

The Necessity for Detoxification Therapy

A Literature Review

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ABSTRACT

Objective: To do a broad search of literature of find proof that there is a rationale for implementing detoxification into the daily lives of the common population.

Data Collection: A computer search of literature was performed on PubMed, Ebsco, and various WEB search engines as well as a manual search of reference texts.

Results: The evidence shows mainstream detox therapies can be safe enough to try with professional help with no proven guarantees.

Conclusion: Although there is limited information on specific diseases caused by toxins building up in the body, there seems to be enough empirical evidence that many people could benefit from some type of detoxification. The proponents say that by ridding the body of toxins diseases can be cured, without proof of clinical trial on specific diseases. The opponents of detoxification appear are making claims about safety and efficacy, also without proof of clinical trails.

INTRODUCTION

Detoxification is an ongoing process of neutralizing or eliminating toxins that our bodies perform on a daily basis. In much the same way that our hearts beat nonstop and our lungs breathe consistently, our bodies continuously encounter and dispose of a variety of toxins. A toxin is considered anything that causes an irritation in the body or has a harmful effect on it. Some are cellular waste materials of our own making, toxic by-products of metabolism. Others consist of environmental pollutants, pesticides and poisons ingested into our systems through the air we breathe, the foods we eat and the water we drink (2). It is possible for our bodies to get overwhelmed with toxins and

function improperly. Accumulated toxins in the body account for a myriad of health complaints like headaches, fatigue, weight gain, arthritis, cancer and allergies (8).

The theory of detoxification therapy has been around for thousands of years and has been dated back to ancient Egypt (1). It has become one of the cornerstones for alternative medicine. Detoxification is one of the more widely used treatments and concepts in alternative medicine seeks to rid the body of harmful toxins and therefore enable the body to heal itself and return to health. It is based on the principle that illnesses can be caused by the accumulation of toxic substances in the body (9).

Opponents of detoxification claim there is no need for detoxifying the body because of the lack of clinical trials clearly identifying specific toxins building up in the body. Another reason for opposition are safety issues because of possible dangers that could arise when programs are done without proper supervision (6).

DISCUSSION

Proponents

Detoxification therapies come in a number of forms from self-directed fasting to intravenously-administered drugs. Here is a preview of some of the more common therapies:

-Fasting is the oldest and most common type of detoxification. It is also the least expensive and cheapest program to try. Fasting is generally done for a limited, specific number of days. All fasting regimens permit water to be consumed, for it is essential to prevent dehydration. Others allow juice as well, although purists consider this to be a food. The main rationale for fasting is that since far fewer toxins are taken in, the body is able to rid itself of those already present (3).

-Detoxification diets boast a strong immune system is founded on a plant-based diet, and that is the best defense against environmental toxins. As opposed to fasting, detoxification diets can be undertaken for extended periods of time. Although there are many different types of detox diets, most are based on eating organic rather than processed foods, minimizing meats and maximizing fruits and vegetables, and drinking filtered water. Advocates of Traditional Chinese Medicine also hold that certain foods, like radishes, turnips, soybeans, and vinegar, can actually counteract or neutralize toxins (3).

-The use of antioxidants as vitamin therapy is generally recommended as an ongoing, daily aspect of people's lives, especially if they are in a compromised, or particularly unhealthy environment. Some feel that certain vitamins, such as vitamin C and E, are antioxidant nutrients and are able to neutralize certain toxins called free radicals. A free radical is a particular type of atom or group of atoms that can damage cells and impair a person's immunity. While our bodies contain natural enzymes that work against these free radicals, some argue that vitamin C and E as well as the beta-carotene in vitamin A function as free-radical scavengers, thus neutralizing the toxins that harm our immune systems (3, 7).

-Colon therapy is a way of cleansing the large intestine with purified water, herbs, or other cleansing agents, is sometimes combined with fasting to flush out toxins from the body. A step beyond a simple enema, this procedure is performed by a trained therapist who introduces from 5-25 gallons of water, or other cleaning agents, directly into the rectum using a tube and nozzle. This technique is supposed to remove toxic stool that

remains in the folds of the intestine. If performed improperly or too frequently, it can be dangerous (4).

-Chelation therapy is involved in using a chemical agent that is recognized as being able to effectively treat heavy metal poisoning (like lead or mercury). The synthetic drug EDTA is administered intravenously or orally and binds to heavy metals in the blood. The toxic metals are then flushed out naturally through the kidneys. Doctors also use natural chelating agents like zinc, garlic, vitamin C, and amino acids like cysteine. Oral chelation, while less expensive and more convenient, has been reported to work considerably slower than the intravenous method. Chelation therapy has also been used to treat arteriosclerosis. It has been theorized that chelation removes calcium which is part of the plaque that coats arteries. While some patients have remarkable results with this treatment, no reliable scientific data exists to support these claims. Research is also needed to confirm reports of success with treating heart and cancer patients with chelation therapy.

-Hyperthermia is another therapy that is also known as heat stress detoxification, this technique essentially uses a sauna or a steam bath to sweat out toxic chemicals from fat cells (3).

