



## Role of adequate water intake in purification of body

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### Abstract

Water has numerous roles in the human body. It acts as a building material, as a solvent, reaction medium and reactant, as a carrier for nutrients and waste products, in thermoregulation and as a lubricant and shock absorber. Water is the major constituent of the human body. The body cannot produce enough water by metabolism or obtain enough water by food ingestion to fulfill its needs. As a consequence, we need to pay attention to what we drink throughout the day to ensure that we are meeting our daily water needs, as not doing so may have negative health effects. Water is main constituent of cells, tissues organs and is vital for life. Despite its well-established importance, water is often forgotten in dietary recommendations, and the importance of adequate hydration is not mentioned. As a consequence health professionals and nutritionists are sometimes confused and question the necessity of drinking water regularly. The purpose of this paper is to review the role of water in removing toxins which are accumulated due exposure of polluted environment.

*Keywords: Toxin, inflamataion, accumulation, hydration, sedentary adults.*

### Introduction

Water is essential for cellular homeostasis because it transports nutrients to cells and removes wastes from cells. It is the medium in which all transport systems function, allowing exchanges between cells, interstitial fluid and capillaries. Water maintains the vascular volume and allows blood circulation, which is essential for function of all organs and tissues of the body. Thus, the cardiovascular and respiratory systems, the digestive tract, the reproductive system, the kidney and liver, the brain and the peripheral nervous system, all depend on adequate hydration to function effectively.

### Importance of excretion

The elimination of toxins allows the body the opportunity to rid itself of waste and unnecessary harmful compounds. If toxins are left in the body they begin to accumulate and overtime disrupt the body's natural physiological functioning and lead to disease. Toxin accumulation can also lead to the generation of free radicals. Free radicals are naturally occurring in the body. Yet with the

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addition of toxins there is more generated which overtime can lead to harm. Free radicals are a highly reactive, extremely unstable chemical compound that causes tissue destruction by attacking protein, DNA and cell membranes. Excessive free radical damage leads to numerous degenerative conditions, advance aging and contribute to the development of cancer. Toxin build-up leads to inflammation in the body. This is an attempt from the body to rid itself of the unwanted toxin. Although inflammation can be protective for the body, chronic inflammation is quite destructive and leads to various degenerative conditions. Health is maintained by ingestion and exposure to what is required for health and proper removal of what is not. If removal of toxins is impaired there is an increased risk for development of chronic disease. As removal of toxins is impaired body's toxic burden increases (Batmanghelidj, 2013). The higher the burden the more likely chronic disease is to set in. Toxins are typically acidic. A buildup of acid in the body can contribute to chronic disease. The organ systems of the body are designed to handle some naturally occurring metabolic and environmental toxins. The body however, is not prepared to handle the excess toxins



that are present in today's world. The need to support and encourage removal of toxins on an ongoing basis is necessary due to the increased number of toxins that each person is now exposed to in food, water, personal care products and our environment. For example, chronic exposure to airborne toxins can overburden the lungs and impede breathing causing increased mucus production from the nasal cavity. Chronic nasal discharge over time disrupts the ability of the nose to capture and eliminate inhaled toxins on an ongoing basis, thus decreasing the integrity and protective functioning of the mucous membranes.

### **Kidney Function and Water Consumption**

The kidney is the key organ of water homeostasis. It is able to retain or eliminate water, to regulate total body water and its concentration. However, renal capacity to manage excess fluid exceeds its ability to save water during dehydration. Thus, becoming slightly dehydrated is not uncommon. The human kidney plays a critical role in water homeostasis. Every day, plasma ultra filtration produces 150litre of filtrate (i.e., 100 mL/min) via approximately 2 million nephrons. This primary urine is almost entirely (i.e., 90%) reabsorbed in parallel to electrolytes. Reabsorption of the remaining volume depends on the presence or absence of an anti diuretic hormone, arginine vasopressin (AVP). Usually, only 1% of the initial amount of filtrate is excreted, leading to a urine volume of 1.5 L/d. In humans, because usual fluid intake is above the requirement for sufficient hydration, the kidney mostly excretes excess water. However, in situations if fluid intake becomes insufficient, the kidney is able to save a noticeable amount of water by concentrating the urine.

### **Water inputs**

Water inputs are composed of three major sources, the water we drink, the water we eat and the water we produce. The water we drink is essentially composed of water and other liquids with high water content (85 to 490%). The water we eat come various foods with a wide range of water content (40 to 480%). The water we produce results from the oxidation of macronutrients (endogenous or metabolic water). The contribution of food to total water intake is 20-30%, whereas 70-80% is provide by beverages. This relationship is not

fixed and depends on the type of beverages and on the choice of foods (EFSA, 2008). For an individual at rest under temperate conditions, the volume that might be drunk in a day is on an average 1.5litres. This has to be adapted according to age, gender, climate and physical activity. The water content of food can vary within a wide range, and consequently the amount of water contributed by foods can vary between 500 ml and 1litre a day. Endogenous or metabolic water represents about 250 -350 ml a day in sedentary people. The adequate total water intakes for sedentary adults are on an average between 2 and 2.5litre per day (women and men, respectively) (EFSA, 2008). In conclusion, the total water inputs for sedentary adults are on an average between 2 and 3litre water outputs. The main routes of water loss from the body are kidneys, skin and the respiratory tract and, at a very low level, the digestive system. Over a 24-hr period, a sedentary adult produces 12litre of urine (Kneipp, 2012).

### **Modes of excretion**

Excretion is the process by which waste products of metabolism and other non-useful materials are eliminated from an organism. In vertebrates this is primarily carried out by the lungs, kidneys and skin. This is in contrast with secretion, where the substance may have specific tasks after leaving the cell. Excretion is an essential process in all forms of life. In mammals urine is carried out through the urethra and that is part of the excretory system of toxins are defined as any substance or element that is toxic to the body. The environment today is responsible for normal cellular metabolism exposes the body to toxins.

