Abstract. In 1958 Poliomyelitis Institute in Moscow and Institute of Experimental Medicine in St. Petersburg received from A. Sabin the attenuated strains of poliomyelitis virus. The characteristics of the strains were thoroughly studied by A. A. Smorodintsev and coworkers. They found that the virulence of the strains fluctuated slightly in 10 consecutive passages through the intestine of the non-immune children. A part of the Sabin material was used by A. A. Smorodintsev and M. P. Chumakov in the beginning of 1959 for immunizing approximately 40000 children in Estonia, Lithuania, and Latvia. Epidemic poliomyelitis rate in these republics decreased from approximately 1000 cases yearly before vaccination to less than 20 in the third quarter of 1959. This was a convincing proof of the efficacy and safety of the vaccine from the attenuated Sabin strains. In 1959, according to A. Sabin's recommendation, a technology of live vaccine production was developed at the Poliomyelitis Institute, and several experimental lots of vaccine were prepared. In the second part of 1959, 13.5 million children in USSR were immunized. The epidemic poliomyelitis rate decreased 3-5 times in different regions without paralytic cases, which could be attributed to the vaccination. These results were the final proof of high efficiency and safety of live poliomyelitis vaccine from the attenuated Sabin strains. Based on these results, A. Sabin and M. P. Chumakov suggested in 1960 the idea of poliomyelitis eradication using mass immunization of children with live vaccine. 72 million persons up to 20 years old were vaccinated in USSR in 1960 with a 5 times drop in the paralytic rate. 50-year-long use of live vaccine results in poliomyelitis eradication in almost all countries worldwide. More than 10 million children were rescued from the death and palsy. Poliomyelitis eradication in a few countries where it still exists depends not on medical services but is defined by the attitude of their leaders to fight against poliomyelitis. In some developing countries the vaccination data are falsified, thereby threatening the polio epidemics reappearance and the virus spreading to other countries. Methods must be developed for detection and dealing with extremely rare persistent virus carriers. Because of all these constraints the outcome of poliomyelitis eradication at present is uncertain and vaccination must be continued. The world has become poliovaccine dependent.

Key words: OPV history, poliomyelitis vaccine live oral, poliomyelitis eradication
Abstract. The goal of this work was to examine the effects of infections caused by HSV1/2, CMV, and HPV on the cytokine profile in pregnant women with obstetric complications (OC) and to evaluate the efficacy of the therapy with recombinant human α2b interferon. Direct markers of the viruses were identified using PCR and rapid culture method in 85 pregnant women divided into 3 groups: group 1 (n = 21), women with visual HPV-related clinical manifestations; group 2 (n = 48), with detectable markers of viral infections and no clinical manifestations, and group 3 consisting of pregnant women with OC without markers and clinical manifestations of viral infections (n = 16). The rate of HPV DNA detection in pregnant women was higher than that of herpesviruses (HV) CMV and/or HSV: 37.6% vs. 11.8%. The frequency of mixed HV/HPV infection in group 1 was 2.3-fold higher than in group 2. The cytokine levels of IFNα, IFNγ, IL-4, IL-6, IL-8, and TNFα in blood plasma and vaginal washings were studied. Statistically significant differences in infected women (groups 1 and 2) in comparison with uninfected women (group 3) were detected: a) blood plasma concentration of IFNγ increased in clinically manifested HPV infection; b) blood plasma IL-8 concentration increased in clinically manifested HPV and in mixed HV+HPV infections without clinical symptoms of HPV infection; c) blood plasma concentration of TNFα increased in women with asymptomatic HPV-infection; d) IL-6 concentration in vaginal washings increased in mixed infection in group 1. The effect of IFN-α2b was assessed by analyzing cytokine levels in women on basic therapy with and without Viferon®. In infected women, Viferon® caused a 2-3-fold decrease in the concentrations of IFNγ and IL-8 in blood plasma, thus bringing them near those of uninfected women with OC. The analysis of the state of newborns health has shown that for women with OC the risk of giving birth to a child in critical condition is 4.3-fold higher when CMV is detected in the third trimester of pregnancy.

Key words: pregnant women with obstetric complications, herpes simplex virus, human cytomegalovirus, human papilloma virus, herpesviral infection, Viferon

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Effect of Mutations Changing the Antigenic Specificity on the Receptor-Binding Activity of the Influenza Virus Hemagglutinin of H1 and H5 Subtypes

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Abstract. The influenza virus hemagglutinin (HA) is an envelope virus glycoprotein responsible for the attachment of the virus particles to cells via binding terminal sialic acid residues of cell surface oligosaccharides. In our previous works on influenza A virus escape mutants, that is, mutants resistant to the neutralization effect of monoclonal antibodies, we encountered amino acid changes in the vicinity of receptor-binding pocket of the HA. In this work we degree the affinity to both alpha-2, -3, and alpha-2, -6, -sialoglycoconjugates was assessed for escape mutants of influenza H1 and H5 viruses. The data demonstrate that the decrease of the positive electrostatic charge of the HA molecule surface resulting from amino acid changes conferring resistance to monoclonal antibodies may lead to a lowering of the affinity to sialic acid-containing analogs of cell receptors. The results are discussed in the context of the evolution of HA in natural circulation of H1 and H5 influenza viruses.

