Is Foxp3 A Good Marker for Regulatory T Cells?

- Douaa Sayed, Omnia H B El-Badawy, Eman Nasr Eldin, Rania Bakry, Mohamed S Badary, Mohamed E Abd-Alrahman, Mohamed A El Feky, Amany G Thabit

Abstract:

To track the changes in the tested Treg markers especially Foxp3 following activation to determine whether data of human studies using Foxp3 in evaluation of Tregs are reliable or not. Four-colour flow cytometry analysis was carried out to calculate the percentages of Tregs before and after lymphocyte activation. Foxp3 expression by CD4⁺CD25⁻ and CD4⁺CD25high T cells increased after T cell activation. A moderate negative correlation was observed between the percentage of each of CD4⁺CD25Foxp3(IL10)⁺ or CD4⁺CD25high Foxp3 IL10)⁺ T cells and the percentage of CD4⁺CD25 T cells (after activation) and a weak negative correlation was similarly observed between the percentage of CD4⁺CD25Foxp3(IL10)⁺ T cells and the percentage of CD4⁺CD25 T cells (after activation). A moderate negative correlation was observed between the percentage of each of CD4⁺CD25Foxp3(IL10)⁺, CD4⁺CD25highFoxp3(IL10)⁺ or CD4⁺CD25 Foxp3(IL10)⁺ T cells and the percentage of CD4⁺CD25high T cells (after activation). CD4⁺CD25high T cell subpopulation expressed a significantly higher level of intracellular Foxp3 compared with CD4⁺CD25low and CD4⁺CD25⁻ T cells subpopulations. In conclusions, Foxp3 is a good marker of Tregs especially if panels of markers were used for their identification. CD4⁺CD25highFoxp3⁺ T cell subpopulation mostly represents Tregs and thus should be the one targeted in Treg studies.

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