opisthorchiasis – 12% and 1% falls at other less common parasitoses.

The role of inorganic plant elements is many-sided: they are parts of cellular structures, take part in biochemical processes, determine the conformation of organic molecules and membrane permeability, influence the living body signaling system functioning, and the main thing is that they take part in the processes of biosynthesis of plant active agents which are necessary for their medical properties manifestation. According to one of the classifications chemical elements are subdivided on the grounds of their importance for the plants: 1) essential macroelements (magnesium, calcium, potassium, nitrogen, phosphorus, sulphur) and microelements (manganese, molybdenum, nickel, cuprum, ferrum); 2) useful elements (sodium, cobalt, chrome, selenium, aluminon). We succeeded to find out all the numerated above substances in Kuzbass antiparasitic action medical plants: absinthium, mugwort, ginger plant, sown garlic, field pumpkin, bulb onion, wild carrot, poisonberry, common hop, garden huckleberry, horseradish, horseheal. Anthelminthic properties of these plants are assured by mineral substances partaking in the synthesis of alkaloids, flavonoids, glycosides, terpenoids. At the same, time geochemical factors and infestation with phytohelminths, which stimulate the accumulation of a range of elements (molybdenum, selenium, chrome, ferrum) in host-plant tissues, influence the content of mineral elements in the plants. These elements shortage in the soil promotes the plants protective properties reduction intensifying pathological processes in their nature at the phytohelminths infestation.

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FASTING-DIET THERAPY INFLUENCE ON SALT GUSTATION THRESHOLD

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Arterial hypertension (AH) is the most common disease concerning cardiovascular pathology. Its connection with heavy consumption of sodium salt is evident. The carried out research (Volkov V.S. and co-authors, 2004) testify the existence of high salt gustation threshold (HSGT) in arterial hypertension teenagers. However, more than a half of the teenagers with AH are overweighted. In this context the HSGT level in teenagers with AH in combination with overweight with Quetelet index more than 25 and fasting-diet therapy influence on HSGT.

56 teenagers with AH combined with overweight were examined. The average age was 14 years old (± 2,6). Besides general clinical-laboratory research the HSGT was studied according to the modified method of Henkin R. (Konstantinov Ye.N. and co-authors, 1983). In accord to the HSGT level the examined patients were divided into three groups: 4 (8,4%) teens had the HSGT level below normal one, 2 (4,2%) – had a medium HSGT level and 50 (87,4%) teens had a higher level of HSGT.

We also raised a question of the HSGT disturbance remoteness. On this basis the examination of 150 teens aged from 14 to 17 was carried out. The analysis of the findings testified that 130 (86,7%) teens have a higher level of HSGT. In the given group the HSGT study in 36 children with periodical arterial pressure rise against the background of overweight. The research data found out the HSGT increase both in the teenagers and their mothers.

A fasting-diet therapy in agreement with the guideline of the USSR MHC (1990) was carried out. The cycle lasted 19 days. Due to curative measures the HSGT decrease was registered in 50 (89,3%) of 56 teenagers. Not only the dynamics of arterial pressure decrease in all the patients was noticed, but also body weight losing by 6,4 kg.

So, it is detected that the HSGT level increase in teenagers has a burdened heredity. the carried out fasting-diet therapy has not only a positive effect at AH and decreases body weight, but also promotes the salt gustation threshold decrease.

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PATHOLOGIC ANATOMY AND MOLECULAR BIOLOGY ON THE BOUNDARY OF MILLENIA

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The role of pathoanatomy in the development of biomedical sciences is of great value and diversity. A wide introduction of biochemical methods, and in morphology – histological chemistry, allowed studying metabolic and molecular changes. The progress of molecular biology and immunohistochemistry, in situ hybridization became the foundation for creation of a new discipline – molecular pathology studying molecular biology of general pathologic processes and diseases in the level of structure, functional activity and gene expression changes.

The pathoanatomy gradually co-opted current achievements and up-dated engineering solutions of such sciences as anatomy, physiology, chemistry, microbiology, immunology, genetics, cellular and molecular biology. Nowadays it has got an opportunity to

study structural and functional imperfections starting with the organismic level and finishing with the molecular-genetic one.

Let us define the main engineering achievements of medical and biological sciences which have given the master pulse to the development of modern pathoanatomy, which nowadays combines elements of classical and molecular pathology, in brief.

