Pollen associated lipid molecules (PALMs) modulate dendritic cell function leading to a reduced capacity to initiate Th1 responses [Abstract]

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945 Pollen Associated Lipid Molecules (PALMs) Modulate Dendritic Cell Function Leading to a Reduced Capacity to Initiate Th1 Responses

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The primary site of exposure to pollen grains is the epithelium of the upper respiratory tract, which is densely populated by immature dendritic cells as link between the innate and adaptive immune system. We recently demonstrated that pollen grains not only function as allergen carriers but are also a rich source of bioactive lipid mediators. Aqueous extracts from phleum pratense and betula alba pollen (APE) contained predominantly monohydroxylated derivatives of linoleic and linolenic acid. In addition, GC-MS analysis of betulla alba APE demonstrated the presence of phytoprostanes E1, F1, A1/B1. Since DC critically influence the outcome of the ensuing T cell polarization, we investigate the biological activity of APE on immature DC. Human pB monocytes-derived DC (GM-CSF, IL-4) displayed morphology and phenotype of immature DC (CD1a+, MHC IImed, mannose receptor+, CD14neg., CD83neg., CD86neg.). Exposure to phleum pratense or betula alba APE induced DC maturation as documented by upregulation of MHC class II, CD83, CD86 and increased allostimulatory activity. APE induced DCs to release significantly less IL-12 p40 and p70, as compared to LPS. In addition, APE inhibited dose-dependently the LPS-induced IL-12 p70 release and IL-12 p40 (but not p35) mRNA levels (real time PCR), while no effect on LPS induced IL-6 release was observed. Consistent with that, APE-activated DCs induced significant less IFN-g production in allogeneic naïve CD45RA+, CD4+ T cells. These results suggest that pollen associated lipid molecules (PALMs) act as important regulatory signals that modulate DC function in a fashion that favours a reduced Th1 polarization

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