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Initial stages of diabetic nephropathy, the beginning of a catastrophe

Diabetes is a public health problem which is distributed worldwide, affecting over 300 million patients. Diabetic nephropathy represents a major complication leading to End Stage Renal Disease (ESRD) and its treatment is nothing but dialysis. Though this evolution is fully recognized, however initial mechanisms of renal damage in diabetes are not fully established. It is recognized that hyperglycemia provokes oxidative stress, which leads to the damage of intercellular tight junctions. The aim of this study is to analyze the functional damage induced by oxidative stress on several segments of the nephron (functional unit of the kidney) and the involvement of the tight intercellular junctions (TJs) that are expressed in those segments. And from this study, we found an extensive oxidative stress at glomeruli (filtration units) and at the proximal tubules (site of reabsorption of glucose and sodium). Damage of TJ junctions at the endothelial cells explains proteinuria, at the epithelial proximal cells, explains glucosuria and augmented natriuresis, was observed. Oxidative stress was reduced by administration of All-Trans Retinoic Acid (ATRA) and vitamin A active forms and as a consequence of this it led to the reduction in oxidative stress. Proteinuria and other abnormalities in renal sodium handling were also ameliorated, even in the presence of persistent hyperglycemia. Hence, this ATRA beneficial effect was accompanied by improvement of the TJs proteins damage and these data provide evidence of renal TJs as potential therapeutic targets on the evolution and progression of diabetic nephropathy.

Biography

Jose L Reyes has graduated from the Medical School at the National University of Mexico. He has done his PhD from the Centre for Research and Advanced Studies in Physiology and Biophysics. He was the Former Head of the Physiology and Biophysics Department and currently, he is a Professor in the same institution. He was also the Former President of the National Board of Nephrology (Mexico). He also visited the Universities of Paris VI, Nice France, Lausanne Switzerland. He completed his Post-doctoral training at the Children's Hospital of Los Angeles, USA. He was also invited to deliver lectures at Department of Pharmacology, Cambridge University, UK, Albert Einstein College of Medicine, USA and New York College of Medicine, USA.

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