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Effect of lipopolysaccharide (LPS) on VEGF production in human PBMCs

Hajighasemi F¹, Hajighasemi S²

¹Department of Immunology, Faculty of Medicine, Shahed University, Tehran, Iran.
²NICU, Mostafa Khomeini Hospital, Shahed University, Tehran, Iran

Introduction and objectives: Lipopolysaccharide (LPS) endotoxin is a part of the external membrane in Gram-negative bacteria which has important role in inflammation, induction of proinflammatory cytokines and angiogenesis. Vascular endothelial growth factor (VEGF), as a proinflammatory cytokine, is an important mediator of inflammation, angiogenesis, cancer growth and metastasis. In this study, the effect of LPS on VEGF production in human peripheral blood mononuclear cells (PBMCs) in vitro has been evaluated.

Materials and methods: The human PBMCs isolated from the venous blood of healthy volunteers by ficoll-hypaque-gradient centrifugation, were cultured in complete RPMI medium. The cells at logarithmic growth phase, were then incubated with LPS at optimum concentration for 48 hours. Subsequently the cell culture supernats were collected and VEGF level was determined by Enzyme-linked immunosorbent assay (ELISA).

Results: LPS significantly increased the VEGF secretion in human PBMCs after 48 hours incubation compared with non stimulated control cells .

Conclusion: Our results showed that LPS augments production of VEGF in human PBMCs. Thus LPS role in angiogenesis may be in part due to its increasing effect on VEGF production. Further studies to determine the precise mechanism(s) of LPS-induced VEGF secretion are warranted.