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Human IgG Fc promotes the expression and secretion of EV71 VP1 protein and enhances its immunogenicity

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Enterovirus (EV71) can cause severe neurological diseases but the underlying pathogenesis remains unclear. The capsid protein, viral protein 1 (VP1), plays a critical role in the pathogenicity of EV71. High level expression and secretion of VP1 protein are necessary for structure, function and immunogenicity in its natural conformation. In our previous studies, 5 codon-optimized VP1 DNA vaccines, including wt-VP1, tPA-VP1, VP1-d, VP1-hFc and VP1-mFc, were constructed and analyzed. They expressed VP1 protein but the levels of secretion and immunogenicity of these VP1 constructs were significantly different ($P<0.05$). In this study, we further investigated the protein lev¬els of these constructs and determined that all of these constructs expressed VP1 protein. The secretion level was increased by including a tPA leader sequence, which was further increased by fusing human IgG Fc (hFc) to VP1. VP1-hFc demonstrated the most potent immunogenicity in mice. Furthermore, hFc domain could be used to purify VP1-hFc protein for additional studies.

Influence of placenta soluble factors on receptor expression profile of JEG-3 trophoblast cells

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Cells in the maternal-fetal interface secrete cytokines that regulate proliferation, migration and trophoblast invasion during pregnancy. The aim of the study was to evaluate the influence of factors secreted by human placenta during pregnancy on cytokine receptors expression of JEG-3 trophoblast cells. The research was conducted using the conditioned media of placentas obtained from healthy women with elective termination of pregnancy (9-11 w.g.) and placentas of women with pregnancy without complications (38-39 w.g.). Assessment of surface molecule expression on JEG-3 trophoblast cells was performed using flow cytometer FACS Canto II (BD). JEG-3 cells increased expression of CD116, CD118, CD119, CD181, CD183, CD186, CD192, CCR1, VEGFR1 and CD140a in the presence of first trimester placental supernatants. In the presence of placental supernatants of the third trimester expression of CD116, CD118, CD119, IFNg-R2, CD120b, CD181, CD183, CD186, CD192, CD295, CCR1, EGFR, TGFb-R2 on JEG-3 cells was higher than constitutive expression. Expression of CD116, CD118, CD119, IFNg-R2, CD120b, CD183, CD192, CD295, EGFR and TGFb-R2 on JEG-3 cells was higher after incubation with placental supernatants of the third trimester than after incubation with placental supernatants of the first trimester. Thus, the expression profile of receptors for cytokines, chemokines and growth factors in the presence of placental supernatants from placentas of the first and third trimesters of pregnancy mainly coincided. However, because of receptors increased expression by JEG-3 cells their sensitivity to leptin, cytokines GM-CSF, LIF, IFNg, TNFa, chemokines IP-10, MCP-1, growth factors EGF, TGFb can be higher in the third trimester than in the first trimester.