

## ***Thymus quinquecostatus* Extracts Suppress IFN- $\gamma$ /TNF- $\alpha$ -induced Inflammatory Cytokine in Lung Fibroblast MRC-5 Cells**

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Pneumonia is infection of air sacs in lungs by bacteria, viruses, fungi and abnormal atmosphere condition. That causes to inflammation and fills up with pus and fluid in air sacs. The symptoms of pneumonia are heavy cough, fever, shortness and rapid respiration and sputum with blood. Also, that remains sequela after the recovery. *Thymus quinquecostatus* (TQ) has a strong antibacterial effect. that has been used a natural medicine for bronchitis, asthma and nervous inflammation.

In this study evaluated anti-inflammatory effects of TQ on IFN (interferon)- $\gamma$ /TNF (tumor necrosis factor)- $\alpha$  (20 ng/ml) stimulation. MRC-5 cells were seeded at  $1 \times 10^5$  cells/well in a 24-well plate and stabilized overnight at 37°C. The cells were treated with various concentrations of TQ extracts (DW, 30, 50, 70, 95% EtOH, 0.1~100 mg/ml) for 4h, Subsequently IFN- $\gamma$ /TNF- $\alpha$  (20 ng/ml) was added to each well and incubated over 12h. the production of inflammatory cytokines were measured by Enzyme-linked immunosorbent assay (ELISA) method. The absorbance was measured at 450 nm using microplate reader.

The treatment with TQ extract at dose of 0.1 to 100 mg/ml did not show cytotoxicity in MRC-5 cells (showed cytotoxicity at 95% EtOH 100 mg/ml). The results demonstrated that stimulation of TNF- $\alpha$ /IFN- $\gamma$  significantly increased the production of inflammatory mediators in the MRC-5 cells compared with unstimulated cells. By contrast, treatment with TQ extracts doses of 0.001 to 10 mM significantly suppressed the production of IL-6 and IL-8. Especially. The higher percent of ethyl alcohol extracts suppressed the production of inflammatory cytokines. This results are considered that essential oil of TQ is extracted according to ethyl alcohol percent. Therefore, TQ has potential to mitigate pulmonary disease that can be used a medicine for pneumonia

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