Neuroblastoma-derived microvesicles differ from non-tumoral-derived in physical characteristics and biological effects

Marina Cerreto[1], Vito Enrico[2], Simona Sennato[3], Gabriele Chieppa[1], Elena Romano[1], Anna Giovanetti[4], Stefano Rufini[1]

[1]Dipartimento di Biologia Università di Roma "Tor Vergata", [2]Dipartimento di Ingegneria Università di Roma "Tor Vergata", [3]Dipartimento di Fisica "La Sapienza" Università di Roma, [4]Technical Unit for Radiation Biology and Human Health ENEA.

marina.cerreto@yahoo.it

Extracellular microvesicles (EVs) are structures which diameter range from 30 to 1000 nm, released by many cell type in almost all extracellular fluids. Through their many functions they mediate cellular communication and remove un-useful proteins from cells. The EVs heterogeneous population is broadly divided in exosomes, ectosomes and apoptotic bodies, depending on their origin and dimension [2]. All types have a double-layer membrane rich in proteins, cholesterol and sfingolipids, and a cargo consisting in soluble proteins and nucleic acids. Content, size, membrane composition and function depend on the cellular source, state and patological conditions [2]. For their potential in diagnosis, prognosis and therapy in multiples diseases research on these particles is of great interest [1]. On the last years physical parameters such as hydrodynamic radius and z potential have been investigated to better characterize the EVs [3]. Given the large heterogeneity of the EV pool, physical characterization can provide a useful and fast analysis to identify and discriminate between different classes of microvesicles of unknown origin, inferring on the biological rule. In this study, non-tumoral human keratinocytes (HaCaT) and tumoral human neuroblastoma cells (SH SY-5Y) derived vesicles (N-TEVs, and TEVs, respectively) have been isolated, characterized and analyzed for uptake and biological effect in term of viability, induction of apoptosis and activation of dendritic cells. TEVs have shown to have different size and z potential if compared to N-TEVs. TEVs arise antiapoptotic response and decrease mortality in tumoral cells. If compared to N-TEVs, TEVs induce a decrease in HLA-DR expression in dendritic cells.

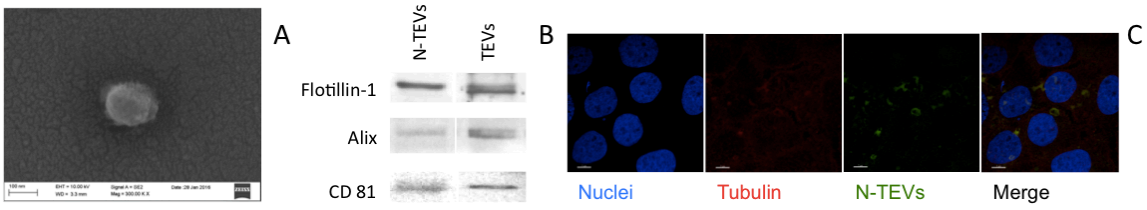

Figure 1 A) SEM image of a single a gold sputter-coated TEV. **B** Western blot analysis of N-TEVs and TEVs indicates the presence of exosome markers. **C** Immunofluorescent images of Keratynocytes treated with prestained N-TEVs reveal the uptake by recipient cells.

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