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Dissertation for obtaining a master's degree in the field of genetics

# Comparative Evaluation of IL-2 and TNF- Gene Expression Level in Lymphocytes of SARS-CoV-2 Patient and It's Relation to Disease Betterment

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**Summer 2023**

Abstract:

Acute respiratory syndrome 2 (SARS-CoV 2) is the cause of COVID-19 disease, which is one of the species of the coronavirus family that binds to angiotensin receptor 2 (ACE2) and enters healthy cells, especially healthy cells in the lung. Tumor necrosis factor-alpha or TNF-α is one of the most important cytokines that manages the host's defense mechanism and is a member of the TNF superfamily, which consists of different membrane proteins with homologous TNF domains. Interleukin 2 (IL-2) is a cytokine that acts as a growth factor and central regulator of the immune system. Cytokine storm is an abnormal immune reaction that is a type of systemic response syndrome during the activation of this reaction and the effect of cytokines and precursors, two factors IL-2 and TNFα are also present. The purpose of this research is to investigate. The level of expression of IL-2 and TNF-α genes in the lymphocytes of patients with COVID-19 and the relationship with the recovery rate of these patients. In this research work, 20 samples have been examined, which were divided into 2 healthy control groups and those with acute disease. In this study, the Real-Time PCR method was used to measure the expression level of two target genes, and the results obtained in this study indicate an increase in the expression of the above two factors in the patient group compared to the control group.

**Keywords:** Real-Time PCR, SARS-CoV-2, COVID-19, coronavirus