Practitioners may be conventionally trained medical doctors with specialties in environmental medicine or interests in alternative treatment. The majority of detoxification therapists are alternative practitioners, such as naturopaths, homeopaths, ayurvedic doctors, or traditional Chinese doctors. Most of these specialists use highly sophisticated diagnostic tests for toxic conditions.

Organs and Toxins

Liver function is studied closely with blood and urine tests because the liver is the principle organ in the body responsible for removing toxic compounds. When the liver detoxifies a substance from the body, it does so in two phases. Tests are performed that indicate where problems may be occurring in these phases. Which may point specific types of toxins. Blood and urine tests can also be completed that screen for toxic chemicals such as PCBs (environmental poisons), formaldehyde (a common preservative), pesticides, and heavy metals. Another useful blood test is a test for zinc deficiency, which may reveal heavy metal poisoning. Hair analysis is used to test for heavy metal levels in the body. Blood and urine tests check immune system activity, and hormones levels can also indicate specific toxic compounds. A 24-hour urine analysis, where samples are taken around the clock, allows therapists to determine the efficiency of the digestive tract and kidneys. Together with stool analysis, these tests may indicate toxic bowel syndrome and digestive system disorders. Certain blood and urine tests may point nutritional deficiencies and proper recovery diets can be designed for patients as well. Detoxification therapists may also perform extensive allergy and hypersensitivity tests. Intradermal and sublingual allergy tests are used to determine a patient's sensitivity to a variety of common substances, including formaldehyde, auto exhaust, perfume, tobacco, chlorine, jet fuel and other chemicals. Food allergies require additional tests because these allergies often cause reactions that are delayed for several days after the food is eaten. The RAST (radioallergosorbent test) is a blood test that determines the level of antibodies in the blood after specific foods are eaten. The cytotoxic test is a blood test that determines if certain substances affect blood cells, including food and

chemicals. The ELISA-ACT (enzyme-linked immunoserological assay activated cell test) is considered to be one of the most accurate tests for allergies and hypersensitivity to foods, chemicals, and other agents. Other tests for food allergies are the elimination and rotation diets.

Since 1976 the Environmental Protection Agency has been running the National Human Adipose Tissue Survey. The survey is an annual program to collect and chemically analyze a nationwide sample of adipose tissue specimens for the presence of toxic compounds. The objective of the program is to detect and quantify the prevalence of toxic compounds in the general population. The specimens are collected from autopsied cadavers and elective surgeries from all of the country. In 1982 they expanded beyond their normal list to look for the presence of 54 different environmental chemical toxins. Five of the chemicals: OCCD (a dioxin) and four solvents: styrene, 1,4-Dichlorobenzene, xylene, and ethylphenol were found in 100% of all samples. Another nine chemicals found in between 91-98% of all samples, including such toxins as: benzene, toluene, and chlorobenzene (10).

During a Michigan trial, a population of PBB exposed victims had fatty tissue biopsy with 97% having detectable levels and widespread health effects. They had no reduction after six years. The participants were then put on a strict detoxification program and after four months had an average reduction of 42% of the chemicals studied (10).

Post program improvement was also made by a Florida cardiologist who conducted regular tests on an individual exposed to Agnet Orang(dioxin) following his completion of the Hubbard regimen. He found his patients's tissue level of DDE had

been reduced by 29% immediately after treatment. At the end of 250 days it had been reduced by 97% (11).

Testing for chemical residues on food has routinely been done throughout the world, which consistently find multiple contaminants. The most comprehensive for the United States is the ongoing FDA Total Diet Survey. While the Total Diet Survey looked for the presence of many different chemicals, by looking at their findings of chlorinated pesticide we see alarming information. DDE was found 100% of the samples of raisins, spinach, chili con carne, and beef. It was found in 93% of the samples of American processed cheese, hamburger, hot-dogs, bologna, collards, chicken, turkey and ice cream sandwiches. It was found in 87% of the samples of lamb chops, salami, canned spinach, meatloaf and butter (12). This is just a broad overview of potential toxins found in everyday living situations.

Opponents

Chelation therapy has been criticized by the medical community because of the large out of pocket expense and potential dangers to the patients. Even if a chelating substance could impact on arterial disease, there is good reason to doubt that EDTA would be an effective agent. Of all the synthetic chelating agents that have been used to bind metals in the body, EDTA is probably the least effective. Because it is water-soluble, it cannot penetrate the lipid-rich cell membranes. Because it is nonspecific, it binds the other divalent and trivalent metal ions in a mixture before it binds calcium. It is rapidly eliminated from the body, carries all bound trace metals with it, and can deplete nutritionally important trace metals (16).

Plaque is an integral part of the artery wall and not a deposit on its surface.

Calcium enters arterial plaque in the late stages of its enlargement. Since EDTA cannot pass through the artery cell membranes it cannot chelate the calcium there. Chelation proponents have never presented evidence that chelation therapy causes softening of hardened arteries, removes calcium from arterial plaque or causes the plaque structure to disintegrate (16).

