Effect of high glucose concentration on extracellular vesicle release and proteomic profile of placental cells

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OBJECTIVES: This study aimed to evaluate the effect of high glucose concentration on placental cells by assessing the release of different population of Extracellular Vesicles (EVs), and determining changes in the protein content in these cell models.

RESULTS: In BeWo cells, high glucose significantly increased the release of total EVs in the different pellets tested. Besides this overall increase in each pellet, variations in the proportion of subpopulations of EVs according to size was identified. There was an enrichment of EVs between 50 – 150 nm. This subpopulation also increased in the three pellets because of high glucose treatment compared with control. On the other hand, high glucose decreased the release of total EVs from HTR-8/SVneo cells compared with normal glucose concentration in 2K and 10K pellet. Besides this, an enrichment of EVs between 50 – 150 nm. This subpopulation also increased in the three pellets because of high glucose treatment compared with control. On the other hand, high glucose decreased the release of total EVs from HTR-8/SVneo cells compared with normal glucose concentration in 2K and 10K pellet. Changes in the proportion of size-subpopulations were not evident in the 2K pellet, where a significant increase of EVs over 200 nm and a decrease of EVs between 50-150 nm were observed. Extensive proteomic analysis of each cell lines showed changes in the expression of proteins after exposure to high glucose.

CONCLUSION: The data presented in this study suggest that placental cell lines from different origins have a differential response to extracellular glucose concentration, also evidenced by changes in the release of EVs and proteomic profile.