

**EFFECT ON HORMONE SECRETION
IN HUMAN ORGANISMS OF LONG-PERIOD HARMONICS
OF REGULAR ELECTROMAGNETIC OSCILLATIONS
OF COSMO-GEOPHYSICAL NATURE**

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In work by the method of Monte-Carlo of mathematical statistics conducted the analysis of intervals between the days of birth of genetic relatives (4—5 generations) in 33 randomly selected family trees (1408 people). In result revealed the phenomenon of incomplete randomness of distribution of dates of birth among genetic relatives related to long-period harmonics — waves, well-known from the theory of earthly tides (modulated S_2 (period 12 h.)): a Solar elliptical wave S_a with the period of anomalistic year (365.259640 days), a Solar declination wave S_{sa} with period of a half of tropical year (182.621095 days). The sampling volume of 440—880 trees suggests detection of a similar reaction also from the modulated M_2 (period 12 h. 25 min.) wave lunar long-period harmonics: a Lunar elliptical wave M_m with a period of anomalistic month (27.554551 days), a Lunar declination wave M_f with period of a half of tropical month (13.660791 days), as well as periods of a half (14.765294 days) and of whole (29.530588 days) of the synodic month. The sum of M_2 and S_2 waves reaches a maximum at syzygial tides during the new moon and full moon. The impact on humans of abovementioned regular cosmo-geophysical oscillations may occur due to variations in the electrochemical properties of the water in organism, which invokes variations in the intensity of secretion of hormones because of the electro-permeabilization, including sex hormones (testosterone), which are also responsible for the ability to work and volitional qualities of man. The question requires careful attention from the viewpoint of the protection of health of astronauts during the deep space missions, including also protection from the dysfunctions of the endocrine system in an environment where there are no sources of electromagnetic background, natural for the surface of Earth.

**СИНХРОНИЗАЦИЯ КОЛЕБАНИЙ ПОКАЗАТЕЛЕЙ
ЭЛЕКТРОЭНЦЕФАЛОГРАММЫ ЗДОРОВЫХ ЛИЦ
С ВАРИАЦИЯМИ МАГНИТНОГО ПОЛЯ ЗЕМЛИ**

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Проведено обследование 4 здоровых волонтеров ($39,8 \pm 5,1$ лет) в Архангельской области ($60^\circ 52'$ с.ш.) 14—18 марта 2012 г. три раза в сутки — в 9—11, 13—15

и 16—18 часов (по 12—13 исследований). Регистрировали ежеминутную спектральную мощность электроэнцефалограммы (ЭЭГ) в основных частотных диапазонах в течение 30 минут монополярно с закрытыми глазами. Данные ЭЭГ получены при участии канд. техн. наук А.М. Мёрзлого. Ежеминутные значения величины полного вектора магнитной индукции (ПВМИ) по геостанции Борок были получены с сайта INTERMAGNET (http://ottawa.intermagnet.org/apps/dl_data_prel_e.php). Выявлены основные реакции ЭЭГ: реакция десинхронизации ЭЭГ — усиление активирующих влияний ретикулярных структур на кору головного мозга в периоды максимума ПВМИ (вечернее время); реакция синхронизации ЭЭГ — усиление таламических и стволовых влияний на кору головного мозга, особенно в височных или фронтальных областях, преимущественно в периоды снижения и минимума ПВМИ (утром и днем). Обсуждается тема о возможной индивидуальной чувствительности нейрональных зон мозга (слуховая, зрительная, моторная зоны неокортекса, диэнцефальные структуры) к колебаниям индукции геомагнитного поля.

SYNCHRONIZATION OF ELECTROENCEPHALOGRAM INDICES WITH GEOMAGNETIC DAILY FLUCTUATIONS IN HEALTHY PERSONS

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There were observed 4 healthy volunteers (age 39.8 ± 5.1 years) in the Arkhangelsk area ($60^{\circ}52'$ n.l.) 14—18 March 2012 three times a day — at 9—11 a. m., 01—03 p.m. and 4—6 p.m. (12—13 studies for each volunteer). Electroencephalogram (EEG) registration was carried out for 30 minutes each study for unipolar scheme blindly. EEG data were obtained with the assistance of PhD Merzly A.M. Data on the total magnetic induction vector in each minute are taken from INTERMAGNET site of the Borok station (http://ottawa.intermagnet.org/apps/dl_data_prel_e.php). There were identified individual types of brain pacemaker reactions on daily geomagnetic fluctuations: the reaction of EEG desynchronization which indicates the increasing reticular activating structures influence on brain cortex during periods of maximum magnetic values (evening); the reaction of EEG synchronization — increased thalamic and brainstem influences on the brain cortex, especially in the temporal and frontal areas, predominantly during period of minimal magnetic values (morning and afternoon). The theme of individual sensitivity of brain neuronal areas (auditory, visual and motor cortex, diencephalon) to the daily geomagnetic fluctuations were discussed.