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Ligands of TLR7/8 up-regulate IFN- α production in human trophoblast cell lines SWAN-71

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Background: According to UNAIDS (Joint United Nations Programme on HIV/AIDS), women account for 50% of the people infected with HIV-1 worldwide. Nevertheless, HIV-1 mother-to-child transmission (MTCT) has been significantly reduced due to the use of antiretroviral therapies. The consequences of HIV-1 infection on the innate immune system of both mother and newborn, however, are not well understood. Evidence indicates that expression of Toll-like receptors (TLR) by trophoblast cells might regulate the differentiation and activation of immune cells, likely a key modulation for successful gestation and fetal protection.

Methods: Herein, we analyzed the production and secretion of cytokines by trophoblast cells involved in an antiviral response. Trophoblast cell line (Swan-71) was activated with agonists for intracellular TLRs and infected with HIV-1.

Results: The cytokines IL-6 and IL-8 were evaluated by cytometric bead array and TNF- α , IFN- α and IL-10 production by flow cytometry. Viral replication was also quantified.

Conclusions: Our results showed a potential modulatory effect of CL097 (TLR7/8) and Gardimiquimod (TLR7), which may reflect an improved anti-viral response during pregnancy, associated with increased IFN- α production. These findings raise new possibilities in the search for better tools in the development of vaccine adjuvant as well as more efficient antiretroviral.

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