ARB alters microRNA profiles of circulating exosome in patients with diabetic nephropathy

순천향대학교 서울병원 내과

*정화음, 김효식, 권순효

Background/Aims: The renin-angiotensin system (RAS) is a major target of diabetes nephrapthy therapy. Angiotensin II receptor blockers (ARBs) decrease proteinuria and mortality associated with diabetes nephropathy. Extracellular vesicles (EVs) contain miRNAs that play a role in cell-to-cell communication and are biomarkers of disease. Whether ARBs modulate miRNAs in EVs is not known. **Methods:** We prospectively enrolled 6 ARB naïve patients (male=4, female=2) with diabetic nephropathy and hypertension along with age-sex matched healthy volunteers (HVs). After collecting baseline samples, an ARB (losartan 50 mg) was added to the patients' drug regimens. Serum EV microRNAs were profiled using RNA sequencing at baseline and 3 months after initiation of ARB therapy. **Results:** RNA sequencing identified 156 miRNAs in the EVs from HVs and patients. ARB therapy decreased the expression of 5 miRNAs in the EVs from patients. Expression of 3 miRNAs was increased after ARB therapy. Biological analysis identified the predicted involved pathways of these miRNAs. **Conclusions:** Our study demonstrates that ARBs affect the expression of miRNAs in EVs from hypertensive patients. The change in expression of miRNAs in EVs due to ARB therapy is a novel aspect of the RAS. Further study is needed to identify the role of these miRNAs in diabetes.

Pathway	Number of genes	P-value
Pathways in cancer	66	0.0000162
Ribosome biogenesis in eukaryotes	20	0.0000849
Prostate cancer	25	0.00037
Cell cycle	31	0.000414
Chronic myeloid leukemia	22	0.000414
RNA transport	31	0.000419
Small cell lung cancer	23	0.000419
HTLV-I infection	42	0.000703
Pancreatic cancer	20	0.000951
Focal adhesion	40	0.0031