

## Distribution of calbindin in human placenta

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Calcium is essential for cell physiological functions. Calcium transport requires four classes of proteins: calbindins (D28k e D9k), plasmatic membrane calcium transporters ATPase-associated (PMCA), Na<sup>+</sup>/Ca<sup>2+</sup> ion exchangers and calcium epithelial channels (TRPVs). All of the proteins belonging to these classes are involved in transcellular transport of this ion, which controls intracellular homeostasis. Particularly, calbindins are D-dependent vitamin cytoplasmic proteins, and their role is to rapidly remove calcium by the cells, facilitating its diffusion through the cytoplasm, to maintain intracellular concentration at low levels. Calbindin-D9k is expressed in gut epithelial cells and, in minor proportions, in the kidney, whereas calbindin-D28k is expressed in the kidney, gut, pancreas, brain and bones. Placenta allows metabolic exchanges between mother and fetus, therefore we investigated distribution of both calbindin D-9k and calbindin-D28k in the human placenta of the first and third trimester of gestation. Localization and expression of these two calcium transporters were evaluated by immunohistochemistry. Our results show that in the first trimester of gestation, calbindin-D9k is localized both in the cytotrophoblast and syncytiotrophoblast, but its expression is very low. In addition, its expression increases in the third trimester of gestation, and it is localized in the syncytiotrophoblast and in endothelial cells surrounding blood vessels. Such localization suggests a role for calbindin-D9k in calcium transport to the fetus. On the other hand calbindin-D28k is localized in the cytotrophoblast and in the syncytiotrophoblast, and its expression is very low both in the first and in the third trimester of gestation. Future studies will clarify the molecular and physiological mechanisms of calbindins involved in the development of human placenta.

Key words

Placenta, immunohistochemistry