Relaxin inhibits uterine contractility in rats and mice. Its role in humans is, however, little known. Stress affects pregnancy maintenance. During stress, CRH stimulates ACTH and adrenal cortisol secretion, leading to acute stress responses. SCP is a high affinity ligand for CRH receptor (CRHR)-2. In this study, effects of recombinant H2 (rH2) relaxin, CRH and SCP on human early placental extravillous trophoblast (EVT) function were examined.

Isolation of trophoblasts differentiating into EVTs was performed by enzymatic digestion of anchoring early placental villi. The presence of relaxin receptors, CRH, SCP, CRHR-1 and -2 in cultured EVTs was examined by RT-PCR and immunoblotting. The effects of relaxin on MMPs and TIMP mRNAs levels and those of CRH and SCP on VEGF mRNA levels in cultured EVTs were examined by real-time RT-PCR. Relaxin receptors, CRH, SCP, CRHR-1 and -2 were revealed to exist in cultured EVTs. Treatment with relaxin increased MMP-2 and -9 mRNAs levels and decreased TIMP-1 mRNA levels in cultured EVTs, suggesting that relaxin may promote the invasive potential of early placental EVTs. Treatment with either CRH or SCP decreased VEGF mRNA levels in cultured EVTs. This suggests that CRH and SCP may inhibit angiogenesis through interacting with CRHR-2 during early placentation.