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EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION ON ATTENTION IN HEALTHY PEOPLE

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Abstract Attention - a key aspect of daily human activities. We studied the effect of transcranial direct current stimulation in healthy volunteers. These results confirm the positive effect of transcranial stimulation, but requires continued research.

Key words: tDCS, transcranial direct current stimulation, brain, attention

A large amount of information and the need to perform many tasks, are one of the main factors for the development of multitasking in the activities of modern man. In this connection, the ability of a person to concentrate his attention and to keep him on a chosen task becomes especially topical. To improve this cognitive skill with variable success, pharmacological drugs, meditation, awareness techniques, etc. are used. Transcranial stimulation of the brain by direct current, a technique of noninvasive brain stimulation widely studied in modern neurophysiology and neurology that allows to change the activity of cortical centers and improve or suppress cognitive skills related to this area.

The aim of the study was to assess the effect of transcranial stimulation of the brain with a direct current on a person's ability to pay attention.

Materials and methods 30 people participated in the experiment, which were randomly divided into 3 groups of 10 participants. The first group - 10 people, received transcranial stimulation of the brain with a direct current with the parameters indicated below. The second group - 10 people, received a placebo-stimulation. The third group - a control group of 10 people, did not receive stimulation. Stimulation of the brain was carried out with the following parameters: current-1.5 mA, duration - 20 minutes before the passage of tasks. Points of exposure F7-F8 in accordance with the International 10-20 system. At the end of the stimulation, the participants underwent two computer tests aimed at assessing the attention of cognitively healthy people. The Feature Match test is a task in which a user needs to quickly compare two images and determine their similarity. If the images are identical, the user clicks "Correct", if not "Wrong". The task requires focusing on simple figures. The complexity of the test automatically adapts to the results obtained. The Pitchblack test is a task in which it is necessary to simultaneously track the movement of several balls and determine the moment when they pass the central part of the target. The task allows to assess the ability of a person to concentrate attention on several objects. To assess the reliability of the obtained results, the reliability criterion $p < 0.001$ was used.

Results Statistical analysis showed an improvement in attention, namely a reduction in the number of errors in the Pitchblack test in the stimulation group compared to the control group ($p < 0.001$). However, there was no significant difference between active and placebo stimulation.

Conclusions As a result of the study, we found a positive effect of transcranial stimulation of the brain with direct current on attention in healthy people ($p < 0.001$). However, the effectiveness of active stimulation does not differ in its effectiveness with placebo. The obtained results testify to the necessity of carrying out additional studies with variations in the parameters of stimulation (time of exposure, current strength, as well as the moment of exposure-before or during the time of passing the test tasks).

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RESEARCHING INFLUENCE AEROSOLS ELECTRONIC CIGARETTES (VAPE) ON INDICATIONS OF BLOOD AND INTERNAL ORGANS OF RATS DURING 30 DAYS

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Abstract Smoking is one of general problems now a days. By information WHO, smoking is main factor of risk of cancerogenesis, which comes about 22% events death of cancer, including death of cancer of lungs - 1.69 billion per year. *Амурский медицинский журнал №4 (20) 2017*

ents of death in year. [1] Nowadays beginning popularity of electronic cigarettes, whose manufacturers declare that the electronic cigarette is much safer than usual. But we did not find studies that demonstrate security of the wipe.

Key words: vape, respiratory system, electronic cigarettes

It is known that the composition of the liquid for the electronic cigarette includes propylene glycol, glycerin, ethanol, acetol, propylene oxide, and also nicotine. [2]

Nicotine is a carcinogen, as well as a carcinogenic effect has its metabolite, formed in the tissues: cotinine, as well as two tobacco-specific nitrosamine: N'-nitrosonornicotine (NNN) and 4- (methylnitrosamino) -1- (3-pyridyl) -1 -butanone (NNK). The carcinogenic effect of these substances is due to their ability to bind to nicotine acetylcholine receptors on cells of non-nervous origin [3], whereby a number of pathological pathways are triggered in the cell that disrupt the normal functioning of the cell and lead to mutations.

