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Novel role of Gas1 protein on podocyte regeneration in early stages of diabetes

Diabetic nephropathy (DN) is a most common complication of diabetes. Diabetes induces podocyte loss, which significantly compromises the renal filtration process. In severe cases, it leads to chronic renal failure (CRF). Podocytes are highly differentiated epithelial cells with a very low proliferation capacity under basal conditions. The mechanisms of podocyte regeneration involved in the early stages of kidney damage in diabetes are not fully established. A subpopulation of progenitor cells (PC's) has been described in Bowman's capsule (BC). These cells have the capacity of self-renewal and eventually might differentiate into podocytes. Recently, the expression of the Growth Arrest Specific Protein 1 (Gas1) was described in kidney, for that reason, we decided to analyze the expression of Gas1 in the BC and its possible effect in the activation and differentiation into podocytes of the PC's in the early stages of diabetes. We found that diabetes decreases the expression of Gas1 in the BC and favors the expression of progenitor cell markers like NCAM, CD24 and SIX1/2. We observed an increase of cells which express podocyte marker (WT1) and progenitor cell marker (NCAM) in the BC, suggesting that PC's initiated their process of differentiation. We also found a restoration in the podocyte density. All these results suggest that diabetes favors the decrease of Gas1 expression and probably the activation and differentiation of the PC's in the Bowman's capsule. We propose that in early stages of diabetes, a mechanism of podocyte regeneration is present and is associated to Gas1 protein expression.

Biography

Brenda Ivonne Luna Antonio is a PhD student in the Department of Pharmacology, Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN). Her research is focused on renal regeneration in early stages of diabetes and the analysis of the expression and function of Gas1 protein in the kidney.

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