Vaccines as an approach to the immunocorrection in herpetic infections
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Abstract: Development of vaccines for immunologic correction in herpetic infections is an important problem that raises a growing concern worldwide. The data on the experimental studies of the efficacy of an inactivated whole-virion vaccine against herpes simplex viruses types 1 and 2 (HSV-1 and -2) using an animal model are discussed. The results of the multiyear application of the vaccine to ophthalmology and dermatology practice are also presented. The results unambiguously show a high efficacy of the vaccine in the prevention of recurrences of the infections based on activation of specific T-cell response. A live vaccine against the varicella zoster virus (VZV) was developed for control of the infection in children. For the cytomegalovirus (CMV) infection in adults, inactivated whole-virion vaccines are at the stage of development. An important part of the study addresses a combined application of the inactivated vaccines with immunomodulators.
Key words: Herpesviridae viruses; herpes simplex; recurrence; infection control; vaccine; immunomodulator; cell immune response; antibody

Genetic characterization of the Zaliv Terpeniya virus (ZTV, Bunyaviridae, Phlebovirus, Uukuniemi serogroup) strains isolated from the ticks Ixodes (Ceratixodes) uriae White, 1852, obligate parasites of the Alcidae birds, in high latitudes of Northern Eurasia and the mosquitoes Culex modestus Ficalbi, 1889, in subtropics Transcaucasia
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Abstract: Complete genome sequences were obtained for the LEI V-13841Ka (ID GenBank KF767463-65) and LEI V-279Az (ID GenBank KF767460-62) virus strains, which were classified as different strains of the Zaliv Terpeniya virus (ZTV). LEI V-13841Ka was isolated from the ticks Ixodes (Ceratixodes) uriae White, 1852 collected on Ariy Kamen (Commander Islands) in 1986. LEI V-279Az was isolated from the mosquitoes Culex modestus Ficalbi, 1889, collected in heron colony (Ardea Linnaeus, 1758) in Azerbaijan (1969) and was initially identified as Uukuniemi virus (UUKV). According to the results obtained LEI V-279Az is ZTV strain as well. LEI V-13841Ka and LEI V-279Az RdRp sequences have high level of homology (99 %) with previously sequenced ZTV/LEI V-271Ka. The L-segment nucleotide sequences are homological with ZTV/LEI V-271Ka on the level of 94% and 98% for LEI V-13841Ka and LEI V-279Az, respectively; M-segment – 89% and 88%, respectively. Such homologies for the amino acid sequences of Gn/Gc polyprotein are 98.3 % and 97.7 %. NP proteins of ZTV/LEI V-13841Ka and LEI V-279Az have 88.7 % and 84.6 % homologies with ZTV/LEI V-271Ka both for amino acid and nucleotide sequences, respectively. Thus, for the very first time we demonstrated ZTV strain isolated from mosquitoes in subtropical Transcaucasia zone. Obtained results permit to expand suggested area of ZTV and to fill up data upon the ecology of the Uukuniemi virus group.
Key words: Bunyaviridae; Phlebovirus; Zaliv Terpeniya virus (ZTV); Uukuniemi virus (UUKV); high latitude; colony sea birds; Alcidae; Ixodidae; Ixodes (Ceratixodes) uriae; Culicinae; Culex modestus; subtropics; Transcaucasia; next-generation sequencing

Genetic characterization of viruses from the antigenic complex Tyuleniy (Flaviviridae, Flavivirus): Tyuleniy virus (TYUV) (ID GenBank KF815939) isolated from ectoparasites of colonial seabirds – Ixodes (Ceratixodes) uriae White, 1852, ticks collected in the high latitudes of Northern Eurasia – and Kama virus (KAMV) isolated from the Ixodes lividus Roch, 1844, collected in the digging colonies of the middle part of Russian Plane
Abstract: Genetic research into the Tyuleniy virus (TYUV) (ID GenBank KF815939) isolated in high latitudes from the Ixodes uriae White, 1852, ticks collected in the nesting colonies of the Alcidae (Leach, 1820) birds and Kama virus (KAMV) (ID GenBank KF815940) isolated from the I. lividus ticks collected in the nesting bird colonies in the middle part of the Russian Plane was carried out. Full-genome comparative analysis revealed 70% homology between KAMV and TYUV on the nucleotide level and 74% on the amino acid level. Thus, KAMV is a new member of the TYUV complex belonging to the seabird tick-borne virus group (STBVG) of Flavivirus (Flaviviridae). KAMV is a separate virus and forms separate phylogenetic line together with the TYUV, Meaban virus (MEA V), and Saumarez Reef virus (SRE V).

Key words: high latitudes; Russian Plane; colonial seabirds; Alcidae; covering biocenosis; Ixodidae; Flaviviridae; Flavivirus; Tyuleniy antigenic complex; Tyuleniy virus (TYUV); Kama virus (KAMV); metagenomic analysis

VV-1401-024

Genetic characterization of the Caspiy virus (CAS V) (Bunyaviridae, Nairovirus) isolated from the Laridae (Vigors, 1825) and Steridae (Bonaparte, 1838) birds and the Argasidae (Koch, 1844) ticks Ornithodoros capensis Neumann, 1901, in Western and Eastern coasts of the Caspian sea


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Abstract: Full-genome sequencing of the Caspiy virus (CAS V – Caspiy virus) (ID GenBank KF801658) revealed its attribution to the Nairovirus genus of the Bunyaviridae family as a separate species. CAS V forms separate line, which is the most close to the Hughes virus (HUGV) and Sakhalin virus (SA KV) groups containing viruses linked with seabirds and ticks parasitizing on them and distributed over the shelf and island ecosystems in the Northern Eurasia, as well as the North and South America.

