

Термочутливість молодих людей в умовах екстремальних змін клімату

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Thermosensitivity of Young People in Conditions of Extreme Climate Changes

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Information about the temperature of the environment is sent to the center of thermoregulation from thermoreceptors, which are located in different areas of the skin [Tan, *et al.*; 2018]. The center of thermoregulation is located in the hypothalamus and is interconnected with the center of the autonomic nervous system (Pop, *et al.*, 2018). This allows the body to maintain the constancy of the internal environment even when it changes (Sörqvist, *et al.*; 2019). The problem of climate change, which is characterized by extremely high and low temperatures in winter, causes significant damage to human health (Trypolska, 2020; Erens, *et al.*; 2021). It has been established that not all people have the same reaction to the influence of high and low environmental temperatures (Vadzyuk *et al.*, 2020; Foster, *et al.*, 2020; Poruchynska, 2021). However, today there are no simple and accessible algorithms for evaluating the heat and cold sensitivity of the human body.

We examined 150 persons aged 17–20, students of TNMU. All examinees were divided into persons with increased and decreased heat sensitivity. At the first stage, testing was carried out with the help of the questionnaire 'Levels of Thermal Sensitivity' (author's certificate No. 115529, 2022). The result was evaluated according to the number of points obtained: 0–6 – reduced thermal sensitivity, 7–16 – increased. At the next stage, a thermal test was conducted according to the author's method (author's certificate No. 119974, 2023). Persons in whom the value of the pulse rate and blood pressure level increased were assigned to the group with increased heat sensitivity, and those in whom the measured indicators decreased or did not change – to the group with reduced heat sensitivity. As a result of conducting the above comprehensive research, out of 150 persons, 94 were assigned to the group with reduced sensitivity to heat, and 56 – with increased sensitivity.

The next stage of research will be the development of the same comprehensive methodology for assessing individual cold sensitivity. After all, scientists have established that sensitivity to cold, as well as to heat, affects temperature comfort and must be evaluated and taken into account in order to survive and maintain health in conditions of extreme climate changes (Wang; 2022). In the available literary sources there is a description of the cold test, which can be used for a quick and accurate assessment of the intensity of the thermoregulation processes of the human body before exposure to cold (Tsyganenko *et al.*, 2018; Shekh *et al.*, 2020). However, no questionnaire was found that could be used at the first stage to assess the level of cold sensitivity.

Thus, the reaction of the human body to heat and cold stimuli is individual. Assessment of the level of thermosensitivity is relevant in the conditions of extreme climate changes today in order to prevent its negative impact on the human body.

Вплив низькотемпературного зберігання на антибіотикочутливість полірезистентних штамів *Escherichia coli*

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Effect of Low Temperature Storage on Sensitivity to Antibiotics of Polyresistant *Escherichia coli* Strains

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Considering permanent development of antibiotic resistance (ABR) in common bacterial pathogens, collection and preservation of resistant clinical isolates are crucial for monitoring of ABR evolution and development of an appropriate strategy for overcoming this challenge. The main requirement for maintaining such collections is to ensure the stability of the strains biological properties, which could be achieved by means of cryopreservation (Jaiswal AN., 2022; Whaley D., 2021).

The research aim was to estimate stability of ABR profiles in *E.coli* at different time points of long term stored in liquid nitrogen.

Five poly-resistant *E.coli* clinical isolates were maintained in supercooled or frozen state for times ranging from 3 to 36 month. Supercooled state was achieved by direct immersion of cryotube (Corning, US) containing 1.0 ml culture suspension (10^9 CFU/ml in peptone-meat broth with 20% of glycerin as cryoprotectant) to liquid nitrogen (-196°C). Sensitivity to antibiotics was tested by disc-diffusion Keurby-Bauer method (EUCAST. Version 13.0.0. 2023) after 3, 6, 12, 18, 24 and 36 months of storage. Statistical analysis of the results was performed using the software package STATISTICA 6.1 (StatSoft).

All tested isolates remained resistant to penicillins, amino-penicillins, beta-lactamase-resistant aminopenicillins, I-III generations cephalosporins, II generations fluoroquinolones, tetracyclines, chloramphenicol and cotrimoxazole throughout observation period of storage in frozen state.

Cryopreservation in liquid nitrogen is reliable method for bacterial strain long term storage which enables *E.coli* clinical isolate functional stability without changes of their sensitivity to antibiotics.

