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Abstract Lugini

Natural Killer-derived extracellular vesicles: immune sensors and antitumour bullets

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Natural killer (NK) cells represent a first-line defense in the control of tumor growth and metastasis diffusion. Extracellular vesicles (EVs), both microvesicles and exosomes, are secreted by all most cells and can be isolated from all biological fluids. We were the first to characterize the exosomes of human healthy NK cells, demonstrating their anti-tumour activity *in vitro* vs different tumour histotype. By the proteomic analysis of EVs isolated from NK donors (NKEVs) we showed in more detail their multiple proteic cargo, showing their involvement in the immune system network and ability to sense the systemic NK cell status in cancer patients. NKEVs also exert an *in vivo* potent and direct antitumour effect in a xenograft model of lymphoma B, studies performed by integrating *in vivo* and *ex vivo* MRS metabolomics. Hence, NKEVs could contribute to improve cancer therapy by interacting with tumour and immune cells and sense the actual NK cell status in cancer patients. We acknowledge support by a grant of Ministry of Health (GR-2011-02351400 to LL).