

Utero-placental cellular and nuclear expression of bradykinin B2 receptors in normal and preeclamptic pregnancies

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Abstract

The bradykinin type 2 receptor (B2R), main effector of the pleiotropic kallikrein–kinin system (KKS), has been localized in the key sites related to placentation in human, rat and guinea pig utero-placental units. The present study was directed to characterize the content, the cellular and subcellular localization of B2R in the villi and basal plate of placentas from normal and preeclamptic pregnancies by means of western blotting, immunohistochemistry and immunoelectron microscopy. The protein content of B2R was demonstrated in both placental zones. The villous placenta of normal and preeclamptic pregnancies expressed B2R in syncytiotrophoblast and fetal endothelium; the basal plate displayed B2R in extravillous trophoblasts and decidual cells. Lastly, immunogold electron microscopy revealed B2R in fetal endothelium, syncytiotrophoblast, extravillous cytotrophoblasts and decidual cells; in all cell types the receptor was mainly located in the cytosol and nucleus. The protein content of placental homogenates and the immunoreactivity in the different cells types did not differ between both study groups; however the abundance of nuclear immunogold B2R positive beads in extravillous trophoblasts was greater in the normal than in the preeclamptic placentas. The purpose of describing nuclear B2R in the utero-placental unit, and its increment in normal extravillous trophoblasts, is to stimulate the study of the functional pathways that may be relevant to understand the local role of the B2R in normal and preeclamptic gestation..

Keywords

Kallikrein–kinin system, Bradykinin B2 receptor, Human utero-placental unit, Preeclampsia, Normal pregnancy, Immunogold electron microscopy.