

STEM CELLS

The renoprotective role of miR-126

Haematopoietic overexpression of microRNA (miR)-126 protects the kidney from ischaemia–reperfusion injury, according to a new study in mice by researchers at Leiden University Medical Center, Netherlands.

The investigators generated chimeric mice by transplanting bone-marrow-derived cells transduced with a lentiviral vector that drives overexpression of miR-126. After renal ischaemia–reperfusion injury, mice overexpressing miR-126 had less renal dysfunction than control mice—evidenced by reduced urea levels, weight loss, and expression of injury markers. This renoprotection was associated with increased density of the peritubular capillary network in the corticomedullary junction—the region most damaged by ischaemia–reperfusion injury—and a 2.2-fold increase in the number of bone-marrow-derived endothelial progenitor cells (EPCs) in the kidney. Overall, the results suggest that haematopoietic

overexpression of miR-126 mobilizes vasculogenic progenitor cells to the kidney, where they promote microvascular integrity and assist in recovery after injury.

The researchers' findings have potential clinical application in the field of kidney transplantation, in which reduced graft function and the use of immunosuppressants result in EPC dysfunction. Lead investigator Anton Jan van Zonneveld speculates, “Donor kidneys could be perfused with exosomes containing miR-126 to protect the peritubular capillary network from ischaemia–reperfusion injury after transplantation, thereby reducing delayed graft function and improving the long-term outcomes of kidney transplant recipients.”

David Holmes

Original article Bijkerk, R. *et al.* Haematopoietic microRNA-126 protects against renal ischemia/reperfusion injury by promoting vascular integrity. *J. Am. Soc. Nephrol.* doi:10.1681/ASN.2013060640