

## عنوان مقاله:

Immunomodulatory Effect of Propolis on Foxp<sup>3</sup> Gene Expression in Human Peripheral Blood Mononuclear Cells Stimulated in vitro with Pseudomonas Aeruginosa Ag

## محل انتشار:

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## خلاصه مقاله:

Immune balance during infection is critical for both supporting the defense of the immune system of the body and preventing an overly aggressive immune response. Foxp<sup>3</sup>, a transcription factor of regulatory T cells, plays a critical role in balancing the immune system of the body. Propolis has been shown to affect Foxp<sup>3</sup> expression. This study aimed to verify the effect of propolis extracts on in vitro Foxp<sup>3</sup> gene expression in peripheral blood mononuclear cells (PBMCs) stimulated with Pseudomonas aeruginosa Ag. In this study, a total of 20 apparently healthy volunteers were included, with 10 males and 10 females within the age range of 20-40 years old. Five ml of blood were drawn from each participant to assess Foxp<sup>3</sup> gene expression in PBMCs using density gradient lymphoprep and stimulated with P.aeruginosa lipopolysaccharide (LPS) in vitro. The samples were divided into four distinct groups as follows: LPS stimulated PBMCs, ethanol-extracted propolis (EEP) + LPS stimulated PBMCs, and water-extracted propolis (WEP) + LPS stimulated PBMCs and PBMCs as the control group. The Foxp<sup>3</sup> gene expression level was estimated in all four groups following a period of 48 h of cultivation by real-time polymerase chain reaction technique using SYBR green dye. Results of the study indicated that propolis had a great effect on the mRNA Foxp<sup>3</sup> expression. Both EEP and WEP had immunomodulatory effects through the Foxp<sup>3</sup> mRNA expression, both the EEP and WEP could significantly inhibit Foxp<sup>3</sup> mRNA gene expression by human PBMCs after stimulation with pseudomonas Ag in vitro. Propolis exhibited an immunoregulatory effect which was the same with ethanol and water extracts on Foxp<sup>3</sup> mRNA gene expression.

## کلمات کلیدی:

Foxp<sup>3</sup>, Gene expression, Immunomodulatory, Propolis

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