

3C-LIKE PROTEINASE OF SARS CORONAVIRUS REDUCES THE EXPRESSION OF GM-CSF

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BACKGROUND: Severe Acute Respiratory Syndrome (SARS) is a severe respiratory illness caused by a novel virus, the SARS coronavirus (SARS-CoV). The SARS-CoV mainly infects lung epithelial cells and causes lung damage and lung fibrosis. It is interesting to understand the mechanism of the lung fibrosis caused by SARS-CoV.

AIM: To study how the SARS-CoV genes, especially the non-structural protein (NSP), 3C like proteinase (3CL) and NBP 9, affected cytokine secretion in these gene-transfected cells.

METHODS: SARS-CoV genes such as NSP9 and 3CL genes were constructed into EGFP-C1 vectors (EGFP-Nsp9 and EGFP-3CL) and transferred into A549 cells (Human lung carcinoma cell line). The transfected cells and the control cells (EGFP vector only) were analyzed for cytokines IL-8, IL-6, IL-1 β , TNF- α , IL12p40, GM-CSF, and TGF- β by RT-PCR.

RESULTS/DISCUSSION: The expression of GM-CSF (Granulocyte Macrophage-Colony Stimulating Factor) mRNA and GM-CSF protein was decreased in the 3CL-transfected cells but not in NSP9-transfected cells. The SARS-CoV 3CL plays a role in the pathogenesis of lung fibrosis of SARS through the suppression of GM-CSF.

Keywords : Severe acute respiratory syndrome, SARS-CoV, lung fibrosis