

Chitotriosidase expression in monocyte-derived dendritic cells

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Chitotriosidase (CHIT1) belongs to 18 glycosyl-hydrolase family, an ancient gene family that is widely expressed from prokaryotes to eukaryotes [1]. CHIT1 is a very critical enzyme to regulate the susceptibility to infection of organisms containing chitin as structural components. Conversely, during the development of acute/chronic inflammatory disorders, the enzymatic activity of CHIT1 increases significantly. The CHIT1 is expressed in activated macrophages as well in different lines monocyte-derived such as Kupffer cells and osteoclasts [2]. So far, it is unknown whether CHIT1 is expressed in other cells involved in the immune response such as monocyte-derived DCs. In this study we have investigated whether CHIT1 is produced in monocyte-derived DCs (moDCs) and the differential expression of CHIT1 during the different stage of moDCs differentiation. The presence of CHIT1 were examined by real time RT-PCR, Western Blot and Confocal Immunofluorescence, in Immature Dendritic cells (iDCs), generated from human monocytes by stimulation with granulocyte-macrophage colony-stimulating factor (GM-CSF) and interleukin-4 (IL-4) and in mature Dendritic cells (mDCs), obtained by using lipopolysaccharide (LPS) and interferon-gamma (IFN-g). We observed that CHIT1 was expressed during the DCs differentiation and maturation process in time dependent manner. The maturation of DCs showed a significantly increased expression of CHIT1 mRNA and protein. Furthermore, the CHIT1 was evenly distributed in cytoplasm both in iDCs and in mDCs. The enzymatic activity confirmed that CHIT1 could play a role in moDCs function.

Taken together, our data confirm the crucial role of CHIT1 in primary immune responses and indicate that could be correlated with the immunogenicity of DCs.

References

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Keywords

Chitotriosidase, monocyte derived dendritic cells, CHIT1 activity