

In the course of the work it was found that the phenolic method of isolating total DNA has a high lability which makes it possible to adapt this technique to the specificity of DNA isolation from different plant samples. Also the low cost of reagents and laboratory plastics can be attributed to the advantages of the method used. The concentration of the isolated nucleic acids in the solution was quantitatively measured using a spectrophotometer "Nanophotometer P330" and was in the range 37.4 - 380 ng / mcl. The purity of the samples was determined from the ratio of optical densities at 260 and 280 nm (A260 / A280) and varied in the region of 1.9 which corresponds to generally accepted standards and speaks of the absence of critical protein contamination.

Conclusions. A phenolic technique for extracting total DNA from a biomaterial was adapted for solving the set tasks for studying the herbal medicinal raw material of the horsetail. Samples of total DNA of *Equisetum arvense* were obtained, the required quality for further scientific research to assess the quality of incoming plant raw materials.

HEREDITARY LOAD WITH HELMINTHIASES

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Introduction. Epidemiological studies of helminth invasions have shown that the propensity to enter into parasitic worms is characterized by family accumulation, that is, it involves the involvement of genetic factors.

Aim. The current study focuses on the genetic factors in the predisposition to some parasitic infections.

Material and methods. Descriptive method was used based on the analysis of 34 scientific articles, related to the topic.

Results and discussion. The gene-epidemiological analysis of the infection of *Ascaris lumbricoides* was performed in the Jirel tribe in Eastern Nepal. Information was gathered about 1261 individuals belonging to the same pedigree. Assessment of infection with ascariasis was carried out at two time points. After an initial diagnosis, all patients were treated with an anthelmintic drug, albendazole. Exactly one year later, those who received medication were again examined for detection of repeated infection. The helminth load was evaluated by three components: the number of eggs per gram of feces, the number of helminths and helminth biomass (total weight). For all three indicators, genetic analysis based on comparison of the same type of indices in relatives showed an obvious presence of the genetic component, which makes up 30 to 50% of the variability in the helminth load. Effects of the general environment, for example, the general economy, accounted for 3 to 13% of the total phenotypic variability. The obtained data testified that the diversity in human susceptibility to ascariasis (in the study study) was almost half explained by genetic factors.

These data differed from the previously obtained results of a study of the same population, in which the relationship between the degree of infection caused by *Ascaris lumbricoides* and *Trichuris trichiura*, relatives of the first degree of parenthood: parents and children was studied. Since the infection could depend on the age, an amendment was previously introduced for this indicator. Comparisons were carried out only in groups, brought to a single age. Despite this, there was no stable relationship between the degree of infection and kinship. In particular, between parents and children, the connection was not higher than between people who were not related by kinship. This indicated that genetic factors were not decisive in predicting the degree of infection. If the genetic basis for such a predisposition existed, then their effect exceeded other, environmental or behavioral factors.

Somewhat later, another genetic study was carried out in the same population. 375 genetic markers were studied in 444 members of this genetically isolated population of Nepal. The construction of a single pedigree of the participants in the experiment made it possible to analyze 6209 related pairs for a helminth load, which was estimated from the number of eggs in the stool. The study revealed two genes located in 1 and 13

chromosomes, which could influence the predisposition to ascariasis. This study was the first genomic analysis to study the genetic predisposition to infection with roundworms, in particular *Ascaris lumbricoides*.

Subsequently, in the same population, a genomic analysis was performed with respect to another round worm - the whipworm, *Trichuris trichiura*. 1253 members of the giraffe tribe were counted helminth eggs. All examined were members of the same pedigree, which numbered more than 26,000 pairs of relatives. All of them were informative links for genetic analysis. The results of the study showed the presence of two loci of genes, which indicated a predisposition to the risk of infection with whipworm. One locus was located at 9, and the other – in 18 chromosomes. It was also suggested that two other loci: in 12 and 13 chromosomes - could influence predisposition to infestation. By the methods of molecular genetics, when studying another population – residents of Bashkortostan – it was established that a certain variant of the chemokine 11 gene (CCL11), namely CCL11 * A (-384A> G allele CCL11), and, accordingly The genotype CCL11 * A / * A is a marker of an increased risk of ascariasis. As is known, this chemokine is one of the cytokines - protein molecules, synthesized by immune cells and participating in the immune response. The HS-chemokine 11 gene (CCL11) is located in the human chromosome 17.

Individual predisposition to ascariasis is described not only in humans, but also in pigs as a result of their infection with another species of *Ascaris suum*. Perhaps this allows us to consider the phenomenon of predisposition to parasitic diseases as general biological, characteristic of different species. Since ascariasis in pigs can be a good model pathology for humans, the data of the decoding of the mitochondrial genome of human ascarids and pork ascarids also represent interest. Thus, a complete analysis of the mitochondrial genome *Ascaris lumbricoides* showed that the parasite contains 14,281 pairs of nucleotide bases. The relative content of nucleotides of four possible types was as follows: adenine – 22.1%, tymin – 49.8%, cytosine – 7.8% and guanine – 20.3%. In another study, a comparative analysis of the mitochondrial genome of human ascaris and pork ascarids was performed. The genetic identity of the mitochondrial genomes *Ascaris lumbricoides* and *Ascaris suum* was 98.1%. An assumption was made that *Ascaris lumbricoides* and *Ascaris suum* may represent the same species.

Conclusions. The research confirmed that predisposing to helminthes is at least partly genetic in origin.

DRINKING WATER AND ITS INFLUENCE ON COURSE OF HUMAN GENETIC DISORDERS

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Introduction. Water is a transparent, tasteless, odorless, and nearly colorless chemical substance that is the main constituent of earth streams, lakes and oceans, and the fluids of most living organisms. Water covers 71% of the Earth's surface. Only 2.5% of this water is freshwater.

Aim. The research was devoted to investigation of water biological functions and consumption by humans in relation to different multifactorial genetic disorders.

Material and methods. Descriptive method was used based on the analysis of 19 scientific articles, related to the topic.

Results and discussion. Safe drinking water is essential to humans even though it provides no calories or organic nutrients. Access to safe drinking water has improved over the last decades in almost every part of world, but many people still lack access to safe water. Water is an essential component required for the effective working of our body since body parts including our brain and the various tissues are mostly composed of water. It also removes toxins and most of the waste products from our body contributing to a healthy quality of life. If our body lacks water then our heart has to make an extra effort to pump fresh oxygenated blood to our organs causing severe health issues. Drinking plenty of water helps fight against the flu and other ailments like kidney stones. Water, along with lemon or lemon juice is often used to overcome respiratory diseases, intestinal problems, rheumatism and arthritis. On the whole, water plays a fundamental role in strengthening immune system. In addition, it helps maintain the elasticity and suppleness of the skin and prevents dryness by detoxifying the skin. Some medical links were found concerning to genetic conditions and water consumption. For example, it was discovered that consuming