

Effect of Steroids on CD4⁺ICOS⁺ Expression in Follicular T Helper Cells and CD19⁺HLA-DR

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Abstract

Objective: T follicular helper (Tfh) and B follicular (Bf) cells play key roles in adaptive immunity, particularly in germinal centre formation and high-affinity antibody production. Inducible T cell co-stimulator (ICOS), expressed on activated Tfh cells, interacts with ICOS-L on B cells to support Tfh survival. HLA-DR, presents antigens to CD4⁺ T cells, promoting their activation and differentiation. Steroids are widely used in the treatment of alloimmune responses. The aim of this study was to investigate the effects of steroids on Tfh and Bf cells.

Materials and Methods: Spleen samples were used, and lymphocytes were isolated by Ficoll density gradient centrifugation and isolated by negative selection (Stemcell, Germany). T-B cell co-culture, steroid treatment was applied. To evaluate the effects of steroids, time-dependent changes in CD4⁺ICOS⁺ expression on Tfh cells and CD19⁺HLA-DR⁺ expression on Bf cells were analyzed by flow cytometry (DxFLEX, Beckman Coulter).

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Results: Expressions of ICOS on Tfh cells (Figure 1) and HLA-DR on Bf cells (Figure 2) are shown.

Conclusion: The interaction between Bf and Tfh cells is suppressed by the effect of steroids. The decrease in HLA-DR expression caused by steroids suggests that the antigen-presenting capacity of B cells is weakened, which may subsequently affect T-cell activation. The time-dependent increase in ICOS expression indicates that Tfh cells become activated; however, this activation is suppressed by the steroid effect. The reduction in ICOS expression caused by steroids is thought to inhibit the development of antibody-secreting plasma B cells. This situation indicates the regulatory role of steroids in immune responses and their potential to modulate the immune reaction by suppressing Tfh–B cell interactions in particular.

Keywords: B follicular cell, HLA-DR, ICOS, steroid, T follicular helper cell

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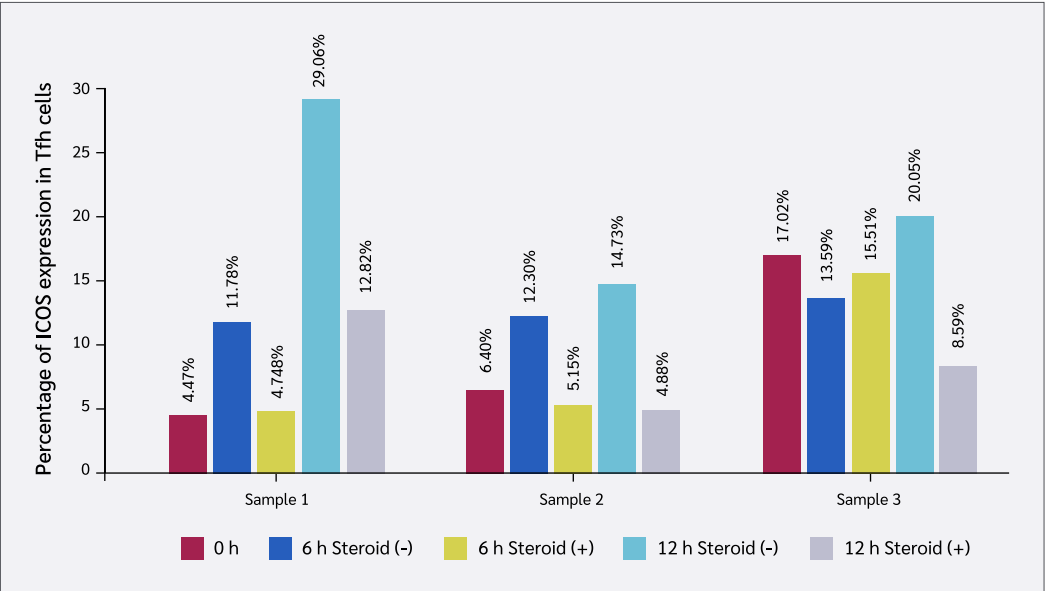


Figure 1. Effect of steroid treatment on ICOS expression in Tfh cells.

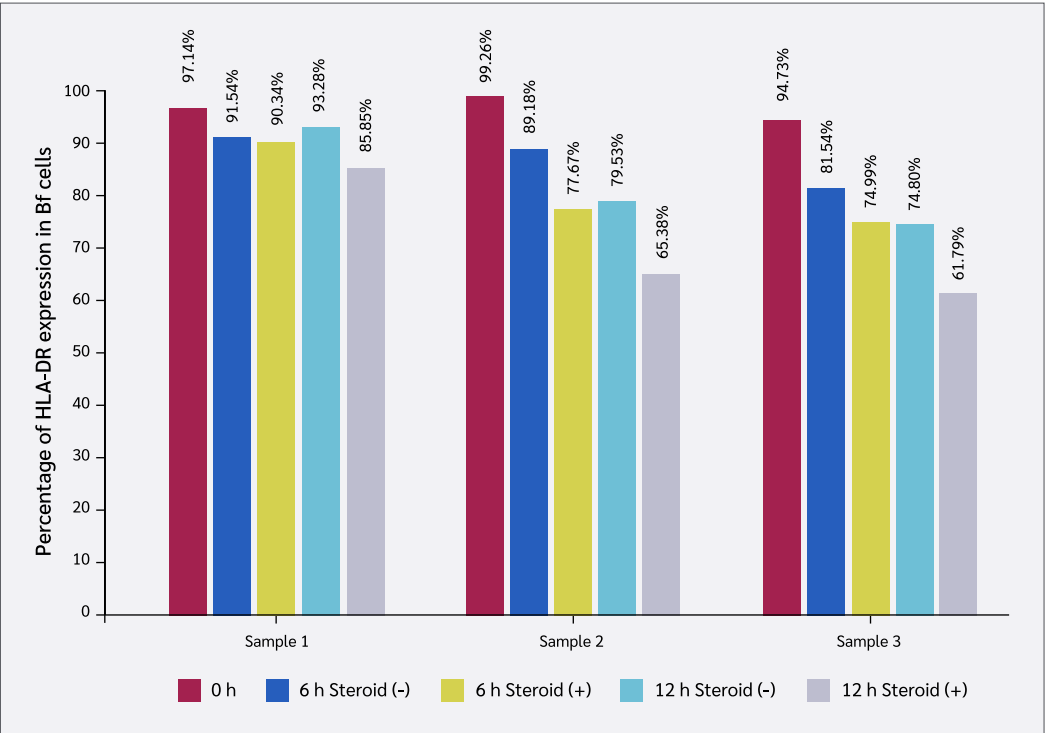


Figure 2. Effect of steroid treatment on HLA-DR expression in Bf cells.