EuroSciCon

EuroSciCon Conference on
Virology and Infectious Diseases

April 22-23, 2019
Athens, Greece

Arch Clin Microbiol 2019, Volume:10
DOI: 10.4172/1989-8436-C1-018

IDENTIFICATION OF ONCOLYSIS EFFECT IN COLORECTAL CANCER CELLS BY ORF VIRUS STRAIN NA1/11 *IN VITRO* AND *IN VIVO*

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Oncolytic viral therapies against cancers, using variously attenuated or recombinant viruses, have appeared as a promising method in cancer treatment in recent years. Orf virus (ORFV) strain NZ2 has been shown to have antitumor effects in animal models mediated by immunoregulation profile, however, little is known about the molecular cellular mechanism of orf virus's anti-cancer effect. Here we report ORFV strain NA1/11, isolated from a sheep in Jilin province of China, inhibited the growth of colorectal cancer (CRC) cells lines including Caco-2, HCT116, LoVo, RKO, SW480, SW1116 cells. ORFV strain NA1/11 also significantly inhibited the growth and the pulmonary metastasis of CRC cells *in vivo*. The inhibitory mechanism of ORFV strain NA1/11 involved apoptosis and autophagy induction. Besides, we utilized a cytokine antibody array to develop a more comprehensive description of the cytokines by ORFV, which indicated that ORFV likely plays roles in the regulation of key factors relevant to apoptosis, autoimmunity/inflammation, angiogenesis and the cell cycle for further molecular mechanism studies. These results suggested that ORFV could be an oncolytic virus for CRC therapy.

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