

# EXCESS DIETARY FRUCTOSE AS A FACTOR OF DEVELOPMENT OF THE “DISEASES OF CIVILIZATION”

Umanets A.<sup>2</sup>

Scientific supervisor: ass. prof. Tovchiga O. V.<sup>1</sup>

<sup>1</sup>National University of Pharmacy, Kharkiv, Ukraine

<sup>2</sup>Kharkiv Gymnasium №116, Ukraine

farmacol@nuph.edu.ua

**Introduction.** Metabolic syndrome and obesity are the urgent problems of the modern society that are becoming a “non-infectious pandemic.” Increased consumption of sugars, especially fructose, contributes to the development of these pathological conditions. Among the foods with “added sugars” high-calorie soft drinks are of special significance, and the decrease of their consumption could lead to the significant benefits in public health.

**Aim.** The aim of this work is to evaluate the data available in the literature about the effects of high-calorie soft drinks on the metabolic processes and about the prevalence of high-calorie soft drinks consumption among the Ukrainian children and teenagers. Besides, the effects of excess fructose intake not aggravated by other factors were determined in rats.

**Materials and methods.** The search of data in the literature was performed using Internet resources, including Medline database as well as domestic media resources. The experiments on rats were conducted using the model of the substitution of drinking water with 10% fructose solution for 10 weeks. The food regimen without an excess of lipids and with a limited quantity of sodium was used. Lipid and carbohydrate exchange values in blood plasma were determined.

**Results and discussion.** The analysis of the available data showed that the wide use of high fructose corn syrup in food industry lead to the dramatic increase in sugar consumption linked to the escalating worldwide obesity and type 2 diabetes epidemic. The negative impact of this factor on immune system and even cognitive processes is seen. WHO recommends the limiting of sugars and high-calorie soft drinks, including the implementation of taxes on soft drinks, which were applied by some countries together with the health warning labeling of these beverages. Such measures are not used in Ukraine, despite the recent opinion polls evidencing that 82% of Ukrainian children consume high-calorie soft drinks.

Experimental data confirmed the negative impact of fructose: atherogenic shift of cholesterol fractions in blood plasma developed in rats under its influence, despite the low food intake of lipids, short term of the study and the absence of glucose metabolism disorders as well as other factors influencing on lipid metabolism.

**Conclusion.** Further work is needed to counteract excess fructose intake.