MORPHOFUNCTIONAL CHANGES OF THE STOMACH UNDER THE INFLUENCE OF ENERGY DRINKS AND THEIR CORRECTION

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Annotation. In recent years, energy drinks have begun to progressively conquer not only the market of European and Western countries, but they have also conquered the market of Asian countries. For this reason, WHO believes that the risk of such massive consumption of energy drinks among adolescents and young people can lead to serious public health disorders and negative health complications in the future. Moreover, this condition remains largely ignored among scientists and the public. An analysis of the literature data with a high degree of persuasiveness indicates that excessive consumption of energy drinks can have an extremely adverse effect on human health and can lead to the development of multiple organ failure, with damage, first of all, to the cardiovascular, central nervous, endocrine systems, as well as the digestive and excretory systems. To substantiate indications and contraindications, recommendations on the use (volumes and dosages) of energy drinks, it is necessary to obtain a clear evidence base based on conducting comprehensive clinical and laboratory, instrumental and experimental morphological studies**Ключевые слова**: Иммуноферментный анализ, пепсиноген, сыворотка крови, крыса, желудок, кунжутное масло, жирные кислоты.

Purpose. Assessment of functional changes in the stomach under the influence of energy drinks and the results of their correction with sesame oil

Research methods. The experiment was conducted on 43 three-month-old white male rats with a body weight of 130 ± 20 g. To obtain an experimental model, group 1 animals were intragastrically injected with an energy drink (EN) "Gorilla" through a plastic tube for 4, 8, 12 weeks. The Gorilla energy drink (EN) was administered intragastrically to animals of the 2nd group for 4, 8, 12 weeks through a plastic probe, and after this period, sesame oil was injected into the experimental animals in order to correct the changes. The blood serum samples taken from animals were stored in a refrigerator at -20 ° C before the ELISA analysis. Laboratory studies of serum pepsinogens I and II, cancer marker CA-74-2 were carried out using special kits for enzyme immunoassay (ELISA) manufactured in Russia.

The results obtained. The amount of PG1, PG2 decreased in 100% of animals that consumed EN for 4 weeks. The level of changes in PG1 was 3.27-7.83 micrograms/l, and the level of changes in PG2 was observed in the range of 1.32-2.7 micrograms/l. The analysis showed that in the main group, the concentration of pepsinogen 1 and 2 was significantly reduced in rats who consumed EN for 8 and 12 weeks. In 100% of rats

treated with AN for 8 weeks, the level of PG1 decreased to 3.6-5.3 mcg/l, the level of PG2 decreased to 1.32-2.15 mcg/l. Even in 100% of animals that consumed EN for 12 weeks. PG1 decreased compared to control animals and amounted to 1.84-4.6 mcg/l, the level of PG2 was in the range of 0.79-1.76 mcg/l.

It was found that in experimental animals exposed to EN for 4 weeks and treated with sesame oil, the level of PG1 increased by 22%, the level of PG2 increased by 14%, and the ratio of PG1/PG2 increased by 5%. It was determined that in experimental animals exposed to EN for 8 weeks, the level of PG1 increased by 28%, the level of PG2 - by 13%, and the ratio of PG1/PG2 - by 4%. It was revealed that in experimental animals exposed to EN for 12 weeks, the level of PG1 increased by 12%, the level of PG2 increased by 15%, and the ratio of PG1/PG2 increased by 2%. The concentration of the cancer marker did not exceed the reference values in three-month-old rats with acute and subacute exposure to energy drinks. In the experimental group, during the 12-week period of exposure to EN, the concentration of CA 74-2 in the blood of rats changed during laboratory testing, and in 1 (9%) case, the precursors of cancer disappeared.

