

**Abstract Submission No.: A-1270**

**The Impact of Urinary Phthalate Metabolites on Kidney Function: A  
Longitudinal Analysis among CKD Patients**

**Yaerim Kim**<sup>1</sup>, Inae Lee<sup>2</sup>, Jeonghwan Lee<sup>3</sup>, Jae Yoon Park<sup>4</sup>, Jung Nam An<sup>5</sup>, Kyung Don Yoo<sup>6</sup>,  
Younglim Kho<sup>7</sup>, Kyungho Choi<sup>2</sup>, Jung Pyo Lee<sup>3</sup>

<sup>1</sup>Department of Internal Medicine-Nephrology, Keimyung University Dongsan Medical Center, Korea, Republic of

<sup>2</sup>Department of School of Public Health, Seoul National University, Korea, Republic of

<sup>3</sup>Department of Internal Medicine-Nephrology, Seoul National University Boramae Medical Center, Korea, Republic of

<sup>4</sup>Department of Internal Medicine-Nephrology, Dongguk University Ilsan Hospital, Korea, Republic of

<sup>5</sup>Department of Internal Medicine-Nephrology, Hallym University Sacred Heart Hospital, Korea, Republic of

<sup>6</sup>Department of Internal Medicine-Nephrology, Ulsan University Hospital, Korea, Republic of

<sup>7</sup>Department of Department of Health, Environment and Safety, Eulji University, Korea, Republic of

**Objectives :** Urinary phthalate metabolites can only reflect recent episodic exposure due to the rapid metabolizing process. Consequently, evaluating diseases based on a single measurement presents limitations. This study evaluates the association between urinary phthalate metabolites and kidney function through values measured repeatedly.

**Methods :** This study included chronic kidney disease (CKD) patients registered in a SKETCH (Study on Kidney disease and Environmental Chemicals, Clinical Trial No. NCT04679168) cohort, who were followed up quarterly over one year. Urine collected at each visit was analyzed for phthalate metabolites. We used Cox-proportional hazard model to evaluate the impact on the kidney outcome which was defined by estimated glomerular filtration rate (eGFR) by 30% decreasing, doubling of serum creatinine, or starting kidney replacement therapy.

**Results :** In total, 285 patients were studied, with eGFR categories  $\geq 60$  (46 patients), 30-60 (155 patients), and  $< 30$  (84 patients). Across CKD stages, concentrations of DnBP and cxMEPA showed significant difference. Among 9 urinary phthalate metabolites, MCPP (aHR 1.02, 95% CI 1.01-1.04) and DiNP (aHR 1.02, 95% CI 1.01-1.03) were associated with a significantly increased risk of kidney dysfunction. For patients with eGFR  $< 45$  mL/min/1.73m<sup>2</sup>, the hazardous effects of MCPP and DiNP persisted. Specifically, the impact of MCPP' remained significant in diabetic patients and non-smokers. In contrast, the impact of DiNP in patients with eGFR  $< 45$  varied according to disease status; it increased the risk in patients with diabetes, BMI  $\geq 25$ , or smokers, but presented a decreased risk in non-diabetic patients, those with BMI  $< 25$ , or non-smokers.

**Conclusions :** Urinary phthalate metabolites, particularly MCPP and DiNP, demonstrated a significant correlation with kidney dysfunction, highlighting the critical role of repeated measurements for a deeper understanding the complex interplay between phthalate exposure and renal outcomes in CKD patients.