Enteroviruses Identifications and Differentiation on the Basis of the Selective Group - Specific Inhibitory Effect of Chemical Compounds

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Summary: Two new enteroviruses (EV) inhibitors with the selective group-specific effect were detected and studied representing the products of the original chemical synthesis. One of them - nifan (arylfuran derivative) inhibits poliomyelitis virus replication, the other one - belvtazide (synchonic acid derivative) blocks non-poliomyelitis EV (ECHO and Coxsackie B) replication. The study of the reference strains of poliomyelitis virus type 1-3, twenty-three ECHO virus types (from the 1st to the 33rd), Coxsackie B virus type 1-6 and 288 primary EV isolates did not reveal type or strain specific variability in the inhibitors effect. Nifan and belvtazide suppress the replication of both EV monostrains and their mixtures. The isolates of mixed nature are inhibited by the mixture nifan + belvtazide. At the same time neither separate chemicals nor their blend affects viruses from other families (Adenoviridae, Orthomyxoviridae, Herpesviridae etc.). The mechanism of nifan and belvtazide action is intracellular EV replication inhibition (they do not affect the process of virus adsorption and penetration into the cell), suppression of de novo virus synthesis by 7.0 - 2.25 lg (tissue culture infective dose 50 per cent) TCID 50/ml and of virus-induced RNA synthesis. The drugs feature is high selectivity (90 - 91%) regarding RNA polioviruses (nifan) and RNA non-poliomyelitis EV (belvtazide). Nifan and belvtazide antiviral effect selectivity allows unknown cytopathic agents (CPA) belonging to the EV to be established with the high degree (over 98%) of reproducibility at the stage of primary identification with the differentiation of poliomyelitis and non-poliomyelitis viruses.

Key words: enterovirus, antiviral drugs, differentiation, cell culture

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