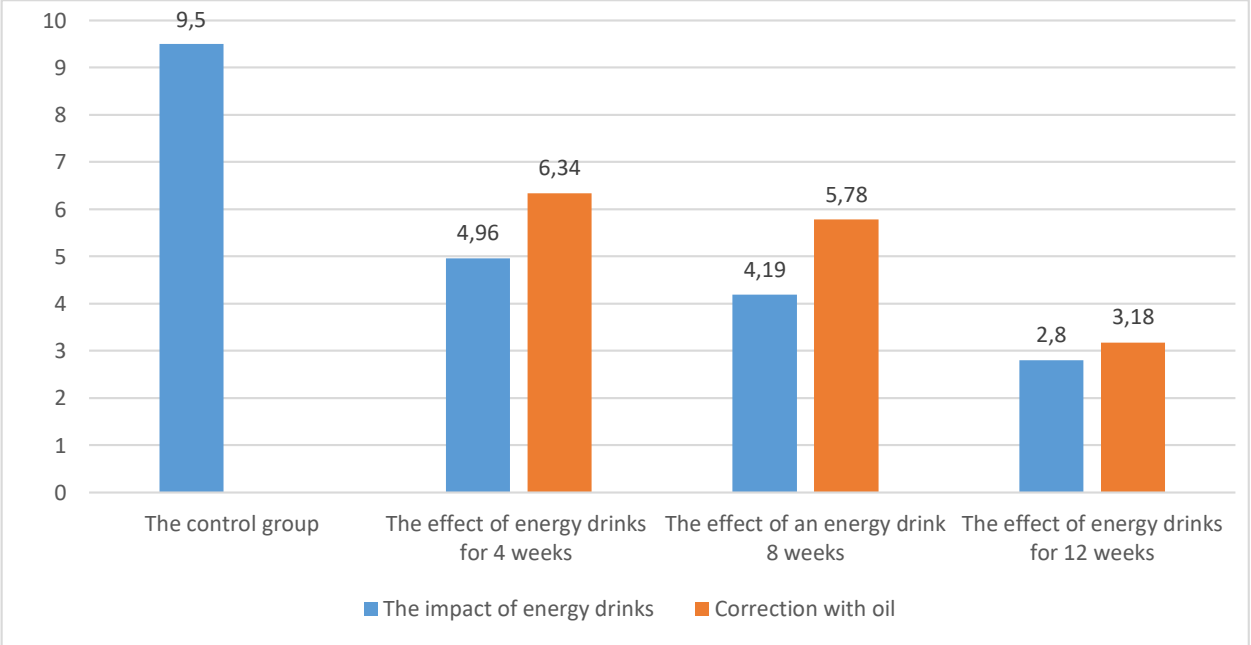

Figure 1. The amount of serum pepsinogen I in experimental animals.

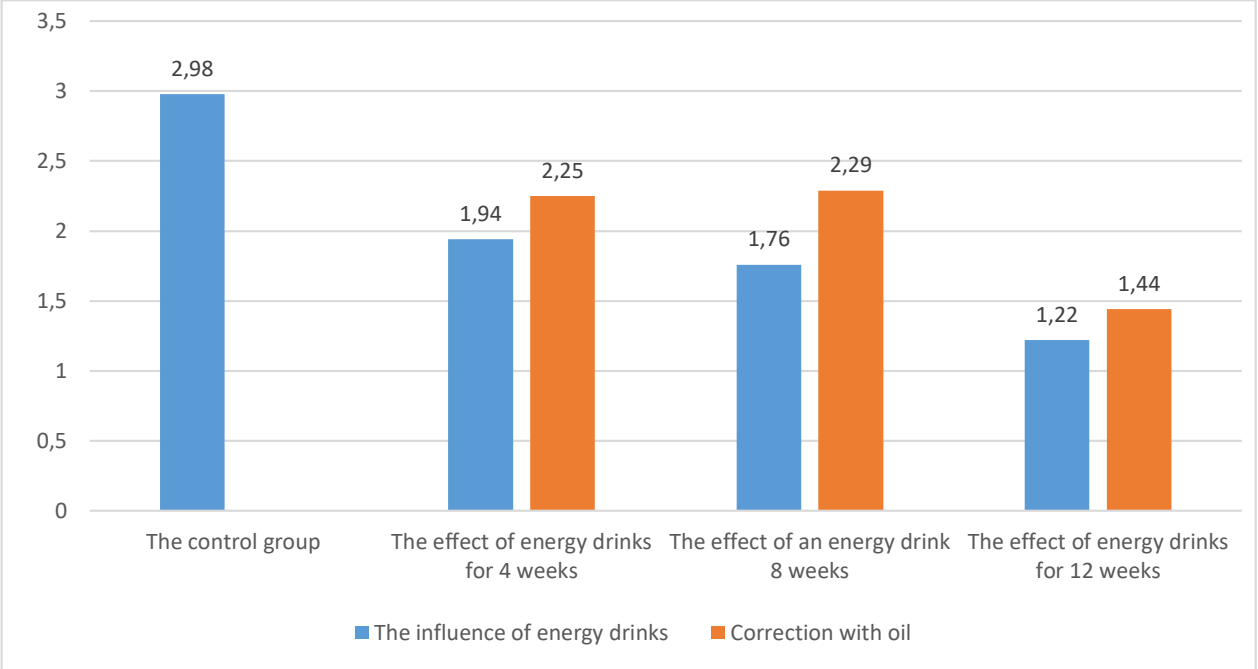

Figure 2. The amount of serum pepsinogen II in experimental animals.

