

## DRINKING 2 LITERS OF WATER DAILY

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### Abstract

*Water is an essential condition for life. Plants, animals and humans need this vital fluid. People everywhere fear that fresh water sources are fewer and fewer and the number of people grows constantly, and at some point the water resources will be out. Every day, the media presents several messages of public interest, among which "For a healthy lifestyle one should consume 2 liters of liquids daily". This study aimed to clarify the nutritional aspects of drinking 2 liters of water per day. This aspect has been clarified by trying to answer the following questions. What do we mean by liquids? Water? Tea? Juices? Is 2 liters enough? If we drink less, will we be sick? If we drink more, will we be healthier? Nutritionists recommend that we consume liquids so that we are not dehydrated, even if we are not thirsty. Are these pieces of advice scientifically founded or are they just myths? Responding to this question based on scientific data and water needs assessments of the body, it was observed that the water demand is closely correlated with the acid-base balance of the body provided by its own biochemical mechanisms.*

**Key words:** water consumption, hydration assessment, hydration status

### INTRODUCTION

#### 1. Water and the human body

##### 1.1 Functions of water in the human body

Approximately 60% of the human body is water. It performs the following functions in the body:

- It transports nutrients
- It adjusts body temperature
- It ensures a normal digestion
- It improves the cognitive function
- It reduces the oxidative stress induced by physical effort and dehydration
- It regulates the cardiac function (Popkin et al., 2010)
- It ensures a normal kidney function (Meschi et al., 2004)

##### 1.2. Why people consume water

- to reduce the feeling of hunger (in order to lose weight), (Dennis et al., 2010)
  - because they are thirsty
  - to reduce headaches
  - for moisturizing the skin
  - in order not to get dehydrated

- not to become costive (Popkin et al., 2010)

## 2. Daily water requirements

Is it actually necessary to consume at least 2 liters of water a day in order to be healthy, or is this a myth?

Heinz Valtin Professor Emeritus at Dartmouth School of Medicine conducted a study in this regard, the results being published in the American Journal of Physiology in 2002.

The findings of the study were as follows:

We must take into account that everything we eat contains water - fruits, vegetables, meat, bread, cheese, milk etc. The daily water supply comes not only from the water we drink but from everything we ingest daily

*Table 1*

Water content in different food products

Water content	Food products
100.00%	Water
90-99%	Fat free milk, melon, strawberry, watermelon, lettuce, cabbage, celery, spinach, pickles, fruit juice (from boiled fruit)
80-89%	Fruit juice, yogurt, apples, grapes, oranges, carrots, broccoli (boiled), pears, pineapple
70-79%	Bananas, avocados, cow cheese, ricotta cheese, potato (baked), maize(boiled), shrimp
60-69%	Pasta, vegetables, salmon, ice cream, chicken breast
50-59%	Boiled beef , hot-dog, feta cheese, steak fillet (cooked)
40-49%	Pizza
30-39%	Cheddar cheese, pretzels, bread
20-29%	Pepperoni sausages, cakes, biscuits
10-19%	Butter, margarine, raisins
1-9%	Nuts, hazelnuts (dry fried), chocolate chips cookies, biscuits, cereals, pretzels, Taco shells, peanut butter
0.00%	Oils, sugars

Source: Popkin et al., 2010

If people drink water when thirsty, they have a healthy yellow urine and everything is fine. (Contreras and Garibay, 2002).

Dan Negoianu and Stanley Goldfarb reached the same conclusion after a study had been conducted in 2008, a study which was published in the journal of the American Nephrology Society. And yet how did this concept come about? There was a misunderstanding. In 1945, the US Food and Nutrition Committee, now part of the National Academy of Sciences, suggested that 1 ml of water should be consumed for each ingested calorie.

So for a diet that contains 2.000 calories per day a consumption of 2000 ml of water corresponds, without taking into account the water from everything that is consumed daily. (Borrayo, 2009).

In September 2013, the British Journal of Sports Medicine conducted an experiment in the "drink when thirsty" campaign on a group of cyclists who got dehydrated 3% of their body weight, being rehydrated later as follows:

- 0%
- 2%
- 3%

The fluid was administered intravenously to the subjects without them knowing the volume. This was considered to be very important because there is a close psychological relationship between water consumption and the idea that we need to get hydrated even when we do not feel thirsty. There was no difference in performance between those who were fully rehydrated compared to those who were not rehydrated, a fact which is really remarkable. (Tulleken, 2013).

In 2005, the Magazine of Medicine in England published a study conducted during a marathon when, due to excessive fluid consumption, 6% of the participants developed different degrees of hyponatraemia. Why? Can intensive consumption of liquids be harmful? Yes, indeed. Even lethal.

