supporting evidence and can be considered a "waste of money".

Types of detoxification

Alcohol detoxification

Alcohol detoxification is a process by which a heavy drinker's system is brought back to normal after being used to having alcohol in the body on a continual basis. Serious alcohol addiction results in a decrease in production of GABA, a reuptake inhibitor, because alcohol acts to replace it. Precipitous withdrawal from long-term alcohol addiction without medical management can cause severe health problems and can be fatal. Alcohol detox is not a treatment for alcoholism. After detoxification, other treatments must be undergone to deal with the underlying addiction that caused the alcohol use.

Drug detoxification

Drug detoxification is used to reduce or relieve withdrawal symptoms while helping the addicted individual adjust to living without drug use; drug detoxification is not meant to treat addiction but rather an early step in long-term treatment. Detoxification may be achieved drug free or may use medications as an aspect of treatment. Often drug detoxification and treatment will occur in a community program that lasts several months and takes place in a residential rather than medical center.

Drug detoxification varies depending on the location of treatment, but most detox centers provide treatment to avoid the symptoms of physical withdrawal to alcohol & other drugs. Most also incorporate counseling and therapy during detox to help with the consequences of withdrawal.

Metabolic detoxification

An animal's metabolism can produce harmful substances which it can then make less toxic through

reduction, oxidation (collectively known as redox reactions), conjugation and excretion of molecules from cells or tissues. This is called xenobiotic metabolism. Enzymes that are important in detoxification metabolism include cytochrome P450 oxidases, UDP-glucuronosyltransferases, and glutathione S-transferases. These processes are particularly well-studied as part of drug metabolism, as they influence the pharmacokinetics of a drug in the body.

Alternative medicine

Certain approaches in alternative medicine claim to remove "toxins" from the body through herbal, electrical or electromagnetic treatments (such as the Aqua Detox treatment). These toxins are undefined and have no scientific basis, making the validity of such techniques questionable. There is no evidence for toxic accumulation in these cases, as the liver and kidneys automatically detoxify and excrete many toxic materials including metabolic wastes. Under this theory if toxins are too rapidly released without being safely eliminated (such as burning fat that stores toxins) they can damage the body and cause malaise. Therapies include contrast showers, detoxification foot pads, oil pulling, Gerson therapy, snake-stones, body cleansing, Scientology's Purification Rundown, water fasting, and metabolic therapy.