Key words: Influenza virus, hemagglutinin, antigen, amino acid changes, receptor-binding activity

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Efficacy of Anti-Neuraminidase Drugs Application during and after an Influenza Pandemic

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Abstract. The emergent 2009 A(H1N1) pandemic brought into acute focus the problem of choosing the most effective anti-influenza drugs for successive influenza infection spreading control. Oseltamivir and zanamivir, influenza virus neuraminidase inhibitors (NAIs), were recommended by the WHO experts for the treatment and prevention of influenza, including that caused by pandemic strains. A major concern regarding the use of specific antiviral compounds is the emergence of the drug-resistant strains. Oseltamivir carboxylate and zanamivir IC50 values were equal to 0.3-5.2 μM for the most of A(H1N1)pdm09 pandemic strains and 1.6-8.6 μM for the strains of influenza B virus in cell-based ELISA assay (2009-2010 season). All the studied strains of influenza A(H1N1)pdm09 (151) and B (22) viruses were sensitive to NAIs (2009-2011 seasons). For the first time in Russia oseltamivir-resistant A(H1N1) pdm09 influenza virus was isolated from the patient on the 5th day of a treatment course of this drug.

Key words: Oseltamivir, Zanamivir, Pandemic, A(H1N1)pdm09 and B Influenza viruses, Neuraminidase, Monitoring, Resistance, H275Y mutation
Estimation of Activity of Bis-Netropsin Derivatives Based on a Model of an Experimental Cutaneous Herpes Simplex Virus Disease of Guinea Pigs

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Using the model of an experimental cutaneous infection of guinea pig males caused by herpes simple virus type 1, it is shown that application of dimerico derivatives of netropsin Lys-bis Nt and 15Lys-bis Nt in the form of poliethylenglicol-based ointment suppresses viral infection more effectively than acyclovir.

Key words: virus simplex herpes type 1, bis-netropsin, antiviral activity in vivo, ointment medicinal form

Frequency of Detection of Different Hepatitis C Virus Subtypes in the Moscow Region

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Abstract. There is a high degree of the hepatitis C virus (HCV) infection in Moscow region. The analysis of different HCV subtypes is caused by the necessity of prognostic estimation of predominant subtypes for the near future because new schemes of antiviral therapy for several HCV genotypes are developed. It is established that subtype 1b (52.1%) prevails in Moscow region. The increase of subtype 3a (37.2%) against the decrease in subtype 1b is observed. In patients infected before 1990 HCV subtype 1b is predominant and liver cirrhosis is detected in 46.7% of cases. The intergenotypic recombinant 2k/1b is registered with the frequency of 0.8% and about 2% of cases of mixed HCV subtypes are detected.

Key words: hepatitis C virus, virus subtypes in Moscow region, monitoring of subtypes

Development of ELISA on the Basis of Monoclonal Antibodies for Detecting Specific Activity of the Vaccine against Hemorrhagic Fever with Renal Syndrome

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Abstract. The monoclonal antibodies to Puumala, Dobrava, Hantaan, and Seoul hantaviruses were obtained using mice. The viruses were known to cause HFRS, and two variants of ELISA were designed. First, Hanta-PUU variant, was constructed using monoclonal antibodies to Puumala virus envelope glycoprotein (GN:GC) for detecting only Puumala virus antigen. The second, Hanta-N variant, was constructed using monoclonal antibodies to Dobrava and Puumala nucleocapsid proteins for detecting four above mentioned hantaviruses. Both Hanta-PUU and Hanta-N assays were reliable in detecting specific hantavirus antigens and the immunogenecity of hantavirus vaccines.

Key words: hantavirus, HFRS, monoclonal antibodies

Biological Properties of Velogenic Strains of the Newcastle Disease Virus Isolated in the Northern Caucasian Region

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Abstract. The results of the biological property investigation of two Newcastle virus strains isolated in Northern Caucasian region – NDV/Adigeya/duck/8/2008 and NDV/Adigeya/duck/15/2008 – were presented. The phylogenetic analysis revealed that these strains belonged to genotype 7 of clade 2. Using molecular-biological analysis of established nucleotide sequences including proteolytic site of fusion peptide it was demonstrated that the strains were velogenic. This conclusion was proved by testing the pathogenicity on the model of intracerebral infected chickens (ICPI – IntraCerebral Pathogenic Index – was found to be 2).
Pathomorphological study of dead chickens made it possible to classify strains as neurotropic with low level of visceral tropism.

**Key words:** Newcastle disease virus, avian paramyxoviruses, velogenic strains, viscerotropism, neurotropism