



## SPECIFIC CHANGES IN HARD DENTAL TISSUES IN MILITARY PERSONNEL REGULARLY CONSUMING ENERGY DRINKS

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### ABSTRACT

*In this article, dental diseases caused by energy drinks occupy a special place due to their prevalence, complexity of diagnosis and treatment. In scientific sources, studies conducted over the past twenty years indicate that up to 32% of oral diseases are observed as a result of energy drinks, and up to 47.5% of these diseases are accompanied by various syndromes.*

Today, energy drinks, popular among young people, were first created in 1960 in Japan as a medicine. Having “conquered” Europe and the United States, businessmen added a number of chemicals to make the product popular. By 2014, the WHO issued a statement concerned about the high consumption of energy drinks among teenagers. In 2017, it was reported that the death of a 16-year-old teenager in the United States was caused by drinking large quantities of an energy drink[1,4].

Excessive and chronic consumption of energy drinks can seriously damage the brain, central nervous system, joints and other organs. Caffeine is a psychostimulant. It can give a temporary feeling of freshness, relieve fatigue, increase mental activity, but after a certain time, for example, after 1-1.5 hours, fatigue in the human body increases, headaches appear, not only mental but also physical activity decreases. Those who often consume such products later develop joint pain, which leads to certain complications. Teenagers and children should not exceed 60 mg of caffeine per week [1,2].

One energy drink contains an average of 30 mg of caffeine. It is strictly not recommended to drink energy drinks for children and adolescents under 18, pregnant and lactating women, patients with cardiovascular diseases and diabetes. With excessive consumption of energy drinks, the amount of glucose in the blood increases. Excess sugar turns into fat, and the level of insulin in the body increases, which leads to diabetes. The worst thing is that a person involuntarily becomes dependent on this drink. In addition, excessive consumption of energy drinks seriously damages the cells and tissues of the human body and causes diseases of the liver, heart and blood vessels [3,4].

Taurine, contained in highly concentrated energy drinks, is a substance that accelerates the energy process and develops the nervous system. Its daily norm for the human body is 400 mg. Some energy drinks contain twice as much of this substance and it negatively affects the health of adolescents. Such drinks begin to have a harmful effect on the body after a short



period of time. But you will not notice this, because it contains orthophosphoric acid. For example, after 45 minutes, the production of dopamine increases, which stimulates the pleasure and satisfaction center in the brain. After 70-80 minutes, the reaction time comes and the body becomes weak.

In addition, energy drinks depress the nervous system. The risk of mental illness increases, people become more aggressive. It will not be a mistake to say that children's intelligence does not develop, their academic performance decreases, the birth of disabled and mentally retarded children is also a complication of such diseases. Energy drinks increase the QT interval (electrical systole of the heart) in the heart by an average of 10 milliseconds in 2 hours. If this time interval, measured in milliseconds, is too long or too short, serious changes in the heartbeat will occur. This can lead to life-threatening arrhythmias [1,3].

There are more than 150 types of energy drinks. Energy drinks have a multifaceted effect on the body. Dental diseases caused by energy drinks occupy a special place due to their prevalence, complexity of diagnosis and treatment. In scientific sources, studies conducted over the past twenty years indicate that up to 32% of oral diseases are observed as a result of drinking energy drinks, and up to 47.5% of these diseases are observed with various syndromes. At the same time, the prevalence of pathology is evidenced by the predominance of diseases of hard dental tissues caused by drinking energy drinks and observed from 36.2% to 43.1%. This situation is explained by the fact that the initial stages of the disease are asymptomatic, there is no way to obtain sufficient information about changes in both clinical and laboratory studies, there is no single etiopathogenetic opinion among specialists. This indicates the need to improve methods of treatment and prevention of the problem [1,3,4].

All over the world, special attention is paid to research aimed at improving the treatment of dental diseases caused by energy drinks. In modern dentistry, it is necessary to determine the clinical and functional characteristics of a specific course of diseases developing as a result of the use of energy drinks associated with oral diseases; assess the place of dental and physiotherapeutic measures in the process of complex treatment; develop a comprehensive step-by-step plan of the approach, taking into account the somatic condition of patients; propose methods for the treatment and prevention of disorders of the oral cavity caused by energy drinks; Of particular importance is the improvement of the development of methods for assessing the effectiveness of treatment [2,6].

Soft drinks can be harmful even to young people. For example, two healthy young men, aged 14 and 16, were diagnosed with atrial fibrillation. In addition to acute conditions, energy drinks can also harm the heart in the long term. Scientists have found that drinking soft drinks can reduce vascular endothelial function and stimulate platelet aggregation. Long-term alcohol consumption increases the risk of blood clots.

Consuming several energy drinks in a short period of time can lead to poisoning. Its symptoms include anxiety, insomnia, tachycardia, upset stomach, tremors, muscle tremors, and restlessness. High doses of caffeine can cause chronic headaches. In addition, the combination of caffeine, taurine, and guarana found in energy drinks can be toxic to the brain and damage nerve cells. Energy drinks are especially dangerous for teenagers. One study



found a direct link between caffeine consumption and behavioral disorders among 15- to 16-year-olds.

Since energy drinks contain a lot of sugar, excessive consumption increases the risk of obesity and type 2 diabetes. For the same reason, soft drinks can reduce the diversity of beneficial bacteria in the small intestine, which is also characterized by weight gain and the development of metabolic syndrome. Energy drinks in moderation do not harm the liver, but if consumed in excess or with the addition of alcohol, the body's main filter may not cope. Doctors believe that the main factor is the excess amount of vitamin B3 in energy drinks, which in large doses has a hepatotoxic effect.

Energy drinks are often used at sports competitions because caffeine can improve athletic performance. At the same time, the amount of urine and sodium increases, which can lead to dehydration and electrolyte deficiency. Therefore, energy drinks should not be consumed during prolonged physical activity, especially in hot conditions. Due to the high acidity and large amount of sugar, energy drinks have a negative effect on tooth enamel. Two studies involving American teenagers confirmed that erosion and caries are directly related to the amount of sugary drinks, including energy drinks. Children and teenagers, pregnant women, people with cardiovascular diseases and diabetes should completely abstain from drinking such drinks. It is usually recommended not to drink more than one serving per day, and this is due to two reasons:

**Caffeine Amount.** The US Food and Drug Administration recommends no more than 400 mg per day. And for energy drinks – no more than two, no more, even if this is the only source of stimulants in the diet.

**Sugar Amount.** The World Health Organization recommends that sugar should make up no more than 10% of total calories, ideally no more than 5%. If the average caloric intake per day is 2000 kcal, this will be 50 and 25 g, respectively.

So, one energy drink per day is relatively safe for health, but in this case, do not eat sugar and avoid other stimulants.

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