

Evaluation of the Synergistic Inhibition of Enterovirus 71 Infection by Interferon- α Coupled with Pleconaril in RD Cells

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Abstract : It is well known that enterovirus 71 (EV71) causes recurring outbreaks of hand, foot and mouth disease (HFMD) and encephalitis leading to complications or death in young children. And, several HFMD of EV71 with high mortalities occurred in Asia countries, such as Malaysia (1997), Taiwan (1998) and China (2008). Thus, more effective antiviral drugs are needed to prevent or reduce EV71-related complications. As reported, interferon- α protects mice from lethal EV71 challenge by the modulation of innate immunity and then degrade enterovirus protease 3C^{pro}. On the other side, pleconaril by targeting enterovirus VP1 protein and then block virus entry and attachment. Thus, the aim of this study was to evaluate the synergistic antiviral activity of interferon- α and pleconaril against enterovirus 71 infection. In a preliminary study showed that pleconaril at concentrations of 50, 100 and 300 $\mu\text{g}/\text{mL}$ reduced EV71-induced CPE to $52.0 \pm 2.5\%$, $40.2 \pm 3.5\%$ and $26.5 \pm 1.5\%$, respectively, of that of the EV71-infected RD control cells (taken as 100%). Notably, 1000 IU/mL of interferon- α in combination with pleconaril at concentrations of 50, 100 and 300 $\mu\text{g}/\text{mL}$ suppressed EV71-induced CPE by $30.2 \pm 3.8\%$, $16.5 \pm 1.3\%$ and $2.8 \pm 2.0\%$, respectively, of that of the pleconaril alone treated with the infected RD cells. These results indicated that interferon- α 1000 IU/mL combination with pleconaril (50, 100 and 300 $\mu\text{g}/\text{mL}$) inhibited EV71-induced CPE more effectively than treated with pleconaril alone in the infected RD cells.

Keywords : enterovirus 71, interferon- α , pleconaril, RD cells

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