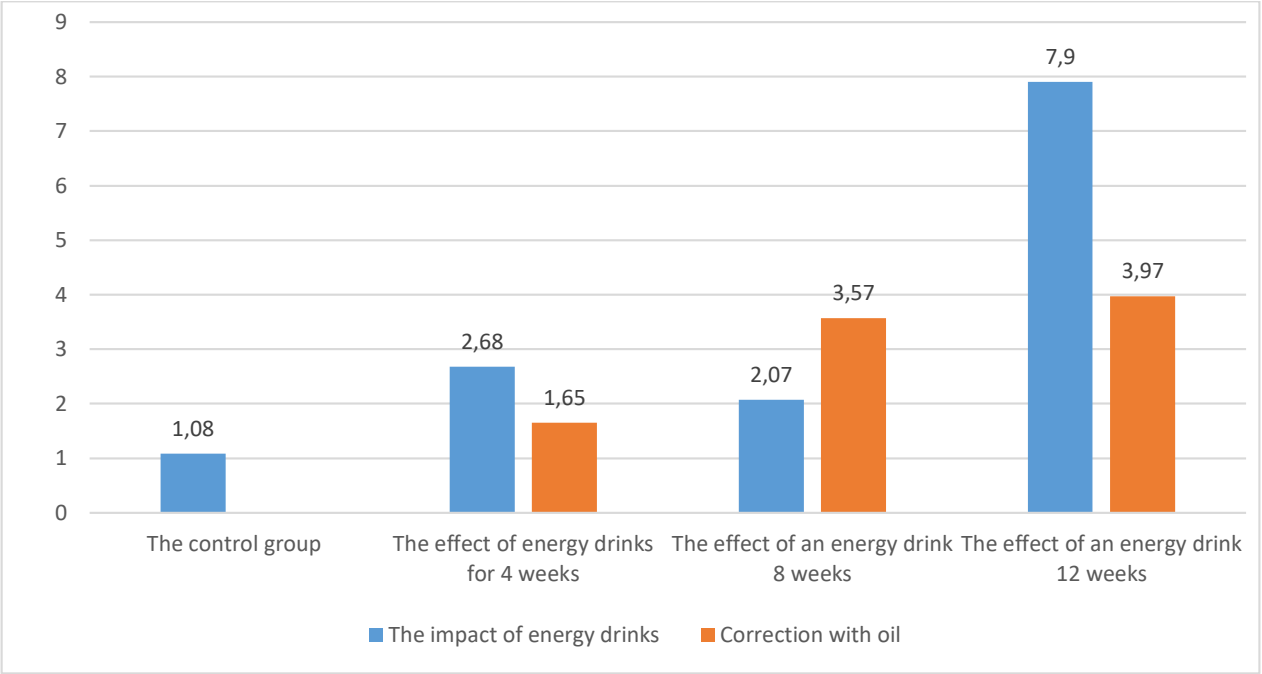

Figure 3. The number of serum CA is 74-2 in experimental animals.

After the end of the administration of EN to experimental rats of group 2 for a given period (4, 8, 12 weeks), positive changes were noted in laboratory studies, when corrected with sesame oil. A convincing decrease in the amount of the CA 74-2 antigen as a result of correction indicates the presence of an anti-carcinogenic effect of sesame oil.

Conclusions.

1. Due to the presence of many components in energy drinks and the fact that each ingredient has a side effect on the stomach, this indicates the need to introduce certain restrictions in consumption. Thus, in this study, it was found that the Gorilla energy drink has a harmful effect on the gastric mucosa, especially with its chronic use.

2. The components of sesame oil significantly reduce these effects. The anti-inflammatory and antioxidant effects of sesame oil significantly reduce the changes resulting from the harmful effects of EN, which determines the effectiveness of this oil for the body.

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