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Introduction: Multidrug resistance (MDR) is a major limitation to the success of chemotherapy and often leads to disease progression and mortality. MDR is highly associated with the overexpression of drug efflux pumps such as P-glycoprotein (P-gp)1. Recently, Extracellular vesicles (EVs) have been implicated in the non-genetic acquisition of P-gp, which may be transferred from MDR cells to drug-sensitive recipient cells2. In spite of being a major clinical problem, to date there are no means to diagnose the MDR phenotype3. The aim of this study was to compared and characterized EVs from MDR cancer cells and their respective drug-sensitive counterparts, in order to identify MDR biomarkers.

Methods: We isolated and characterized (in terms of size, quantity, molecular profile and protein cargo) EVs from two different pairs of cancer cell lines, consisting of a MDR cell line and its drug-sensitive counterpart.

Results: Results showed that for both pairs of cell lines the EVs from the MDR cells were isolated in bigger amounts and sizes than the EVs from the drug-sensitive cells. In addition, the proteomic profile (validated by Western blot) provided a distinct signature between the EVs shed by the drug-sensitive cells and their MDR counterpart cells.

Discussion: We propose that the specific size and protein signature that we have identified in the EVs shed by the MDR cells may have diagnostic significance in cancer, as biomarkers to identify the MDR phenotype.

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