THE STUDY OF INFLUENCE OF THE NICOTINE FROM DIFFERENT DISPERSED SYSTEMS ON WEIGHT OF BODY AND INTERNAL ORGANS OF ANIMALS

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Introduction. Body weight is the one of the most important indicators of the physical development of people and their state of health. Weight depends on gender, age, heredity, constitutional type, physical activity, profession, diet, lifestyle, habits, etc. Today various ways smoking presents, example conventional cigarettes or hookah smoking. Many people believe that the use of hookah is less harmful than cigarette consumption. But how hookah influences on human health veracious unknown. The cigarettes smoke is system consisting of solid particles. The hookah smoke unlike cigarettes is a system (aerosol) that consisting liquid particles. As result hookah smoke can penetrate deeper and condense on the surface of the lungs.

Aim. The aim of the study was to study the effect of nicotine from cigarettes and hookah on the on weight of body and internal organs of animals.

Materials and methods. The study was carried out on 18 rats weighing 220±30 g for 15 days. Animals were divided on three groups of 6 animals each: 1st – intact control, 2nd – rats that have been subjected to cigarette smoke aspiration, 3rd – rats that have been subjected to hookah smoke aspiration. Rats of 2nd and 3rd groups placed to aspiration chamber volume of 0.08 m³ and subjected to influence cigarette or hookah smoke, respectively for 30 minutes. The dose of nicotine was calculated based on the equivalent dose for the rat from of average man's weight 70 kg, which receives daily 20 mg nicotine, which amounted to 0.043 mg per day for rat.

The mass is determined by weighing the animals at the beginning and end of the experiment. For internal organs calculated mass-weight coefficient.

All intervention and euthanasia of animals was performed according to the requirements of the Commission on Bioethics of the National University of Pharmacy (Kharkov, Ukraine) and "General ethical principles of experiments on animals", which are consistent with the provision of the European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes (Strasbourg, 1986) and the I-st National Congress on Bioethics (Kyiv, Ukraine, 2001).

Statistical analysis included material using standard methods of variation statistics, calculating average values (M) and the average error (m). Statistical

significance was assessed using one-way ANOVA test, the difference was considered to be reliable at $p \leq 0.05$. The data processing was performed using Statictica 7.0 and Excel software.

Results and discussion. It was found that during the experiment the weight of animals in the intact group increased by 8 % compared to initial weight. Unlike rats of the intact control group, the weight of animals of the 2nd group increase was 6 % relative to the initial weight and in rats that inhaled hookah smoke decreased 2 % ($r \geq 0.05$). At the beginning of the experiment the difference between the weight of the animals of intact control and experiments groups been 7 and 1 % respectively. After 15 days of smoking weight of the animals 2nd group was 9 % lower than in control, and weight of 3rd group – 10 % lower.

In the calculating the mass-weight coefficient found that nicotine from various dispersion systems has a different degree of influence on internal organs. It is established that the weight of the lungs was higher 18 % in rats under the influence of cigarette smoke, and the animals under the influence of hookah smoke higher only 3 %, compared to the mass of intact control group animals. The weight of the liver in experimental groups was lower on 9 % and 14 % relative to control.

Significant changes occurred in the thymus weight of rats under the influence of cigarette smoke. It weight was smaller relative weight of thymus of intact control group on 25 % ($r \geq 0.05$). The difference in the group of rats, which were under influence of hookah smoke was 7 %. Thus, it was found that nicotine from various dispersion systems have negative influence on weight of body and internal organs animals like thymus and liver.

Lungs weight increased, especially in rats under the influence of cigarette smoke, which, in our opinion, due to the development of inflammation and edema.

Conclusions.

1. Decrease of the weight of the body more in rats that have been subjected to hookah smoke aspiration.

2. The most difference among mass-weight coefficient thymus and lungs relative to the control group observed in animals that were under the influence of cigarette smoke.

3. The mass of liver under the influence of hookah smoke was increased.