

and play a major role in allergic sensitization. Since all cells of the immune system, including DCs, express serotonin receptors (5HTR), it is assumed that serotonin is involved in the modulation of innate and adaptive immune responses. However, the role of serotonin in priming and in modulation in allergic immune responses is unknown. So far, the expression of 5HTR on DCs has only been investigated at the mRNA level, revealing a significant change in the expression depending on the maturation stage. Recently, we have discovered that birch pollen extracts contain biogenic amines, among them serotonin, raising the question of serotonin in birch pollen allergy. **Aim of study:** To investigate the protein-level expression of 5HTR isoforms in immature and LPS-activated DCs from donors with and without birch pollen allergy. Further, we want to examine the role of serotonin signaling in DC maturation and cytokine production and the influence of serotonin on DC-mediated priming of native T-helper cells. **Methods:** DCs were derived from peripheral venous blood from CD14⁺ monocytes. 5HTR FACS analysis was performed on DCs before and after LPS stimulation. Mature and immature DCs were stimulated with different concentrations of serotonin (10^{-9} to 10^{-5} M) and broad-spectrum serotonin inhibitors (risperidone, asenapine). After 24 hours of stimulation, maturation marker expression was studied by flow cytometry and cytokine release measured by multiplex (MSD meso-scale). **Results:** 5HTR FACS analysis showed that DCs expressed 5HTR1a, -1b, -2a, -2b, -3a, -3b, and -4 as well as the serotonin transporter (SERT). There was a trend (not statistically significant) towards downregulation of all 5HTRs and SERT after LPS stimulation, while 5HTR7 was not expressed at all. Maturation markers were generally induced in the presence of serotonin inhibitors but showed a tendency towards reduction with higher serotonin concentrations. This increase in expression could be observed in particular with CD40, HLA-DR, and CD80 and to a lesser extent with CD86 and CD83. Interestingly, these effects were more pronounced in DCs from allergic donors than in non-allergic donors. **Conclusion:** The regulation of

maturation marker expression by serotonin inhibitors and serotonin suggests the existence of an endocrine serotonin signaling, which inhibits the expression of some, but not all, maturation markers. Serotonin present in birch pollen could play an important role in DC-induced allergic immune responses.

V07 Influence of serotonin signaling on maturation, cytokine production, and T-cell priming of dendritic cells

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Background: Dendritic cells (DCs) are an important link between the innate and adaptive immune system