The methods based on the immune mechanisms rest on the interaction of human tissue and molecular antigens with specially obtained antibodies bearing various marks on themselves. The light imuunohistochemistry antibody marks can be represented by various fluorochromes, horseradish peroxidase, alkaline phosphatase, peroxidase-antiperoxidase, avidin-biotin-peroxidase and avidin-streptavidin-peroxidase complexes, and also radiogenic substances. In the electronic immunohistochemistry it is preferable to use the marks in the form of colloid silver or gold.

The light immunohistochemistry allows revealing antigens in tissue and cellar levels and evaluating the resultant amount on the fluorescence intensity or tissue coloration. The electronic immunohistochemistry is used to study the subcellular antigen focalization.

The immunohistochemistry serves also for the evaluation of cell-specific gene expression on the corresponding protein products, coded by the given genes, in tissues and cells.

The immunohistochemical cells' marks coupled with their flow cytophotometry, laser and computer sorting allow detaching cell groups according the availability of definite antigenic determinants that is widely used in the hemopathy diagnosis.

The investigation of disease molecular foundations is associated with the identification of separate products (abnormal proteins, for example), transmission paths of cellular and intercellular signals, and synthesis of definite proteins, glycol- and lipoproteins.

The development of modern DNA analysis became possible after the discovery of series of enzymes (endonucleases, restrictases, polymerases, transcriptases) providing specific manipulations with DNA and RNA. Due to the fact it became possible to obtain specific fragments of the DNA molecule from different cells and tissues, to synthesize amino acid sequences typical of definite proteins, to create new DNA molecules by the recombination of molecule fragments from different sources. The newly synthesized DNA molecules' fragments are often used as a cloning vector for separate proteins with predetermined properties. The fragments of already existing DNA are transformed with the help of endonucleases to the vectors which are distributed in phages in the nature of a genomic library. The genomic library is necessary for the identification of newly discovered proteins.

The use of molecular analysis current technology allowed beginning the investigation of the expression of separate genes controlling the production of a definite protein. The analysis of gene structure helped understand their transcription mechanisms and identify many factors regulating it. In some cases these factors appeared to be hormones, in others – nucleoproteins responding extracellular cues.

The opportunity to investigate separate genes' functions appeared after the introduction into practice the method of obtaining transgenic animals and models with a definite gene knockout. Into the egg cell of animals (mice) separate genes responsible for the synthesis of a definite factor are introduced, and, as a result, animals with hyperexpression of this focalized tissue-specifically factor are obtained. The gene knockout technique is particularly widespread nowadays as it allows studying the role of separate factors in various diseases' pathogenesis.

The gene expression leads to the intensification of protein synthesis. The proteins can be detected and identified both by immunochemical method – with the help of gel electrophoresis, and by immunohistochemical methods – using high-specific antibodies.

The polymerase chain reaction (PCR) discovery in 1986 became a revolution in practical molecular biology due to the possibility of quick amplification of DNA specific fragments. For this method use it is enough to have one molecule or a DNA or RNA fragment to produce a necessary for the identification amount of DNA copies with the help of gel electrophoresis and Southern-blot- hybridization. This method is widely used for gene structure and expression investigation. For nucleic acids isolation and their conversion into the liquid phase cellular and tissual breakdown is necessary, and it complicates the comparison of amplification results and histopathological picture and also cell counting.

The in situ hybridization method provides an accurate focalization of specific nucleotide sequence in cells. Unfortunately, it possesses a low-grade (compared to PCR) sensitivity, and, to carry out the reaction it is needed not less than 10-20 m-RNA copies per a cell.

The use of molecular technology has allowed combining the high PCR sensibility and cellular focalization of in situ hybridization. This method got the name of in situ PCR.

All the three methods are widely used in pathology. The greatest number of the in situ PCR investigations is focused on the definition of viral or foreign sequence of nucleic acids. The possibility to detect latent viruses in single copies is an important measure on the way to viral disease pathogenesis comprehension.

The in situ PCR method is also used to study endogenic DNA sequences inclusive of single human gene copies, chromosomal translocations and mapping of numerically insignificant copies of genomic sequences in metaphase chromosomes. The possibility of carcinogenesis genetic determinants studying in-

cluding DNA mutations and chromosomal translocations is extremely important for the comprehension of latent period between DNA damage and the appearance of morphological signs of atypia or malignization.