In order to maintain health, is it imperative that the body be able to handle the toxins and be able to adequately eliminate them. The body possesses primary and secondary routes of elimination which must be working optimally in order to avoid storage of toxins and prevent disease. Some toxins are able to directly excrete through the primary routes of elimination; others must first be transformed by the liver. Through a series of reaction, the liver is able to convert some toxins to a more water soluble form which will aid excretion in the urine, breathe or sweat. Other toxins are combined with bile to a fat soluble form to aid excretion via the bowels. Therefore, the liver plays



a large role in conversion and detoxification of toxin and is a vital organ in the eliminatory process. Some toxins are able to be directly excreted through the primary routes of elimination, others must first be transformed by the liver through a series of reaction. The liver is able to convert some toxins to a more water soluble form which will aid excretion in the urine, breathe or sweat. Other toxins are combined with bile to a fat soluble form to aid excretion via the bowels. Therefore, the liver plays a large role in conversion and detoxification of toxins and is a vital organ in the eliminatory process. The primary routes of elimination all have direct access to the outside of the body. They are a transition point between normal bodily processing and excretion. Ensuring optimal function of all six primary routes is essential to health.

**1. Bowels** -This is a major route of elimination of toxins from the body. As food is ingested, it passes through the digestive tract and is continually broken down and nutrients are absorbed along the way. What the body cannot utilize is then eliminated in the stool. Toxins and waste are eliminated in the stool, thus protecting the body from toxic accumulation.

**2. Bladder** -The main function of the bladder is to store and release urine. The complex urinary system filters blood through the kidneys as a means of maintaining homeostasis and physiological pH within the body. The urinary system is the primary system responsible for excretion of metabolic waste. Uric acid, from nucleic acid metabolism, and nitrogen, from protein breakdown, are the major metabolic by products excreted in the urine.

**3. Skin**-Elimination of toxins from the skin is achieved through sweating. Sweat stimulated by exercise, fever, environment (i.e. summer weather, saunas, steam room etc.) is a way for the body to rid itself of toxins which are stored in adipose or fat tissues.

**4. Breathing**- The lungs are responsible for the elimination of carbon dioxide with every breath. Carbon dioxide is a naturally occurring toxin in the body. Breathe is a major way for the body to maintain homeostasis. PH balance in the body is achieved through breathing and optimal kidney function.

**5. Voice**- The voice is an important way for the body to eliminate emotional toxins. The expression of true emotions and organic feelings through voice

allows the body the opportunity to express and release emotions. The proper release of emotions whether positive or negative is an important part of detoxification elimination for the body.

**6. Menses**- Is a primary route of elimination for women. Monthly, women are awarded an additional Opportunity to detoxify and eliminate toxins from the body. As blood and uterine lining are shed the body eliminate unwanted waste. Dark, heavy painful menstruation is a sign of excess toxins in the system. Secondary routes of elimination are utilized when the primary routes are overburdened with toxins. The body attempts to shed unwanted toxins from the system by utilizing the secondary routes. Optimal functioning of all primary routes and minimal exposure will prevent the body from utilizing the secondary routes of elimination. Secondary routes of elimination include nasal discharge, ear wax, tears, hair, leucorrhoea(excess vaginal secretions), phlegm, mucus or blood in stool, and sneezing (Roger, 2015).

#### **Importance of Water Intake To Eliminate Toxin**

Adequate good quality water intake is integral to optimal health. Quantity water is a necessary component of every bodily function: digestion, absorption, circulation, lubrication, regulation, elimination and detoxification. Adequate water intake allows toxins to be taken away from the cells and transported to the kidneys to be excreted. Quality of the water we drink is also important for proper elimination. By reducing exposure to toxins which are ingested through water one can take the stress off the organs of elimination. Properly filtered or spring water is important to decreased exposure. Having pipes tested by city and replacing lead piping if they do exist is crucial as well. Water helps remove toxins from the body, in particular from the digestive tract. Water suppresses the appetite naturally and helps the body metabolize stored fat. Studies have shown that a decrease water intake will cause fat deposits to increase, while an increase in water intake can actually reduce fat deposits. In some individuals, the thirst mechanism is so weak that it is often mistaken for hunger. One glass of water shut down midnight hunger pangs for almost 100% of the dieters studied in a University of Washington .Drinking plenty of water ensures that the blood will carry plenty of oxygen to all the



cells of your body. This means that all of your they'll be getting plenty of oxygen. Our immune system functions best when your muscles and organs are functioning best. Water allows your kidneys to remove toxins from your body. It allows your cells to take in nutrients, and it also allows them to expel waste products. If you don't drink enough water, toxins will build up, weakening your immune system. By weight, the average human adult male is approximately 65% water. However, there can be considerable variation in body water percentage based on a number of factors like age, health, weight, and gender (Shelton, 2013).

### Conclusion

Toxins are defined as any substance or element that is toxic to the body. The environment today and normal cellular metabolism exposes the body to toxins. In order to maintain health, is it imperative

body's systems will function adequately, because that the body be able to handle the toxins and be able to adequately eliminate them. The body possesses primary and secondary routes of elimination which must be working optimally in order to avoid storage of toxins and Prevent disease. Adequate good quality water intake is integral to optimal health. Quantity water is a necessary component of every bodily function: digestion, absorption, circulation, lubrication, regulation, elimination and detoxification. Adequate water intake allows toxins to be taken away from the cells and transported to the kidneys to be excreted. Quality of the water we drink is also important for proper elimination. By reducing exposure to toxins which are ingested through water one can take the stress off the organs of elimination.

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