Ionic iron has two electrons in its outermost shell . This configuration gives ionic iron the distinct characteristic of being able to accept three pairs of electrons from other ions. As long as one pair of these electrons is left unbound, ionic iron remains highly reactive. In contrast, when ionic iron is chelated with EDTA, only two of the three pairs of available electrons are bound. The binding of just two of the three pairs of electrons allows the iron to exist in physiological solutions (at pH 7) in a soluble yet stable form.

More importantly, since the EDTA only forms bonds with two of the three pairs of electrons, it allows the remaining pair to be fully involved in oxidation reactions that generate free radicals. Therefore, if EDTA chelates ionic iron, it does not stop it from generating free radicals. Rather, EDTA chelation keeps iron dissolved in the blood stream for extended periods and magnifies the extent to which it catalyzes production of tissue-damaging free radicals.

Under normal circumstances most of the iron in the body is bound to proteins and is not able to generate free radicals. As a result, the few free radicals that are generated by ionic iron are fully dealt with by existing antioxidant enzyme systems. However, when something causes the release of iron from these protein complexes, the amount of ionic iron is markedly increased and the potential for free-radical production is exacerbated.

High doses of vitamin C increase the amount of ionic iron in the circulation by promoting its release from transferrin (the iron-transport protein) and from ferritin (the iron-storage protein), and by increasing the absorption of dietary iron from the gut. Since EDTA infusion solutions include megadoses of vitamin C, the possibility exists that chelation therapy will increase the formation of free radicals that cause tissue damage. Colonic irrigation, which also can be expensive, has considerable potential for harm. The process can be very uncomfortable, since the presence of the tube can induce severe cramps and pain. If the equipment is not adequately sterilized between treatments, disease germs from one person's large intestine can be transmitted to others. Several outbreaks of serious infections have been reported, including one in which contaminated equipment caused amebiasis in 36 people, 6 of whom died following bowel perforation (18). Cases of heart failure (from excessive fluid absorption into the bloodstream) and electrolyte imbalance have also been reported (15). Yet no license or training is required to operate a colonic-irrigation device. In 1985, a California judge ruled that colonic irrigation is an invasive medical procedure that may not be performed by chiropractors and the California Health Department's Infectious Disease Branch stated: "The practice of colonic irrigation by chiropractors, physical therapists, or physicians should cease. Colonic irrigation can do no good, only harm." The National Council Against Health Fraud agrees (18). The FDA classifies colonic irrigation systems as Class III devices that cannot be legally marketed except for medically indicated colon cleansing (such as before a radiologic endoscopic examination). No system has been approved for "routine" colon cleansing to promote the general well being of a patient. Although laxative ads warn against "irregularity," constipation should be defined not by the frequency of movements

but by the hardness of the stool. Ordinary constipation usually can be remedied by increasing the fiber content of the diet, drinking adequate amounts of water, and engaging in regular exercise. If the bowel is basically normal, dietary fiber increases the bulk of the stool, softens it, and speeds transit time. Defecating soon after the urge is felt also can be helpful because if urges are ignored, the rectum may eventually stop signaling when defecation is needed. Stimulant laxatives (such as cascara or castor oil) can damage the nerve cells in the colon wall, decreasing the force of contractions and increasing the tendency toward constipation. Thus, people who take strong laxatives whenever they "miss a movement" may wind up unable to move their bowels without them. Frequent enemas can also lead to dependence (19). A doctor should be consulted if constipation persists or represents a significant change in bowel pattern. The most drastic way to reduce caloric intake is to stop eating completely. After a few days, body fats and proteins are metabolized to produce energy. The fats are broken down into fatty acids that can be used as fuel. In the absence of adequate carbohydrate, the fatty acids may be incompletely metabolized, yielding ketone bodies and thus ketosis. Prolonged fasting is unsafe, because it causes the body to begin to digest proteins from its muscles, heart, and other internal organs.

The danger of these practices depends upon how much they are used and whether they are substituted for necessary medical care. Whereas a 1-day fast is likely to be harmless (though useless), prolonged fasting can be fatal. "Cleansing" is unlikely to be physically harmful, but the products involved can be expensive.

CONCLUSIONS

Proponents of detoxification therapies have found that toxins do exist in the body and there can be a toxic overload. However, there is such a large number of proposed health complaints from these toxins, as opposed to definable illnesses that no specific cures have been given for specific diseases. Most of the research found describes an overall state of well being that is difficult to put into calculations and trials. Opponents are not without fault in their criticisms, most of them are based on extreme cases of failure. Their claims are mostly substantiated allopathic thinking and detoxification blunders. They say that the human body can rid itself of toxins, no residual fecal matter can remain in the colon, and chelation therapy has the potential to create the opposite of the desired effect.

Detoxification therapies do have potential for having many health benefits, but much more valid research is necessary. Randomized, double blind trials need to be done to prove toxic buildup is associated specific diseases. This proposed research will be difficult to come by because there is no money in it. The holistic community does not have enough money to fund such trials, and their efforts would only be for acceptance because they already know their treatments work for their patients. The allopathic community is not likely to fund such large scale research because there is potential for taking money out of their pockets.

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