NEW DYNAMIC MARKERS IN STRATIFICATION OF PATIENTS WITH CHRONIC KIDNEY DISEAS

PharmDr. Valášková S.[1], MUDr. Kužmová Z.[2], Doc. MUDr. Kužma M., PhD[2], PharmDr. Gažová A., PhD[3], RNDr. Červenák Z.[2], prof. MUDr. Payer J. PhD[2], prof. PharmDr. Kyselovič J., PhD.[2]

[1]Department of Pharmacology and Toxicology, Faculty of Pharmacy, Comenius University in Bratislava, Odbojárov 10, 832 32, Bratislava, Slovakia
[2]Research centre of V.Department of Internal Medicine, Faculty of Medicine, Comenius University in Bratislava, Špitálska 24, 813 72 Bratislava, Slovakia
[3]Institute of Pharmacology and Clinical Pharmacology, Faculty of Medicine Comenius University, Špitálska 24, 813 72 Bratislava, Slovakia

Kidney disease represents a global public health problem, whose prevalence is rising worldwide, due to the aging of the population and the increasing prevalence of diabetes, hypertension, obesity, and immune disorders. In addition, chronic kidney disease (CKD) is an independent risk factor for the development of CVD, which further increases kidney-related morbidity and mortality. Klotho and fibroblast growth factor 23 (FGF23) are significantly correlated with the development and progression of CKD and its complications. In order to provide insights into their full clinical potential as biomarkers and/or therapeutic options in CKD we correlate them with expression of the specific miRNAs.

Objective: In the present study, we examined the levels of Klotho and FGF23 with ELISA test and the expression the microRNAs 29b and 133a via RT-PCR in plasma of patients with CKD (stage G1 – G4).
The results: The levels of Klotho were increased in plasma of patients with CKD from stage 1 to stage 4 (130.9 pg/ml; 133.63 pg/ml; 237.65 pg/ml; 398.47 pg/ml). FGF23 plasma levels were significant changed – stage 1 (73.52 pg/ml $p<0.05$ vs stage 2-4); stage 2 (108.43 $p<0.05$ vs stage 4), stage 3 (97.68 pg/ml $p<0.05$ vs stage 4) and stage 4 (150.72 pg/ml). The relative value of microRNAs 29b and 133a were significantly reduced versus healthy volunteers (without CKD) – stage 1 – 2.20/2.40; stage 2 – 2.17/3.53, stage 3 – 1.87/2.59 and stage 4 – 2.17/3.48.

Conclusion: Further studies are needed to clarify the practicability of the integration microRNA 29b and 133a, FGF23, and Klotho as new clinically-relevant biomarkers in renal disease. Alone and in combination, it might facilitate the identification of new diagnostic/therapeutic strategies, in line with the concept that it is the integration of biological, molecular, and genetic characteristics of CKD patients.