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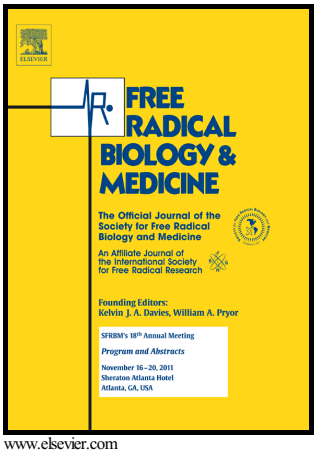

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Oxidative stress modulates the cytokine response of differentiated Th17 and Th1 cells

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Abstract:

Reactive oxygen species (ROS) signaling is critical in T helper (Th) cell differentiation; however its role in differentiated Th cell functions is unclear. In this study, we investigated the role of oxidative stress on the effector functions of in vitro differentiated mouse Th17 and Th1 cells or $CD4^+$ T cells from patients with Rheumatoid Arthritis using pro-oxidants plumbagin (PB) and hydrogen peroxide. We found that in mouse Th cells, non-toxic concentration of pro-oxidants inhibited reactivation induced expression of IL-17A in Th17 and IFN-γ in Th1 cells by reducing the expression of their respective TFs, RORγt and T-bet. Interestingly, in both the subsets, PB increased the expression of IL-4 by enhancing reactivation induced ERK1/2 phosphorylation. We further investigated the cytokine modulatory effect of PB on $CD4^+$ T cells isolated from PBMCs of patients with Rheumatoid Arthritis, a well-known Th17 and or Th1 mediated disease.