STUDYING INDICATORS OF CIRCADIAN RHYTHMS OF MACROELEMENTS CONCENTRATION IN HUMAN SALIVA UNDER NORMAL CONDITIONS

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Seasonal and circadian research in the field of chronobiology and chronomedicine is currently of particular interest to scientists. Chronobiology has discovered previously unknown approaches to the diagnosis, treatment and prevention of diseases. For biological objects, as an open thermodynamic system, in their development have absorbed all the laws of the rhythmically oscillating external world and interact with it with the help of these vibrations. Therefore, at the present stage of the development of chronobiology, any research that fills, like bricks, still empty niches of new knowledge reflects the advanced frontiers of natural science and is included in the creation of a future general theory of biology. This is confirmed by a number of discoveries of scientists in the field of physics, physiology and medicine. Thus, a group of scientists became laureates of the Nobel Prize in physics in 2017 for the discovery of gravitational waves, and in the field of physiology and medicine, a number of scientists (Hall, Rosbash, Young) became Nobel laureates for a series of works on the topic: *«Studying the mechanisms of the circadian dynamics of the body.»*

Today, chronobiology can characterize periodic fluctuations of, perhaps, all organs, all body systems. A large amount of data has been accumulated on the daily and seasonal rhythms of the digestive and urinary tract organs, respiratory and cardiovascular systems, brain, etc. A violation of biorhythms can lead to the development of defects in oral and maxillofacial tissues, the development of inflammation and tumors, which affects cell proliferation, apoptosis, oxidative stress, etc.

The main purpose of this work was to study the characteristics of circadian rhythms of macroelement concentrations in human saliva under normal conditions. A feature of the research work is the determination of the concentration of macroelements in saliva in the summer. The saliva of 12 healthy volunteers was taken as the study material. Age 22-30 years. The method of spectrophotometry was used in this research work. The research work was carried out in the summer at the Department of Biophysics, Biomedicine and Neuroscience of the al-Farabi Kazakh National University and at the City Clinical Hospital №1 in Almaty. During the study, a saliva sample was collected on 1.5 ml of Eppendorf. All samples were stored in the freezer. Before the experiment, the material was soaked at room temperature for 30-40 minutes. Using the spectrophotometric method, we determined the concentration of macroelements in saliva using a set of special reagents.

We have identified the features of the daily dynamics of the concentration of macroelements in the saliva of healthy people in summer: *K, Na, Ca, Mg* and *P.* The concentration of macroelements varied widely throughout the day. As a result of the study, the concentration index of *K* during the day normally ranges from 528±36 μg/ml to 634±42 μg/ml; *Na* - from 153.4±19.8 μg/ml to 144.9±25.1 μg/ml; *Ca*-from 35.4±4.0 μg/ml to 45.5±5.1 μg/ml; *Mg*-from 2.12±0.15 μg/ml to 4.02±0.25 μg/ml and *P*-from 134.5±7.7 μg/ml to 151.6±10.1 μg/ml.

Summing up, we have identified the features of the daily dynamics of the concentration of macroelements in the saliva of healthy people in summer. In summer, the daily dynamics of the concentration of macroelements in saliva ranged from 2.12±0.15 μg/ml *(Mg)* to 634±12 μg/ml *(K).*