Key words: colonial seabirds; gulls – Laridae; terns – Steridae; Argasidae; Ornithodoros; Bunyaviridae; Nairovirus; Caspiy virus – CASV; Caspian sea; metagenomic analysis

VV-1401-030

Taxonomy of the Sokuluk virus (SOKV) (Flaviviridae, Flavivirus, Entebbe bat virus group) isolated from bats (Vespertilio pipistrellus Schreber, 1774), ticks (Argasidae Koch, 1844), and birds in Kyrgyzstan


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Abstract: Complete genome sequencing of the Sokuluk virus (SOKV) isolated in Kyrgyzstan from bats Vespertilio pipistrellus and their obligatory parasites – Argasidae Koch, 1844, ticks was carried out. SOKV was classified as attributed to the Flaviviridae family, Flavivirus genus. The maximum homology (71% for nucleotide and 79% for amino acid sequences) was detected with respect to the Entebbe bat virus (EN TV). EN TV and SOKV form a group joining to the yellow fever virus (YFV) within the limits of the mosquito flavivirus branch. Close relation of SOKV with bat covers and human housings permits to assume SOKV potentially pathogenic to human health.

Key words: bats; dwarf bat; Vespertilio pipistrellus; argas ticks – Argasidae; ixodid ticks – Ixodidae; Flaviviridae; Sokuluk virus (SOKV); Entebbe bat virus (ENTV); covering biocenosis; metagenomic analysis

VV-1401-034

Activity of the inositol-containing phospholipid dimer analogues against human immunodeficiency virus

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Abstract: For the purpose of finding effective inhibitors of virus adsorption the series of inositol-containing phospholipid dimer analogues were previously synthesized. In the present work, the antiretroviral activity of these compounds against HIV-1 was demonstrated on the model of cells infected with the virus. The highest effect was found in the case of dimer poliol 5, EC 50 (50%-effective concentration) was 3.9 μg/ml. The development of new polyanionic compounds, which can interfere with early steps of the virus life cycle, is a promising addition to the antiretroviral therapy based on the virus enzyme inhibitors.

Key words: anti-HIV activity; inositol-containing phospholipids; HIV adsorption; polyanions

VV-1401-038
Research of suppression of the herpes simplex virus reproduction with drug resistance using a combination 15-Lys-bis-Nt with some antitherpetic drugs
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Abstract: The antiviral effect of combinations of netropsin derivative 15-Lys-bis-Nt with the known antitherpetic compounds, whose activity does not depend on viral TK and which are able to inhibit replication of HS V in most cases, including strains resistant to acyclovir and pencyclovir, was studied. The combinations evoking additive, synergistic and significant synergistic effects of interaction of tested compounds were observed. The results obtained in this work indicated the possibility of significant reduction of concentrations of high toxic compounds in case of the combined use.

Key words: herpes simplex virus; antiviral activity in vitro; combined effect; drug resistance

VV-1401-042
Intrafollicular infection of mammals and human oocytes by the herpes simplex virus
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Abstract: The goal of this work was to study the capacity of the herpes simplex virus (HS V) of infecting ovary with disease in case of the intravaginal experimental animals. The results of the study demonstrated that the ascending HS V infection in mice lead to modification of all the cells of the ovary, including follicular cells synthesizing estrogen and progesterone. The two hormones influence the development of the disease. Estrogens provide the protective effects against the virus. Progesterone does not modify the body sensitivity to HS V, but reduces the effectiveness of the antiviral immunity, resulting in increased mortality of animals. We demonstrated that infection of oocytes in ovarian follicles of female mice during infection with HS V modified the process in vitro and for the first time demonstrated the detection of viral antigens in mature oocytes in patient with infertility. During the intracytoplasmic sperm injection into the infected oocytes (ICSI ), the failure of fertilization was observed. These results are of interest, because there is no available literature on whether HS V infection of oocytes can have a direct negative impact on the process of fertilization in humans.

Key words: herpes simplex virus; oocyte; failure of fertilization; IVF; ICSI; infertility

VV-1401-047
An ultrastructural study of the cervix epithelium infected with the human papillomavirus types 16 and 18 before and after treatment with contrasting thermolaser therapy
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Abstract: The results of the ultrastructural study of the epithelium of the patient cervix infected by the human papillomavirus (HPV) types 16 and 18 before and after treatment by contrasting thermo-laser therapy (CTLT) are presented. It was shown in this work that 1.5 and 6 months after treatment HPV DNA was not detected in the biopsy and the smear of the cervix using the polymerase chain reaction (PCR). In the ultrathin sections, the structure of the epithelial cells from the biopsy after treatment corresponded to norm. There was effective elimination of HPV types 16 and 18 as induces by CTLT method.

Key words: human papillomavirus; method of contrasting thermo-laser therapy; cervical epithelium; electron microscopy