Also, substances contained in a liquid of electronic cigarettes, such as propylene glycol and glycerin, are oxydized in a reel of wipe to propylene oxide, propanal, methyl glycol, acetaldehyde, formaldehyde, acrolein and glycidol which havea carcinogenic / toxic effect. [2] Therefore, the aim of our study was to study the effect of an electronic cigarette on blood and internal organs of rats for 30 days.

Materials and methods The experiment was done on non-native rats. Before the experiment, permission was obtained from the local ethical committee and the bioethical commission of the Amur State Medical Academy.

In the experiment, 20 mature male rats aged 6-12 months, weighing 200-300 g, were used. Two groups were created - control and experimental - 10 individuals each. The animals were kept under natural lighting with free access to water and food. Animals from the experimental group were smoked for 30 days, twice a day, the dosage of one smoking was 44 mg / 1 kg. For smoking we used a vape model "JoytecheGo AIO".

For every 10 days, blood was taken from the tail vessels for clinical blood analysis. The animals were killed by the method of cervical dislocation under chloroform anesthesia. The blood of the rats was taken for hematological analisation on the Abacus Junior hematological analyzer. 3 organs (trachea, lungs) were selected from each rat for histological analysis.

During the experiment, one rat from the control group died.

Result and discussion Based of the results of experements, we are not definitely validate harm of smoking of an electronic cigarette for such short period. During the experiment, were made a number of technical mistakes that which led to the receipt of unreliable data.

In the future this study will be continued with and elimination of all the errors in the experiment. There will be an increase in the number of laboratory animals, timing of smoking and increase blood sampling skills.

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HERBAL MEDICINE LINGONBERRY FOR ALZHEIMER'S DISEASE

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Abstract Alzheimer's disease (AD) is a neurodegenerative disease, which is common in the elder people with gradually seriously cognitive impairment and memory loss. Because of the complicated pathogenesis, the mechanism of AD is not explained clearly. Rely on the current level of medical care, AD cannot be cured. It is necessary to develop a new drug to intervene AD in the early phase. Recently, it was reported that some components from lingonberry have effect to retard the aging process in the brain and inhibit the development of neurodegenerative diseases. In this paper, we introduce the intervention effect of lingonberry on AD and the mechanism. Key words: lingonberry, Alzheimer's disease, phenolic compounds, oxidative stress

Introduction Alzheimer's disease (AD) is a neurodegenerative disease which makes people gradually lose memory and become dementia. The effective drug treatment of AD was anticholinesterase, but only 12% patients accept treatment because of the high cost. Lingonberry (*Vaccinium vitis-idaea* L.) widely distributes in northeast China with abundant resources. Clinical practice has proved that the berries and leaf of lingonberry are beneficial for health. It has many pharmacological actions, including anti-inflammatory, antioxidant and preventing cardiovascular disease.[1] In this article, we introduce the intervention effect of lingonberry on AD.

Active components of lingonberry In fruit of lingonberry, phenolic components are the major components. There are 28 kinds of phenolic components, and most of them have an excellent antioxidant effects. Proanthocyanidins (PC) is the most significant active compounds of lingonberry. Some bioactive flavonoids, arbutin, hyperoside and quercetin, also existed in the stem and leaf. Besides, there are 10 kinds of organic acids, 19 kinds of free amino acids and many triterpenoids.[3]

The effects of active compounds from lingonberry on AD There are several hypothesis of AD including oxidative stress and the loss of the cholinergic neuron. Researchers found that the extract of lingonberry has effects on the cognitive disorder, and they want to know whether lingonberry can intervene AD in the early phase. Via comparing some biochemical indexes associated with the oxidative stress injury such as SOD and acetylcholinase (AChE), they found that the extract can improve the learning ability and the cognitive disorder induced by chronic stress.[4] PC, the main component from