

Extracellular release of antigen by dendritic cell regurgitation promotes B-cell activation

Extracellular release of antigen by dendritic cell regurgitation promotes B-cell activation.

Houssam El-Barbry^{1,2,3*}, Marisa Capita^{1,2,3*}, Susanna Borreill^{1,2,3}, Emmanuel Donnadiou^{1,2,3}, Florence Niedergang^{1,2,3#} and Fatah Ouaz^{1,2,3#}
1Institut National de la Santé et de la Recherche Médicale U1016, Institut Cochin, Paris, France; 2Centre National de la Recherche Scientifique UMR 8104, Institut Cochin, Paris, France; 3Université Paris Descartes, Sorbonne Paris Cité, Paris, France.

Dendritic cells are professional antigen-presenting cells, which sample antigens in the periphery and migrate to the lymph node where they activate T cells. Dendritic cells can also present native antigen to B cells through interactions observed both in vitro and in vivo. However, the mechanisms of antigen transfer and B cell activation by dendritic cells remain incompletely understood. Using subcutaneous delivery of antigen-pulsed dendritic cells in vivo, as well as an in vitro co-culture system, we have investigated: 1)- Antigen transport by dendritic cells and distribution in the lymph node, 2)- the role of dendritic cells in B-cell activation both in vivo and in vitro, 3)- the intracellular mechanisms underlying B cell activation by dendritic cells through the analysis of the role of the NF- κ B pathway. Here, we report that dendritic cells are an important cell transporter of antigen from the periphery to the lymph node B cell zone and also potent inducers of B cell activation and differentiation. Importantly, we highlight a novel extracellular mechanism of B cell activation by dendritic cells. We demonstrate for the first time that antigen released upon dendritic cell regurgitation is sufficient to efficiently induce early B cell activation, which is BCR driven and mechanistically dependent on the nuclear accumulation of the transcription factor NF- κ B/cRel. Thus, our study provides new mechanistic insights into antigen delivery and B cell activation modalities by dendritic cells and a promising approach for targeting NF- κ B/c-Rel pathway to modulate the dendritic cell-elicited B cell responses.

Keywords : dendritic cell, B cell, regurgitation, antigen, NF- κ B

Authors :

References : , , ,

Authors

Fatah OUAZ 1, Houssam EL-BARBRY 1, Marisa CAPITAO 1, Susanna BORREILL 1, Emmanuel DONNADIEU 1, Florence NIEDERGANG 2,

1. Infection-Immunity-Inflammation, Institut Cochin-INSERM U1016, Paris, FRANCE

2. Infection-Immunity-Inflammation, Nstitut Cochin-INSERM U1016, Paris, FRANCE