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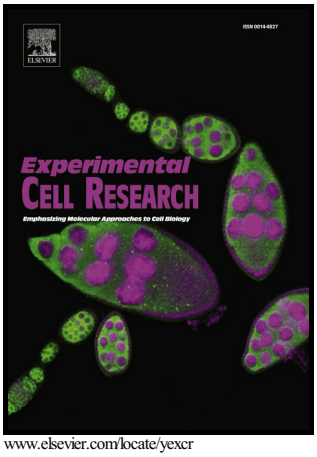

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PII: S0014-4827(17)30647-X
DOI: https://doi.org/10.1016/j.yexcr.2017.12.005
Reference: YEXCR10844

To appear in: *Experimental Cell Research*

Received date: 25 July 2017
Revised date: 3 December 2017
Accepted date: 7 December 2017

Cite this article as: Qi Li, Qiuping Huang, Ting Huyan, Yilin Wang, Qingsheng Huang and Junling Shi, Bifacial effects of engineering tumour cell-derived exosomes on human natural killer cells, *Experimental Cell Research,* https://doi.org/10.1016/j.yexcr.2017.12.005

Bifacial effects of engineering tumour cell-derived exosomes on human natural killer cells.

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Abstract

Extracellular vesicles (EVs) are nano vesicular structures that are secreted by almost all kinds of cells. Exosomes are small EVs derived from endosomes, with a diameter between 30-100 nm. Tumour-derived exosomes carry many molecules and factors from tumour cells. These exosomes are recognized and taken up by immunocytes. However, tumour-derived exosomes can not only suppress immune cell functions but also help tumours escape immune surveillance in the tumour microenvironment. The present work investigated the effect of exosomes derived from genetical modified K562 cells (GMK cells), which express IL-15, IL-18 and 4-1BBL (TNFSF9) on their surface. The results showed that these GME exosomes, carrying IL-15, IL-18 and 4-1BBL proteins similar to their host cells, could activate NK cells, increase the cytotoxicity of NK cells on some tumour cells in a short treatment (4 h) and promote NK cells proliferation. However, with an extended treatment time (48 h), these exosomes could inhibite the cytotoxicity of NK cells by inhibiting activated receptor expression on NK cells. These results indicated the bifacial effects of GMK exosomes on NK cells, which will be helpful to explore the possibility of using transformed exosomes as an anti-tumour immune vaccine or a therapeutic tool in future.

Keywords

natural killer cells, genetically modified K562 cells, bifacial effects, extracellular vesicles, exosomes