

program "Statistica 7.0" software with the definition of Student's criteria (t) and non-parametric χ^2 . The differences were considered significant at $p < 0.05$.

Among the examined children 68 (66.7%) ones had sensorineural hearing loss, 34 (33.3%) - conductive hearing loss. There were 36 girls (35.29%) and 66 boys (64.71%), an average age of children was 13.90 ± 3.11 years. The control group consisted of 60 practically healthy children, with the appropriate distribution by sex: girls - 22 (36.67%), boys - 38 (63.33%) ($\chi^2 < 1.0$, $p > 0.05$). According to the age criterion, the comparison groups were comparable ($p > 0.05$).

The analysis of the obtained results showed that the mutation of the GJB2 gene in the homozygous state occurred among children with sensorineural hearing loss - in every second (50.0%), among children with conductive hearing loss - in 11.77% of cases, while in the control group - with a frequency of 5.0% ($\chi^2 = 38.32$, $p < 0.001$). Among children with sensorineural hearing loss, mutation of the GJB2 gene (c.35delG) in boys was significantly more common than among girls - by 20.58% ($\chi^2 = 7.69$, $p = 0.005$). While the absence of mutations was more often observed in children of the control group and with conductive hearing loss - both boys and girls than in those with sensorineural hearing loss: 25.98% ($\chi^2 = 8.71$, $p = 0.003$) and 19.02% ($\chi^2 = 5.91$, $p = 0.015$), and 26.47% ($\chi^2 = 6.56$, $p = 0.01$) and 11.76% ($p > 0.05$), respectively.

Thus, mutation in the GJB2 gene (c.35delG) is significantly more common in boys with sensorineural hearing loss than in girls.

Kushnir O.V.

PROSPECTS FOR APPLICATION OF OMEGA-3 POLYUNSATURATED FATTY ACIDS IN IMMUNONUTRITIONAL PREVENTION OF RESPIRATORY DISEASES

*Department of Hygiene and Ecology
Bukovinian State Medical University*

The theory of immunonutritional prevention of viral diseases is gaining considerable popularity among scientists and clinicians. In the context of increasing socio-economic burden of respiratory diseases, omega-3 polyunsaturated fatty acids (PUFA) are of great importance in nutritional immunocorrection.

The aim of the study was to analyze research data on the sources of omega-3 PUFA, their impact on human health and prospects for their application for immunocorrective nutrition in the pandemic COVID-19.

PUFAs are precursors of glycolipids, phospholipids, eicosanoids, which form a complex regulatory matrix to maintain intracellular homeostasis at the appropriate level [Xue H., Wan M., 2006]. They are an important source of energy, structural components of cell membranes, as well as regulators of gene expression that affect the metabolism of lipids, carbohydrates, proteins, cell growth and differentiation [Gula NM, Margitich VM, 2009].

A significant role in inhibiting the inflammatory process is played by eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which are present at the site of inflammation and are transformed into special mediators (resolvins, proteins, maresins) under the influence of enzymes [Basil et al., 2016; Rogero M. et al., 2020].

Omega-3 fatty acids have been shown to reduce the amount of reactive oxygen species and proinflammatory cytokines (tumor necrosis factor α , -interleukin (IL) IL 1, IL 6, IL 8), reduce NF- κ B activation, thereby preventing translocation of nuclear p65 NF- κ B, as well as minimize the synthesis of cyclooxygenase 2. EPA and DHA help to resolve the inflammatory process and accelerate the repair of various tissues, including SARS-CoV 2-induced damage to the respiratory system [Messina G. et al., 2020; Rogero M. et al., 2020].

F.BourBour et al. (2020) believe that a balanced diet and supplements that contain "pure" nutrients may play a leading role in the prevention of COVID 19. It has been suggested that omega-3 fatty acids can reduce the severity of inflammation, correct respiratory disease, prevent development of thromboembolic complications in SARS-CoV 2 infection [Sorokin A. et al., 2020].

