

## THE EFFECT OF SUBSTANCES IN ENERGY DRINKS ON KIDNEY FUNCTION

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**ABSTRACT:** *In this article, we will consider the effects of energy drinks on the human body. It is no secret that today energy drinks are widely consumed by young people, students, and athletes. This cannot but have its negative effects on the human body. This article will examine the effects of energy drinks on kidney function.*

**Keywords:** *sugar, taurine, caffeine, dehydration, obesity, diabetes, homeostasis, metabolism, filtration,*

**АННОТАЦИЯ:** *В этой статье мы рассмотрим влияние энергетических напитков на организм человека. Не секрет, что сегодня энергетические напитки широко потребляются молодежью, студентами и спортсменами. Это не может не оказывать негативного воздействия на организм. В данной статье будет рассмотрено влияние энергетических напитков на функцию почек.*

**ANNOTATSIYA:** *Bu maqolada energetik ichimliklarning inson organizmiga qanday ta'siri borligi haqida fikr yuritimiz. Sir emaski, bugungi kunda energetik ichimliklar yoshlar, talabalar, sportchilar tomonidan ko'p iste'mol qilinmoqda. Bu esa inson organizmiga o'z salbiy ta'sirini o'tkazmay qolmaydi. Ushbu maqolada energetik ichimliklarning buyraklar faoliyatiga ta'sirini ko'rib chiqiladi.*

### INTRODUCTION

The kidneys are the most important excretory organs in the human body, responsible for filtering the blood and removing metabolic products. The main functions of the kidneys are:

Filtration - cleanses the blood of harmful waste products, excess water and salts.

Homeostasis - regulates the acid-base balance and water-salt content in the body. Blood pressure - regulates arterial blood pressure through the renin-angiotensin system.

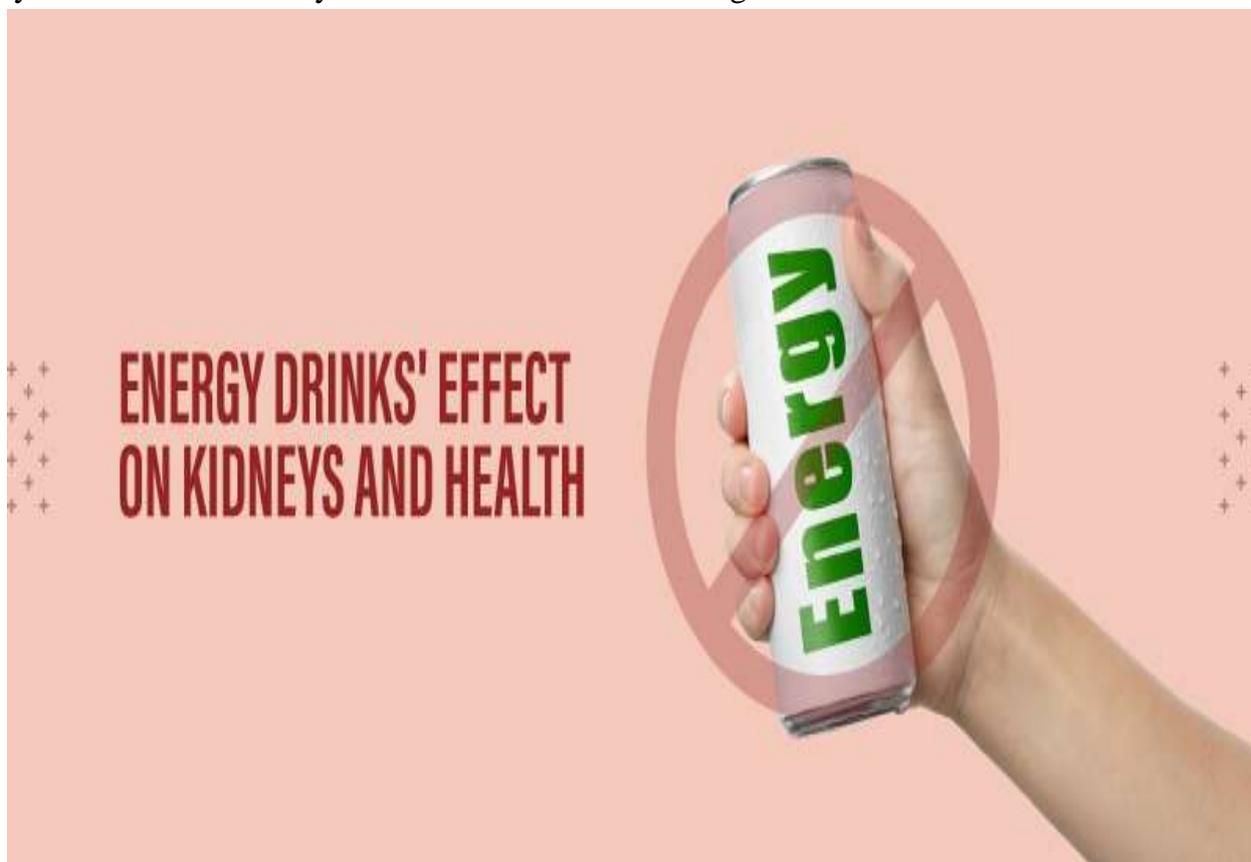
Hormonal function - stimulates the production of red blood cells (erythrocytes) by producing the hormone erythropoietin. The high levels of caffeine, sugar and various additives in energy drinks put a serious strain on the kidneys. Regular consumption can not only reduce the filtering ability of the kidneys, but also cause chronic diseases. The main negative effects of energy drinks on the kidneys:

**Dehydration:** Caffeine has a strong diuretic effect. This leads to excessive fluid loss from the body and thickening of the blood, as a result of which the kidneys have difficulty filtering toxins.

