## THE ROLE OF miR-152-5p IN RENAL TRANSPLANTATION

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**Introduction.** miR-152-5p is a microRNA involved in the regulation of gene expression at the posttranscriptional level, primarily expressed in hematopoietic cells. It impacts the regulation of genes involved in T cells and macrophage activation, making it an important biomarker for monitoring transplant rejection. In the context of kidney transplantation, it plays a significant role in modulating the immune response, preventing allograft rejection, and slowing the progression of chronic lesions such as fibrosis or chronic allograft nephropathy.

**Materials and Methods.** A literature review was conducted using PubMed, BioMed Central and the Cochrane Library, alongside the analysis of international publications.

**Results.** Recent studies have demonstrated that by inhibiting DNMT1 (DNA methyltransferase 1), miR-152-5p blocks T cell activation and reduces the production of pro-inflammatory cytokines associated with acute allograft rejection (IL-6, TNF- $\alpha$ ). Additionally, by inhibiting pro-apoptotic genes (BIM, CASP3), it protects renal cells from apoptosis. miR-152-5p has also been shown to provide protection against fibrosis and chronic renal lesions by suppressing the expression of TGF- $\beta$ 1, a key mediator of tubulointerstitial fibrosis and chronic allograft nephropathy. Low levels of miR-152-5p in blood, urine, or renal biopsies have been identified in patients with progressive renal fibrosis and impaired kidney function, and it has ben associated with a high risk of chronic allograft rejection. Furthermore, miR-152 mitigates oxidative stress and inflammation by inhibiting reactive oxygen species and reducing NF-kB expression, providing protection against ischemia-reperfusion injury. Moreover, the use of miR-152-5p mimetics can reduce inflammation and fibrosis in the renal allograft, while combined therapies with immunosuppressants such as tacrolimus or mycophenolate allow for dose reduction and minimization of adverse effects.

**Conclusions.** miR-152-5p is a microRNA involved in immune response regulation and inflammation, serving as a promising regulator in kidney transplantation with roles in immunomodulation, antifibrotic protection, and prevention of ischemia-reperfusion injury. Its use as a biomarker or therapeutic agent could revolutionize the management of kidney transplant patients by reducing the risk of rejection and improving allograft survival.

Keywords: microRNA, biomarker, transplant, graft, renal.