The use of the complex of molecular-biological, immunological and morphological methods in pathoanatomy has lead to a more thorough understanding of the interconnection between the structure and the function, and to the formation of a new line in the development of pathology – functional morphology, which in XXI century is becoming a guiding approach in studying the human body and various diseases morphogenesis.

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IMMUNOLOGY BARRIER IN EPITHELIAL LAYER WITH MICROBIAL CONTAMINATION

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Mechanisms of the immune response in epithelial barriers of the body in response to microbial contamination, and also owing to the effect of other disturbing factors, are the subject of fierce disputes. Singular woks on the influence of regulator factors, in particular, cytokines, on the barrier properties of epithelial plates do not solve the problem of cell-to-cell cooperation between lymphocytes and epithelial colony-forming cells at alteration and microbial contamination (Yarilin A.A., 1999).

The biological sense of inflammation as an evolutionally formed process lies in delimitation and elimination of the lesion and causing it pathogenic factors. In the infant state of the infectious agent damage of the epithelial barrier a local inflammatory response progression occurs, redistribution of cells from the blood bed to the inflammatory tissue and intensification of proinflammatory cytokines output (Tsuboushi S., 1981). In the initiation and regulation of cellular and antibody responsiveness macrophages take part by antigen presentation to lymphoid cells and because of their possessing a powerful phagocytic and lytic potential, the presence phagocytotic vesicles in their cytoplasm, the ability to release compliment components and also various cytokines output. A macrophage is an elementary cell regulating regenerative processes by cytokines output, the transition from the inflammatory response and alteration of the epithelial barrier to its neogenesis (Yarilin A.A., 1996, 1997, 1999). At the same time the enzymes released by macrophages, proteolytic enzymes in particular, can damage surrounding tissues and give ride to secondary inflammatory alterations, thus promoting the process's chronization in the epithelial plates (Roncucci L., 1988). Macrophages influence cytodifferentiation, migration, poliferation and functions of monocytes, neutrophils and lymphocytes. In the focus of primary acute inflammation macrophages make less than 5% of infiltrative cells, yielding in number to granulocytes. On the second-third day from the beginning of alteration macrophages become a predominant cellular pool of the infiltrate, succeeding quickly tumbling granulocytes. The migration of monocytes from the blood flow into tissues is mediated by the expression of integrin adhesion molecules CD18+ , IL-6, INF- , TNF-a (Ohtsuka Y.,2001) on monocytes and endotheliocytes. After the adhesion to endothelial cells and successful cooping of the endothelial barrier by diapedesis and transepithelial migration, the monocyte makes land downstream the affected epithelium region or pocket of infection influenced by the corresponding chemoattractants. The chemoattractant function is performed by the components and decay products of microbes, the bacterial LPS in particular, and also the tissues' breakdown products (Paltsev M.A., 1996). The cells' movement with no such a gradient bears an irregular character and is called "random migration". When binding the LPS/LPB and the cellular form of myelocytes the cell eating of gram-negative bacteria is intensified, the cell-mediated response to low concentrations of LPS. When binding the LPS/LPB and the soluble form of CD14 a triple complex, which is identified by the receptors of endothelial, epithelial and dendritic cells of Langerhans, is formed, and then the induction of the inflammatory response to LPS occurs. Such reactions bear local character and prevent the incidence (Roncucci L., 1988). The binding of the LPS/LPB complex and CD14 monocytes can be over with the LPS internalization without the induction of the inflammatory process.

In the early stage of inflammation the bacterial LPS or the agent of viral nature, affecting epithelial cells, induce the release by epithelial cells of proinflammatory cytokines, IL-1 and TNF-a in particular (Bacon K., 1998). Besides, when damaging the epithelial barrier, macrophages, being antigen-presenting cells and affecting through the receptor apparatus of immunocompetent cells, induce them to release proinflammatory cytokines mediating the activation of specific and nonspecific immune responses, as well.

The number reduction of cells examined in populations' peripheral blood in the acute period of sickness at various virulent diseases attended by the damage and partial damage of mucous coats' and epidermis's epithelial plates cannot be interpreted as a being formed immunodeficiency disease, but should be considered as variable immunodeficiency, due to the fact that the number of immunocytes increases