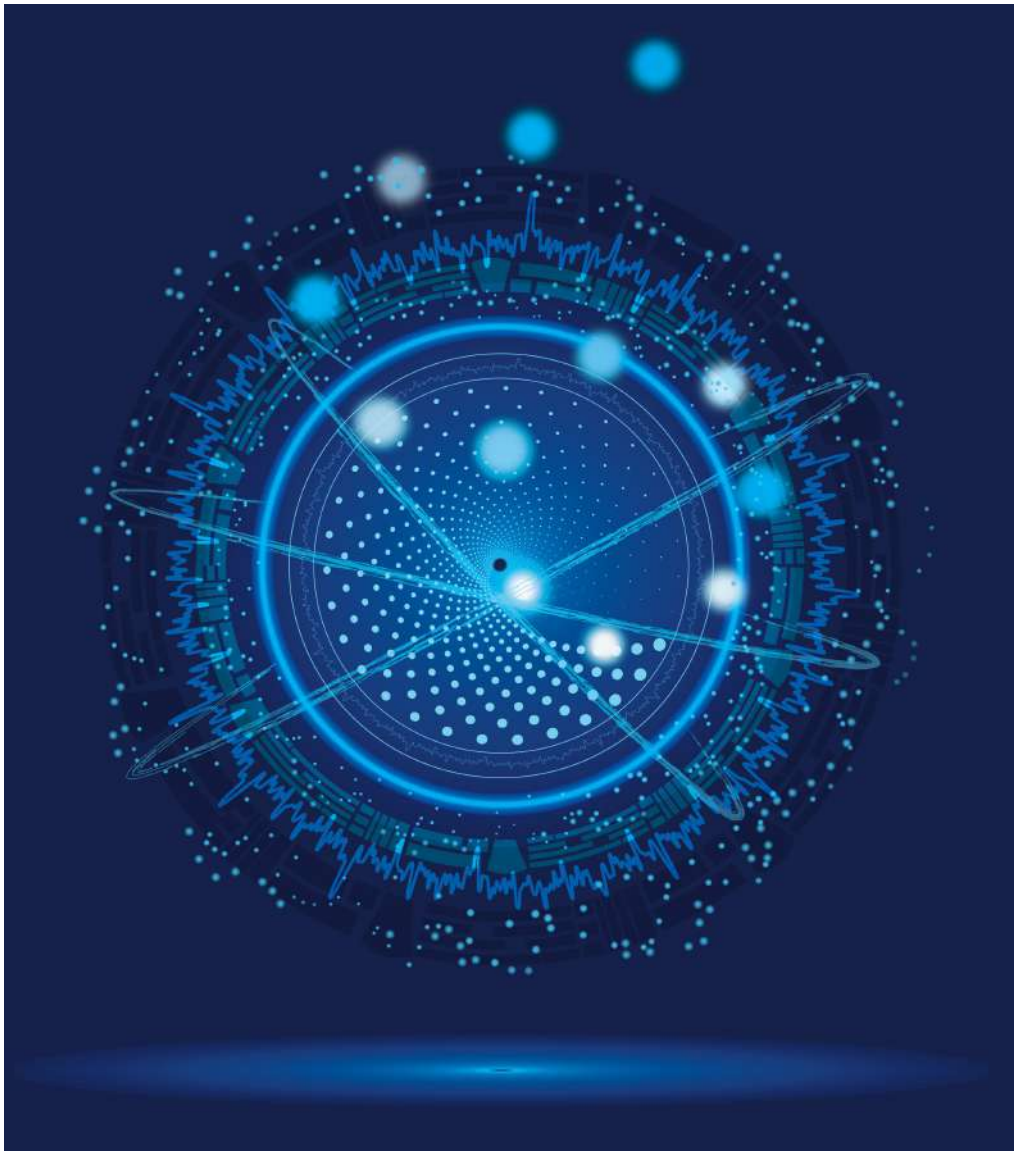
Small New World 2.0

4-5 September 2023

Abstract Book



Medical University Graz, Austria

Small New World 2.0

4-5 September 2023., Graz, Austria

Joint Meeting of

Austrian Society for Extracellular Vesicles - ASEV
Hungarian Section for Extracellular Vesicles - HSEV
Slovenian Network for Extracellular Vesicles - SiN-EV
Serbian Society Extracellular Vesicles - SrbEVs

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Poster presentation P21

Immunomodulatory Potential of Trophoblast-Released Extracellular Vesicles on Activated PBMCs

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During pregnancy, trophoblasts express and secrete a battery of immunomodulatory molecules to sustain immune tolerance at the feto-maternal interface. The study aimed to investigate the effects of extracellular vesicles (EVs) released by first trimester extravillous trophoblast HTR-8/SVneo cell line on activated peripheral blood mononuclear cells (PBMCs), and their ability to modulate cellular proliferation and the expression of inflammatory molecules.

EVs were isolated from HTR-8/SVneo cell-conditioned medium and characterized for size, quantity, and exosomal markers using nanoparticle tracking analysis (NTA) and Western blot, respectively. Subsequently, PBMCs were isolated from healthy human donors and activated by PHA.

Following 24h treatment with trophoblast EVs, a significant decrease in PBMC proliferation was observed, providing robust evidence for the inhibitory effects of trophoblast EVs on PBMC activation-induced proliferation. Quantitative real-time polymerase chain reaction (qPCR) analysis revealed a substantial downregulation of proinflammatory cytokines IL-6 and TNF-α, in trophoblast EVs-treated PBMCs compared to control groups. Additionally, our results suggest a protective role for trophoblast EVs in H2O2-induced oxidative stress in PBMCs.

The previous findings shed light on the potential role of trophoblast EVs in maintaining immune homeostasis at the feto-maternal interface and suggest their therapeutic potential for managing inflammatory disorders and pregnancy-related complications. Further investigations are warranted to unravel the underlying mechanisms and to explore the full range of immunomodulatory capabilities of trophoblast EVs.

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