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Expression and localization of CHI3L1 in monocyte derived dendritic cells

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Chitinase-3-like-1 protein (CHI3L1) also called YKL-40, is a 40 kDa mammalian glycoprotein which is a heparin, chitin and collagen binding member of the mammalian chitinase-like proteins. Biological activities of CHI3L1 embrace regulation of cell proliferation, adhesion, angiogenesis, migration and activation. CHI3L1 is produced by variety of cells, including neutrophils, monocytes/macrophages, osteoclasts and Kupffer cells [1]. CHI3L1 secretion is induced by interferon (INF)-g and interleukin (IL)-6 and is an acute phase reactant associated with disease severity and mortality in a variety of infectious [2]. In this study, we have examined the expression and localization of CHI3L1 during the differentiation and maturation of monocyte derived dendritic cells by real time RT-PCR, Western Blot, Confocal Immunofluorescence, and Immunocytochemical assays. Potential nuclear localization signal (NLS) was determinated using the open source software cNLS Mapper and Chimera. Peripheral blood monocytes were differentiated toward immature DCs (iDC) and mature DCs (mDCs) through a combination of factors and cytokines. Our result showed, for the first time, that CHI3L1 is expressed during the process of differentiation and maturation of DCs in time dependent manner. Furthermore, CHI3L1 is evenly distributed in cytoplasm and in the nucleus of both the iDCs and mDCs.

In conclusion, the discovery of CHI3L1 expression in DCs has opened new dilemma for designing DC-based cancer immunotherapeutic. In fact, on the light of these results one can't exclude that as well as activated Tumor-associated macrophages (TAMs) also DCs infiltration could to be a significant unfavorable prognostic factor for cancer patients.

References

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Keywords
CHI3L1, YKL40, monocyte derived dendritic cells