**The Role of Endothelin in Chronic Kidney Disease: A Review**

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**Abstract**

*Background*

Endothelins (ET) are a family of peptides that act as potent vasoconstrictors and pro-fibrotic growth factors. ET-1 is integral to renal and cardiovascular pathophysiology and exerts effects via autocrine, paracrine and endocrine signaling pathways tied to regulation of aldosterone, catecholamines, and angiotensin**.** In the kidney ET-1 is critical to maintaining renal perfusion and controls glomerular arteriole tone and hemodynamics. ET can bind to two different receptors, ETA and ETB. is hypothesized that ET-1 influences the progression of chronic kidney disease (CKD), and the objective of this review article is to discuss the pathophysiology and role of ET in the following diseases: diabetic nephropathy, hypertensive nephropathy, focal segmental glomerular sclerosis (FSGS), and autosomal dominant polycystic kidney disease (ADPKD).

*Methods*

Search terms “chronic kidney disease”, “CKD”, “endothelin”, “ET-1”, “diabetic nephropathy”, “hypertensive nephropathy”, “focal segmental glomerular sclerosis”, and “autosomal polycystic kidney disease”, and “AKPKD” were used to search PubMed for relevant articles to consider for review. Research staff hand-selected articles that pertained to the review and they were examined at that time. Additionally, Clinicaltrials.gov was searched for recent/current clinical trials pertaining to endothelin and CKD.

*Results*

Use of ERAs in hypertensive nephropathy has potential to decrease proteinuria, and in diabetic nephropathy has potential to restore glycocalyx thickness, also decreasing proteinuria. FSGS has no specific FDA-approved therapy currently, however ERAs show promise in decreasing proteinuria and tissue damage. ET-1 is suggested to be a biomarker for ADPKD disease progression and so it is thought that ERAs may be of some therapeutic benefit.

*Conclusion*

Multiple studies have shown utility of ERAs in CKD. These agents have shown to reduce blood pressure, proteinuria, and arterial stiffness. However, more studies in human populations are needed, and the results of active or recently concluded studies are eagerly awaited.