Detoxification Diets: Three Pilot Studies

by Sarah Axtell, ND; Alicia Birr, ND; Chip Halvorson, ND; Cheri King, ND; Cara Orscheln, ND; Morgan Schafer, MS; Robin Sielaff, MS, ND; and Heather Zwickey, PhD

Abstract

Background: Detoxification diets (detox) have become popular in recent years, with health benefit claims of weight loss and improved energy. Conventionally, *detox* refers to removing toxins from the body, as in the cases of drug and alcohol abuse. In the alternative health field, however, detoxes aim to improve sleep, energy, and weight management. Research is needed to understand the mechanisms, safety, indications, and contraindications of detox.

Pilot Study Objective: Three pilot observational studies were completed to examine the symptoms and side effects of detox diets.

Methods/Design/Setting/Participants: The first pilot study surveyed 390 participants at the National College of Natural Medicine (NCNM). Participants reported the type, duration, and motivation for up to five detoxes. In the second study, 15 adults, who had completed various detoxes (3–40 days in length), were interviewed regarding their motivations, symptoms, and side effects. In a third study, 11 NCNM students were asked to report their symptoms and side effects of a 7-day detox. For all three studies, there was 100% completion among the participants. Adverse events were considered as part of the results of the study.

Intervention: All three pilot studies were observational and researchers did not implement an intervention. Two of the surveys were administered retrospectively, and one was administered prospectively.

Results: In all 3 studies we observed tremendous variability in the motivation and experiences of people who undergo detox diets, including protocols followed, length implemented, as well as symptoms, side effects, and perceived results.

Conclusions: People who undergo detoxes experience both positive and negative side effects. Further investigation of safety and symptoms induced by detoxes is warranted. Efforts should be made to examine physiological effects of detox and which markers can track biochemical changes. Results of further investigations will contribute to clinical use of detoxes.

Introduction

All cells produce waste that must then be eliminated. Toxins, either endogenous or exogenous, are sent to the liver, where they are filtered and processed by means of detoxification. These processed wastes are then sent to the primary emunctories for elimination: the digestive tract eliminates solid wastes; the kidneys eliminate liquid waste; the lungs eliminate gaseous waste; and the skin eliminates waste in the form of sweat.[1]

Many chemical toxins are removed by the liver, which detoxifies via oxidation, reduction and hydrolysis (phase 1) and conjugation (phase 2) of functional groups of toxins. Phase 1, also known as the cytochrome P450 monooxygenase system, involves a group of isoenzymes, most commonly the cytochrome P450 enzymes. Phase 1 is the beginning stage of detoxification. In most cases, the chemical compound must go to phase 2 conjugation before it can be removed from the body. The primary function of phase 2 is to chemically modify functional groups to make compounds more polar and less toxic. The hallmark of phase 2 is the conjugation of an endogenous substrate to the new functional group created in phase 1.

Defects in (or inhibitors of) the phase 1 and phase 2 detoxification pathways lead to clinical symptoms including fatigue, PMS, headaches, gastrointestinal distress, acne, weight gain, and poor memory. When liver detox mechanisms are overwhelmed or not working properly, toxins accumulate. Exogenous methods of detoxification can aid the process. This is where detoxification diets have a possible role.

Diets involve modifying nutrient intake and can be selected for a variety of purposes. Most often diets are prescribed for weight loss. However, diets may also be recommended to lower cholesterol or affect other body systems.[2] Diets that are designed to remove environmental toxins from different organs are gaining popularity. These detoxification diets (hereafter referred to as detox) vary in scope and method, but share the common purpose of reducing intake and increasing elimination of toxins, thus restoring health.

Historically, naturopathic physicians and other alternative practitioners have used detoxes to remove environmental toxins, identify food intolerances, address inflammation, and prevent chronic, degenerative conditions.[3] Naturopathic physicians design detoxes to stimulate different organ systems, including the body's natural emunctories which naturally carry waste out of the body.[1]

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