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### The Effect of Betamethasone and IFN- $\gamma$ on Replication of Toxoplasma gondii (RH Strain) and Nitric Oxide Production in HeLa Cell Culture

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#### Abstract:

Toxoplasmosis is a protozoal infection caused by Toxoplasma gondii. Toxoplasmosis produce severe damage in patients who are immunosuppressed. In those who are immunosuppressed, latent infection can be reactivated resulting in acute disseminating disease. Betamethasone is a synthetic glycocorticoid, used as an anti-inflammatory and immunosuppressant in a wide variety of disorders. The aim of this study was evaluation of betamethasone as an immunosuppressor drug on infected cells by Toxoplasma gondii. In this study, at first HeLa cells were grown in 24 well culture plates in culture medium. When confluent monolayer was obtained, we compared 6 groups to evaluate the effect of betamethasone as a corticosteroid drug (two concentrations 4 and 40 $\mu$ g/ml) and the effect of IFN- $\gamma$  (100 IU/ml) on growth, replication and Nitric Oxide (NO) production. The results showed, that high number of plaques were seen in group with 40 mg/ml of betamethasone and the lowest number of plaques were seen in group with 100 IU of IFN-g. The difference between plaque number in control and groups treated with IFN-g and betamethasone was significant ( $P < 0.05$ ). The groups with betamethasone or IFN-g without tachyzoites did not show any effect on cell structures. Replication rates in the wells treated with IFN-g were decreased significantly 72h post inoculation in comparison with control group ( $P < 0.05$ ). There was no significant difference among different groups in NO production. The results indicated that betamethasone increase the invasion of tachyzoites to host cells in vitro.

#### Keywords:

[Betamethasone](#) , [Hela cell](#) , [IFN-Gamma](#) , [Replication](#)

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