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FcεRI γ-chain negatively modulates Dectin-1 responses in dendritic cells

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The inhibitory effect of immunoreceptor tyrosine-based activation motif (ITAM)-containing adapters DAP12 and FcεRI γ-chain (FcRγ) has been found in many immune functions; however, the role of these adapters is not known in C-type lectin receptor (CLRs) response. In this report, we identified that FcRγ, but not DAP12, could negatively regulate the Dectin-1 responses in dendritic cells (DCs). Loss of FcRγ or both DAP12 and FcRγ enhanced the maturation and cytokine production in DCs upon Dectin-1 activation compared to normal cells, whereas DCs lacking only DAP12 showed little changes. In addition, increment of recall T-cell proliferation was observed in FcRγ-deficient mice. Examining the Dectin-1 signaling, we revealed that the activations of several signaling molecules were augmented in FcRγ-deficient DCs stimulated with Dectin-1 ligands. Furthermore, we demonstrated that the association of phosphatases SHP-1 and PTEN with FcRγ may contribute to the negative regulation of FcRγ in Dectin-1 activation in DCs. These results extend the inhibitory effect of ITAM-containing adapters to Dectin-1 response in immune functions, even though Dectin-1 contains an ITAM-like intracellular domain. According to the role of Dectin-1 in responding to microbes and tumor cells, our finding may have applications in the development of vaccine and cancer therapy.

Biography

Ching-Liang Chu has completed his PhD from National Defense Medical College/Academia Sinica, Taiwan and Post-doctoral studies from School of Medicine, UCSF, CA, USA. He is the Associate Professor of Graduate Institute of Immunology, National Taiwan University, Taiwan. He has published more than 40 papers in reputed journals and has been serving as a reviewer of more than 20 reputed journals.

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