A number of scientists believe that optimizing the status of omega-3 fatty acids can prevent the development of infectious diseases, including COVID 19, and recommend that diet should be supplemented with EPA and DHA [Weill R. et al., 2020; Calder R. et al., 2020].

Adequate omega-3 fatty acids can be achieved by intake of certain foods (flaxseed, soybean, rapeseed oil, cold sea fish, fish oil) and / or taking dietary supplements.

Unfortunately, neither optimal doses of omega-3 fatty acids nor a required duration of their intake, which can contribute to optimal immunocorrection, are known yet. According to R. Calder et al. (2020), the ideal daily dose of omega-3 fatty acids is 250 mg, whereas M.Husson et al. (2020) recommend the use of higher doses - 500 mg / day. The minimum duration of omega-3 fatty acids, according to various authors, ranges from 2 months [Husson M. et al., 2016] to 1 year [Watson H. et al., 2020].

Masikevych A. Yu.

WAYS TO MINIMIZE AN ENVIRONMENTAL HAZARD TO THE RIVER SYSTEM OF THE POKUTSKO-BUKOVYNIAN CARPATHIANS

*Department of hygiene and ecology
Bukovinian State Medical University*

The aim of the research was to investigate the ecological condition and to develop a system of engineering measures to minimize the environmental hazard to the river system. As a benchmark for comparing the impact of anthropogenic activities on the state of mountain ecosystems, we have chosen the protected areas of the Vyzhnytskyi National Nature Park (hereinafter NNP). To prevent microbiological contamination of streams and watercourses, we used a fibrous carrier type "Via" (TU 995990), made of textured plait thread (TU 6-06-C116-87, tex 350). Earlier, a number of authors (Hvozdiak, 2003; Hvozdiak and Sapura, 2009) found that the fibrous carrier "Via" can be successfully used for the construction of "bioreactors" for surface degree of purification. Water sampling was carried out in the Cheremosh and Siret river basins, which flow into the Pokutsko-Bukovynian Carpathians and is part of the Ukrainian part of the Danube basin. Coli-index, total number of microbes count was determined by generally accepted methods in accordance with methodological guidelines (Nakaz MOZ Ukraine 284, 2007). To confirm the morphological and other properties of the culture of microorganisms used the method of microscopy with subsequent identification according to the determinant of Bergi.

An increase in the content of suspended solids in the river system of traditional economic landscapes is shown, which is accompanied by a decrease in free oxygen in water and an increase in biochemical oxygen consumption and chemical oxygen consumption and total oxidation. At the same time, the content of chlorides and nitrites (salts of hydrochloric and nitric acids) increases in water, which leads to acidification of the river system pH = 5.8 (below the norm San PiN 4360-88; Surface Water Directive EES). Based on the monitoring observations, it can be stated that there is a progressive trend of pollution of the river system in the territories of traditional economic landscapes, which are outside the protected areas and where there is active anthropogenic activity. The use of a bioreactor based on fibrous carrier "Via" for surface water treatment has shown that during the season the carrier becomes overgrown with invertebrates (so-called periphyton). Bacteria and algae also accumulate on the lashes. To reduce the inflow of discharges into the river system of waste from alcohol and food enterprises, in the absence of centralized treatment facilities in the region, a reagent method of cleaning discharges based on sodium hypochlorite was quite effective. The optimal dosage of sodium hypochlorite, which is used for wastewater treatment, is 0,45 dm³/m³ of untreated wastewater. The proposed method does not require a radical restructuring of existing treatment facilities and significant material costs to create new ones using our proposed technology. Sodium hypochlorite, used as a reagent, is accumulated in large quantities at the Kaluga plant for the production of sodium metal as a waste that requires additional costs for disposal. In this situation, it can be claimed about combination of economic and environmental components of sustainable development. To reduce the pollution of the river system with waste from the forest processing cycle, we proposed the use of a modified method of obtaining fuel pellets and briquettes