on the activity of liver CYP-dependent enzymes in mice experimentally infected with influenza virus A/Aichi/2/68(H3N2) (1.5 LD_{50}). It was found that influenza virus infection is a powerful prooxidant and causes a significant increase of the lipid peroxidation products as well as a decrease of the natural antioxidants (vitamin E, glutathione) and CYP. Moreover, the cytochrome *c*-reductase and the liver monooxygenases (aniline hydroxylase, ethylmorphin-N-demethylase, analgin-N-demethylase and amidopyrine-N-demethylase) are inhibited as compared to the control (non-infected) animals. We found that oseltamivir treatment led to a decrease of the products of lipid peroxidation on the 5th and on the 7th day after the virus inoculation. Besides, oseltamivir had a stabilizing effect on the content of CYP, activities of cytochrome *c*-reductase and liver monooxygenases. These effects were more pronounced on the 7th day as compared to the 5th day after virus inoculation.

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66

Antiviral Activity of Hemocyanin Isolated from Marine Snail *Rapana venosa*

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Topicality of Epstein-Barr virus (EBV) in the development of human pathology is enormous. This virus is the etiologic agent of acute form of the disease – infectious mononucleosis. The persistence of the virus in the human organism leads to the development of lymphoproliferative disease, the formation of various carcinomas and to the affection of the peripheral and central nervous system. Therefore, the antiviral activity of hemocyanin from *Rapana venosa* (RvH) against Epstein-Barr virus was studied. Hemocyanin RvH was isolated from the hemolymph of marine snails, leaving in the Black sea. The native molecule of RvH consist from two isoforms RvH1 and RvH2. Each structural subunit contains 8 covalently linked functional units (FUa to FUh) with different carbohydrate content. A comparative study of anti EBV activity of two isoforms RvH, as well as individual FUs was carried out. As a model of EBV-infection *in vitro* have been used the line of lymphoblastoid B-cells Raji. We preliminary shown that all preparations of hemocyanin RvH have low toxicity; CC_{50} was about 700 μg/ml. The antiviral activity was determined by a PCR method, using "Àmply Sens 100 R" system (Russia). Preparations were investigated in concentrations range: 1, 10 and 100 μg/ml. The analysis of obtained data allowed determination of the concentrations, oppressing the replication of the virus on 50%. That was shown by reducing of the number of genomic equivalents of EBV DNA on a cell. ID_{50} for the hemocyanin RvH has amounted to 1 μg/ml. At the same time FU RvH1-6 in concentrations of 10 and 100 μg/ml result in a 100% inhibition of EBV. That is not observed during the test of the total RvH. A similar picture is revealed for the RvH2 and its functional unit FU-5. Thus, the study of antiviral activity of investigated hemocyanins found that they have low toxicity and their effective doses were determined. Proceeding from the index of selectivity which is 700 for hemocyanins isolated from *R. venosa*, it is possible to conclude about their availability for the further researches as of drugs that are active against an Epstein-Barr virus.

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67

Long-term Inhibition of HIV-1 Replication in $CD4^+$ T Cells Transduced with a Retroviral Vector Conditionally Expressing the *Escherichia coli* Endoribonuclease MazF

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Considering the limitations of current antiretroviral therapy for HIV-1 infection, such as chronic toxicity, emergence of drug-resistant mutants, and inability to eradicate latently infected cells, gene therapy appears to be an alternative and desirable approach. We have recently developed a Tat-dependent expression system of MazF, an ACA-specific endoribonuclease derived from Escherichia coli, in a retroviral vector. Upon expression of Tat, MazF is induced in the cells transduced with this vector and can cleave HIV-1 mRNA, since HIV-1 genome has more than 240 ACA sequences. Strong inhibition of HIV-1 replication, irrespective of X4 or R5 strains, was observed without affecting cellular mRNAs in $CD4^+$ T cells (and PBMCs) isolated from different donors, when the cells had been transduced with the MazF-expressing retroviral vector (MazF/$CD4^+$ T cells). Furthermore, the replication of multi-drug resistant clinical isolates was also strongly inhibited in MazF/$CD4^+$ T cells. The proliferation and viability of the MazF/$CD4^+$ T cells were not affected even under HIV-1 infection. Long-term coculture experiments revealed that HIV-1 replication was always lower in the coculture of HIV-1-infected $CD4^+$ T cells with MazF/$CD4^+$ T cells than in that of HIV-1-infected $CD4^+$ T cells with no vector- or control vector-transduced $CD4^+$ T cells for more than 190 days. The HIV-1 proviral sequences of $CD4^+$ T cells after 3 days post-infection was compared with those after 190 days of the coculture cells and there was no substantial difference in the mutation rates of HIV-1 genes even after 190 days of coculture. Thus, the Tat-dependent MazF expression system has great potential for inhibition of HIV-1 replication in vitro without apparent cytotoxicity and may be able to avoid the emergence of resistant strains for a considerable period of time, indicating a possible candidate for treatment of HIV-1 infection.

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68

SP600125 Inhibits Orthopoxviruses Replication on a JNK1/2-Independent Manner – Implication as a Potential Anti-Poxviral

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The pharmacological inhibitor SP600125 [Anthra(1,9-cd)pyrazol-6(2H)-one 1,9-Pyrazoloanthrone] has been largely employed as a c-JUN N-terminal kinases (JNK1/2) inhibitor. In this study, we evaluated whether pretreatment with SP600125 was able to prevent Orthopoxviruses *Vaccinia virus* (VACV), *Cowpox virus* (CPXV) and modified *Vaccinia virus Ankara* (MVA) replication. Our findings are consistent with the assumption that pre-incubation with SP600125 at 10, 20, 40 or 50 μM, blocked