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Measles virus vaccine infects tumor cells and induces dendritic cells (DC) maturation and tumor antigen cross-presentation

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Dendritic Cells (DC) are antigen presenting cells specialized in inducing immune responses. Measles Virus vaccine (MV) was recently proposed as anti-tumor agent to target and kill specifically tumor cells, without infecting healthy cells. We demonstrated that myeloid dendritic cells (mDC) co-cultured with MV infected tumor cells, actively matured and cross-presented tumor antigen. Recently, we also investigated the effects of MV tumor infected cells on phenotype and functions of plasmacytoid DC. We studied maturation, cytokine production and tumor antigen cross-presentation by mDC and pDC exposed either to the virus alone, MV infected or UV irradiated tumor cells. We found that MV infected cells induce DC maturation with a strong cytokine production, notably IFN-α, whereas UV irradiated tumor cells and the MV alone did not. We also observed that MV infected and UV irradiated cells were similarly phagocytosed by DC, although this up-take was less important than in myeloïd DC. Interestingly, we observed cross-presentation of tumor antigen to a specific $CD8^+$ T cell clone only when DC are co-cultured with MV infected tumor cells. Altogether, our results suggest that the use of MV, as anti-tumor virotherapy, may induce immunogenic tumor cell death allowing DC to cross-present tumor antigen. Data will be presented with effects on mesothelioma, melanoma and lung cancer.

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