**Kidney Stone Risk:** The sugar and caffeine in the drink increase the excretion of calcium and uric acid from the body. This accelerates the formation of sand and stones in the kidneys.

**Acute renal failure (AKI):** There have been cases in which drinking a large amount of energy drinks in a very short period of time (for example, 4-6 cans in one day) caused sudden kidney failure.

**Metabolic disorders:** When the taurine and artificial vitamins in the drink are in excess, they interfere with kidney metabolism and force the organ to work overtime.



**Figure 1. Energy drinks.**

According to Ekaterina Meteleva, in hot weather the load on the kidneys increases. However, following a few recommendations will help maintain health.

“First of all, accept the fact that water is everything. There is nothing better than clean drinking water. It is better to drink often, but in small portions. The approximate amount is calculated according to the following formula: 30-40 ml per 1 kg of body weight. Therefore, the average person should drink 2-2.5 liters of fluid per day,” she says.

### Ingredients in energy drinks

To understand the effect of energy drinks on your health, it is important to know their composition. Although the ingredients and their concentration in each drink may vary, most of them contain several common components that are harmful to your health: The risk of urinary tract infections is highest during the first trimester of pregnancy, up to 24 weeks, because the uterus is growing at this time. The fetus puts pressure on the bladder, making it difficult for the pregnant woman to empty it completely. When there is residual urine, bacteria can grow well in the bladder. Another reason for urinary tract infections during pregnancy is a weakened immune system. Pregnancy suppresses your immune system to protect your baby. This reduces you Caffeine

If you're one of those people who can't start your day without a cup of coffee, you're not alone. The caffeine in coffee provides an instant boost of energy, prevents drowsiness, and helps you stay physically and mentally alert. Caffeine is also a key ingredient in energy drinks. The only difference is that energy drinks contain much more caffeine than coffee. r body's ability to fight infection. Excessive caffeine consumption, especially if you drink it every day, can put unnecessary strain on your kidneys. It raises your blood pressure, which causes your kidneys and other organs to work harder than usual. Over time, this strain can lead to chronic kidney disease, including kidney failure. The risk is especially high in adults with high blood pressure and existing kidney disease.

### Sugar

Another ingredient that is often added to energy drinks is sugar. For example, a 16-ounce can of Rockstar contains about 60 grams of sugar. That's the equivalent of 12 teaspoons of sugar. If you drink two cans of this energy drink a day, you're consuming 120 grams of sugar. Even one can of Rockstar or a similar energy drink can exceed the recommended daily sugar intake. Regular consumption of this can increase your risk of weight gain, insulin resistance, and other health problems.ase.

### Taurine

Taurine is a form of protein that is naturally found in your heart, brain, and kidneys. It is essential for your kidney function as it helps regulate calcium levels, maintain blood pressure, and reduce oxidative stress. It should be noted that too much taurine, especially when combined with caffeine and sugar, can be harmful.

For example, when consumed with caffeine, it can overwork your kidneys and interfere with their filtration process. Additionally, the taurine in energy drinks has been linked to increased blood pressure, which can ultimately damage your kidneys. The effects are even worse for patients with chronic kidney disease. Kidney Side Effects of Energy Drinks

We've already established the link between caffeine and chronic kidney disease. Let's take a look at how other ingredients in these energy boosters can pose long-term risks to your kidneys and overall health.

#### Dehydration

Caffeine is a diuretic, meaning it increases the frequency of urination. This can lead to excessive fluid loss from the body, putting people at risk. Dehydration reduces blood flow to the kidneys, which reduces their ability to effectively filter toxins from the blood. As a result, the kidneys have to work harder to maintain normal electrolyte balance. Excessive consumption of energy drinks can lead to acute kidney injury, in which your kidneys do not function as effectively as healthy adult kidneys. Caffeine can cause irreversible damage to children's immature nervous and cardiovascular systems. Sleep problems, digestive disorders, and dehydration are more likely to occur.

Energy drinks with high caffeine content have been linked to insomnia, irritability, and anxiety in adolescents. Risk of dehydration. The risk is significantly higher in athletes and those who engage in strenuous exercise. One can of energy drink contains 54-62 grams of added sugar. This is more than the daily recommended amount of sugar. If consumed repeatedly, it can lead to obesity and diabetes.

#### Conclusion

"In conclusion, it has been scientifically proven that the high doses of caffeine and artificial additives contained in energy drinks overload the kidney filtration system (nephrons). Studies show that regular consumption of these drinks significantly increases the risk of kidney failure through the formation of kidney stones, chronic dehydration, and increased blood pressure. Therefore, it is an urgent task for the healthcare system to create a consumer culture among the population and warn about the harmful effects of these products.

"If energy drinks are consumed, it is necessary to drink at least twice as much plain water to reduce their damage to the kidneys, but the best solution is to avoid them altogether."

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