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Can exosomes influence triple negative breast cancer metastasis?

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Triple-negative breast cancer (TNBC) is associated with high mortality rates and incidence in younger women. Our analysis primarily investigated the relevance of exosomes in TNBC, by comparing the effects of exosomes derived from Hs578T and its more invasive subclone, Hs578Ts(i)8, as well as exosomes derived from TNBC compared to control sera. The effects of exosomes were analyzed on secondary cell proliferation, motility, invasion, anoikis and endothelial tubule/vessel formation. Hs578Ts(i)8 exosomes, compared to Hs578T exosomes, conferred increased proliferation, motility and invasion of SKBR3, MDA-MB-231 and HCC1954 breast cancer cell lines; as well as Hs578Ts(i)8-derived exosomes inducing Hs578T cells to be more invasive. Additionally, Hs578Ts(i)8-derived exosomes stimulated greater tubule formation than Hs578T-derived exosomes. However, Hs578Ts(i)8-derived exosomes, compared to Hs578T exosomes, sensitised the SKBR3, MDA-MB-231 and HCC1954 cell lines to anoikis; a finding consistent with the innate phenotype of both cell Hs578T variants. Furthermore, exosomes isolated from TNBC patients' serum, compared to those from control sera, increased the invasiveness of SKBR3 cells. Further investigation established the presence of RNA in serum-derived exosomes, supporting the potential for exosomes as cargos of cancer biomarkers. Our analyses indicate that exosomes influence secondary cells in a manner indicative of the innate phenotypes of their donor cells, as well as having the potential as carriers of cancer biomarkers.

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