ity of cells to produce CC10 in response to TNF-α stimulation as well as its mother drug, CT. The minimum concentrations that caused significant increase was 0.05 μM for LCT, which is lower levels than that induced by its mother drug, CT (0.1 μM). Although treatment of cells with LCT caused inhibition of CC10 mRNA expression, which was increased by TNF-α stimulation, the agent increased the translation of CC10 mRNA to produce specific proteins. Oral administration of LCT also increased CC10 levels in nasal secretions from pollinosis patients along with attenuation of clinical symptoms.

Conclusion: The ability of histamine H1 receptor antagonists, LCT to enhance CC10 production may account, at least in part, for the clinical efficacy of the agent on allergic disorders, including allergic rhinitis.

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Phlp 5-specific antibody responses and their impact on antigen uptake and cell polarization in CD1c+ dendritic cells from non-allergic humans living in different environments

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Background: In our present project we study primary $CD1c^+$ dendritic cells from non-allergic individuals as these have been hotly debated in the maintenance of allergic – and probably also non-allergic – immune responses via interaction with antigen-IgG immune complexes. Dendritic cells can be activated or inhibited by immune complexes binding to functionally different FcμR which link humoral and cellular immune responses. The balance of activating and inhibitory FcμR therefore might play a decisive role in the regulation of a non-allergic immune response against the major grass pollen allergen Phl p 5. However, it is still unknown how the ratio between signals from the activating FcμR and the inhibitory FcμRIIb determines the immunological outcome. Thus, we measured the amount of Phl p 5-specific antibodies in non-allergic donors living in different environments (farm vs. urban environment) and investigated their influence on antigen uptake and polarization of $CD1c^+$ dendritic cells.

Method: IgG1, IgG4 and IgE antibody titers were measured by ELISA. $CD1c^+CD19^-CD20^-$ dendritic cells from non-allergic donors were purified using a BD FACSAria III cell sorter and antigen uptake in the absence and presence of autologous IgG was assessed by flow cytometry. Afterwards, polarization of antigen loaded DCs was determined based on secreted cytokines and gene expression profiles, both measured by Luminex system.

Results: We found that a high percentage of non-allergic individuals display considerable amounts of Phl p 5 specific IgG1 and IgG4 with significant differences depending on the living conditions. Furthermore, IgG1, which is associated with TH1 immune response is 100-fold elevated compared to TH2 associated IgG4 in farmers and towns people. Furthermore, we could show that allergen uptake by $CD1c^+$ dendritic cells is highly dependent on the presence of allergen specific IgG. Moreover, we established and measured gene expression of the Fc receptors and genes involved in activation/polarization as well as cytokine and chemokine secretion after IgG mediated antigen uptake.

Conclusion: We found that donors living in farming vs. urban environment differ in seroconversion indicating that the environment and the amount of antigen exposure might have an influence on the non-allergic immune response. The established methods will allow us to analyze the impact of allergen immune complexes on polarization and T cell priming capacity of CD1c+ dendritic cells.

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Immunophenotype of human olfactory mucosa-derived mesenchymal stem cells

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Background: The olfactory mucosa from nasal cavity is an easily available source of resident multipotent cells. Human olfactory mucosa-derived mesenchymal stem cells (hOM-MSCs) are similar to bone marrow and adipose tissue MSCs. This study assesses the immunophenotypic properties of hOM-MSCs.

Method: Nasal mucosa samples were taken from 16 patients with non-inflammatory diseases of nasal cavity. Explant culture method was used to obtain hOM-MSCs cells. Cells were assayed for 30 markers using flow cytometric analysis (CD11b, CD11c, CD15, CD31, CD33, CD34, CD40, CD45, CD54, CD71, CD73, CD80, CD86, CD90, CD105, CD106, CD117, CD123, CD 133/2, CD273, CD274, HLA-ABC, HLA-DR, nestin, vimentin, β-III-tubulin, p75NTR, GFAP, MAP-2, O4).

Results: The analyzed cell cultures satisfied the minimal criteria used to define human MSC according to Mesenchymal and Tissue Stem Cell Committee of the International Society for Cellular Therapy. HOM-MSCs expressed mesenchymal markers CD105, CD73 and CD90, but were negative for lymphocyte common antigen CD45 and the specific endothelial marker CD31. Hemapoetic stem cell proteins CD177 and CD133/2 were not observed on hOM-MSCs surface, but cells expressed low levels of CD34. Among markers inherent to neuroglial-linege, hOE-MSC expressed nestin, vimemtin, β-III-tubulin, p75NTR and GFAP. Markers of mature neurons (MAP-2) and oligodendrocytes (O4) were absent. hOM-MSCs were negative for erythroid (CD71) and myeloid receptors CD15, CD11c and CD33, while weak expression of CD11b was seen. Cells expressed co-inhibitory molecules CD273 and CD274, co-stimulatory molecule CD40, but were negative for CD80 and CD86 markers. Moreover, hOM-MSCs were positive for cell adhesion molecules CD54 and CD106. Cells expressed HLA class I (HLA-ABC) molecules, but the expression of HLA-DR was absent.

Conclusion: The hOM-MSCs belong to the MSC-superfamily based on the pattern of antigen expression. Some neuronal stem/progenitor markers were observed in analyzed cells suggesting that hOM-MSCs may represent a distinct tissue-specific population of stem cells. The presence of co-inhibitory molecules may explain the immunosuppressive effect of MSC on human T-cells.

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Dynamic changes of B-cell subpopulations after renal allograft transplantation

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B lymphocytes play an important role in immune responses affecting the outcome of kidney allograft transplantation. Each subpopulation of these cells is involved in both alloimmune response and regulation. The long lived plasma cells derived from bone marrow (PCs) are the main source of donor specific antibodies (DSA) involved in the pathogenesis acute or chronic rejection. Memory cells have an indispensable role in early antibody mediated rejection in sensitized recipients. Many donor reactive