

A CYTOTOXIC EFFECT OF THE WILD TYPE NEWCASTLE DISEASE VIRUS STRAIN ON THE TUMOR CELLS *IN VITRO*

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Oncolytic Newcastle disease viruses (NDV) are one of the non-pathogenic for human groups of antitumor agents for experimental treatment of oncological diseases. It is known that the implementation of the cytotoxic effect of VBN strains on tumor cells depends on the structural features of the viral genome, the virulence of the strain and the culture of tumor cells (NIH, 2018). In this case, the mechanism of NDV-induced death is not well understood. The purpose of this work was to study the nature of the morphological changes in human HeLa and Hep-2 (derivative HeLa) tumor cells after infection with the natural VDH NDV/Altai/pigeon/770/2011 natural mesogenic strain. Counting live tumor cells using the MTT test showed that 144 h after infection, the cytotoxic activity of the NDV/Altai/pigeon/770/2011 strain decreases cell viability to $13.08 \pm 8.29\%$ (HeLa) and $4.74 \pm 3.29\%$ (Hep-2). Routine staining revealed the morphological degradation of infected cells, and the quantitative characterization of the changes obtained is expressed by an increase in the value of the nuclear-cytoplasmic ratio. The presence of the virus in tumor cells was visualized by immunocytochemical staining for antibodies to the HN glycoprotein of the NDV envelope. Detection of antibodies to tumor necrosis factor- α revealed a possible activation of cell death along the path of apoptosis in the background of a viral infection. The obtained results indicate a pronounced cytotoxic activity of the natural strain NDV/Altai/pigeon/770/2011 on HeLa and Hep-2 (derivative HeLa) adenocarcinoma cells and the sensitivity of the studied lines to the oncolytic effect of NDV.

Keywords: Newcastle disease virus, cytotoxic effect, tumor cells, apoptosis