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Differential Expression Of Cytokeratins 7 And 18 In Villous And Extravillous Trophoblast Cells: A Confocal Laser Scanning Microscopy Study.

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Cytokeratins (CKs) are a subfamily of proteins that form intermediate filaments and constitute the major cytoskeletal system of epithelial cells. CKs are subdivided into Type I (Acidic) including CK9-CK20 and Type II (Neutral-Basic) consisting of CK1-CK8. During pregnancy, trophoblast differentiates into either villous trophoblast or extravillous trophoblast (EVTs). EVT's remodel spiral arterioles. Trophoblasts express greater anti-pan-cytokeratin immunoreactivity in EVTs compared than in villous trophoblast. Here we investigate expression of cytokeratins 7 and 18 using indirect immunofluorescence confocal laser scanning microscopy (CLSM) of freshly delivered cryo-fixed term-placental basal plate tissues. For both CKs, EVTs were more immunofluorescent than villous trophoblast. Non-epithelial tissue levels of fluorescence were close to background. For CK7, there was a > 10 fold difference [Wilcoxon Sign Rank Test $Z = -6.501$, $p = 0.000$] in the mean area percent of a banded zone of the most intensely fluorescent pixels, when equal size areas containing villous trophoblast and EVTs were compared. A similar result was obtained for CK18 [Wilcoxon Sign Rank Test $Z = -8.339$, $p = 0.000$]. Similar results are indicated using CK19 and CK5. Summarising cytokeratins 7 and 18 are upregulated in extravillous trophoblast following differentiation. Since these proteins are representatives of the two subfamilies, and taken together with the pancytokeratin data it appears that this may be a generalised phenomenon in the CK gene family. The upregulation of CKs in EVTs may favour their migration into the basal plate to remodel the spiral arterioles in normal placentation.