The kidneys in the human body are responsible for controlling the amount of water, salt and other soluble substances. In one hour the kidneys excrete between 800 and 1000 ml of water in the case of a rested person. When we run, for example, a marathon, the amount of water excreted by the kidneys is reduced to 100 ml (the kidneys being "trained" to conserve water by vasopressin-an antidiuretic hormone produced in the hypothalamus during periods of stress). So if an athlete will consume a large amount of fluids during physical exercise, a build-up of water in the body can occur, a dilution of plasma Na-salts below 135 mEq / l, known as hyponatraemia and headache, vomiting, unconsciousness may occur as a consequence.

The supporters of the theory '2 liters of water daily' support the idea that thirst cannot guide us. When we are thirsty, we are already dehydrated chronically and we can no longer sense the signals of the body.

Barbara Rolls, professor of nutrition at Pennsylvania State University, "has found no evidence that humans are dehydrated chronically."

There are elderly people who can not detect the feeling of thirst because of medication, but people are generally hydrated properly. She also disagrees with those who support the idea of drinking to get rid of hunger.

Rolls explains that "hunger and thirst are controlled by separate systems in the body and they can not be confused by humans. Water can help with the weight loss only if it is a substitute for a caloric beverage."

Both Valtin and Rolls do not exclude water from a balanced diet. But they do not agree with a certain amount of water needed by all people, a rule that suits everyone, (Bellenir, 2009).

Water consumption can be compared to breathing. We breathe without being aware and we can not say that if we do it more often we will be healthier. In the same way the feeling of thirst is very well controlled by the body and we do not have to consume water when we are not thirsty in order to feel better. (Hoste et al, 2014).

The degree of hydration or dehydration can also be established taking into account urinary osmolarity. The higher the values, the more concentrated the urine is.

In this respect, the following study was carried out. The sample included 4.134 participants aged 6 to 19 in the National Health and Nutrition Examination Study from 2009 to 2012 (Kenney, 2015). More than half of the children had 800 mOsm / kg and those who didn't drink water with 8 mOsm / kg less than those who drank water. By comparison, other studies indicate a value of 1200 mOsm / kg as a normal value, and also indicate that values vary in the case of children more than in adults. So it can not be claimed that 800 mOsm / kg represents dehydration among children.

In 2002 another study in Germany showed an average of 844 mOsm / kg and fluctuating values of 392 mOsm / kg in Kenya to 964 mOsm / kg in Sweden.

This has not stopped many more recent studies from continuing to use 800 mOsm / kg as the standard to declare a large number of children as being dehydrated. A 2012 study presented in *Annals of Nutrition and Metabolism* is used to state that nearly two-thirds of French children do not drink enough water. Another study presented in the *Journal of Public Health and Nutrition* said nearly two-thirds of the children in Los Angeles and New York City are not sufficiently hydrated. The first study was funded by Nestle Waters; the second through Nestec, a Nestlé subsidiary.

Some children may need more fluids but why are two thirds of healthy children labeled as abnormal?

All the so-called "specialists" in the field recommend drinking at least 2 liters of liquids a day but no one recommends a quantity of water depending on what we eat daily (Carroll, 2015).

## **RESULTS AND DISCUSSION**

### **Proper water consumption**

The Committee and the Institute of Medicine of the US National Academy stated that an average requirement for water consumption cannot be

estimated because of the differences among individuals; only an adequate intake of water was established.

The amount of water required daily is influenced by:

- metabolic necessities
- body weight
- sex
- physical activity
- environmental conditions
- type of nutrition
- disorders etc.

All this can determine the energy consumption and therefore the necessary water consumption, (Popkin, 2010).

The amount of fluids ingested one day can vary from person to person. It is closely related to what we eat. We do not have to be stressed out that the thirst is not always present. The body tells us when we need to drink water before we are dehydrated.

Some people need more water to feel good while for others drinking water only causes the inconvenience of going too often to the bathroom.

But there are people who need to be careful about ingesting fluids, namely:

Pregnant or lactating women

Older people (the feeling of thirst is no longer perceived or is decreased by disturbances at the level of osmoreceptors and baroreceptors)

Athletes

In case of illness: vomiting, diarrhea, fever etc. (Álvarez, 2008).

## CONCLUSIONS

There is no scientific evidence to support the consumption of 2 liters of water daily.

The amount of ingested water depends on each and every individual, taking into account several factors, the most important of which is daily nutrition.

The sensation of thirst must be the main guide of a healthy individual.

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