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Use of immunopotentiating reconstituted influenza virosomes (IRIV) as vector to deliver antigens into dendritic cells

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Dendritic cells (DC) are the most potent antigen presenting cells and therefore represent a promising tool for cancer immuno-therapy. We developed single use cell processors, allowing generation of large numbers of clinical grade monocyte-derived DC in serum free medium containing GM-CSF and IL-13. We have previously demonstrated that these DC cross present antigens to specific CD8 T cells on MHC class I molecules *in vitro*. In order to improve specific CD8 T cell responses, we tested Immunopotentiating Reconstituted Influenza Virosomes (IRIV) as vehicles to deliver antigens into DC. IRIVs are spherical, unilamellar vesicles with a mean diameter of 150 nm derived from the envelope of the Influenza virus. IRIVs could enter into DC via binding of hemagglutinin flu protein present at the surface of IRIV to sialic acid. It has been shown that antigens encapsulated into IRIVs are delivered to the cytosol and enter the MHC class I pathway inducing a CD8 T cell immune response. In this study, we demonstrated efficient uptake of PKH-26 labeled IRIVs by DC. IRIVs did not affect DC viability and did not induce DC maturation. In addition, IRIVs did not prevent maturation induced by bacterial extract (FMKp) and IFNγ. In order to study the capacity of IRIV associated with antigen to present epitopes at the DC cell surface, we developed a model antigen containing the highly immunogenic mutated Melan-$A_{26–35(27L)}$ peptide encapsulated into IRIVs