Effects of newcastle disease virus strains AF2240 and V4-UPM on cytolysis and apoptosis of leukemia cell lines.

ABSTRACT

Newcastle disease virus (NDV) is used as an antineoplastic agent in clinical tumor therapy. It has prompted much interest as an anticancer agent because it can replicate up to 10,000 times better in human cancer cells than in most normal cells. This study was carried out to determine the oncolytic potential of NDV strain AF2240 and V4-UPM on WEHI-3B leukemia cell line. Results from MTT cytotoxicity assay showed that the CD50 values for both strains were 2 and 8 HAU for AF2240 and V4-UPM, respectively. In addition, bromodeoxyuridine (BrdU) and trypan blue dye exclusion assays showed inhibition in cell proliferation after different periods. Increase in the cellular level of caspase-3 and detection of DNA laddering using agarose gel electrophoresis on treated cells with NDV confirmed that the mode of cell death was apoptosis. In addition, flow-cytometry analysis of cellular DNA content showed that the virus caused an increase in the sub-G1 region (apoptosis peaks). In conclusion, NDV strains AF2240 and V4-UPM caused cytolytic effects against WEHI-3B leukemic cell line.

Keyword: Newcastle disease; NDV; Cytolytic; Apoptosis; Flow-cytometry; Leukemia.