中文題目：末期腎臟病病患使用檸檬酸鐵和碳酸鈣磷酸的降磷結合劑之腸道菌群差異

英文題目：Comparative gut microbiome differences between ferric citrate and calcium-containing phosphate binders in patients with end-stage kidney disease

作　　者：吳秉勳 [1,2], 林憶婷 [2,3], 洪薇鈞 [4], 郭美娟 [1,2], 邱怡文 [1,2]

服務單位：[1]高雄醫學大學附設中和紀念醫院內科部腎臟內科, [2]高雄醫學大學醫學院醫學系, [3]高雄醫學大學附設中和紀念醫院家庭醫學科,[4]高雄醫學大學醫學院醫學系基礎醫學科微生物暨免疫學科

Background: Gut dysbiosis in patients with chronic kidney disease (CKD) may induce chronic inflammation and increase morbidity. Phosphate-binding agents, generally used in patients with CKD, may potentially change the composition of the gut microbiota. This study aimed to compare the microbiota composition in hemodialysis patients treated with ferric citrate or calcium carbonate.

Methods: The stool microbiota was investigated in hemodialysis patients treated with ferric citrate (n=8) and calcium carbonate (n=46) using 16S rRNA gene amplicon sequencing profiling using linear discriminant analysis of effect size. We compared the α-diversity, β-diversity, linear discriminant analysis score, and top relative abundance difference between two different phosphate binder users.

Results: Hemodialysis patients treated with calcium carbonate had significantly reduced microbial species diversity (Shannon index and Simpson index) and increased microbial alteration ratio compared with patients treated with ferric citrate. A distinct microbial community structure was found in patients treated with ferric citrate, with an increased abundance of the *Bacteroidetes* phylum and a decreased abundance of the phylum *Firmicutes*. Members of the order *Lactobacillales* were enriched in patients treated with calcium-containing phosphate binder, whereas taxa of the genera *Ruminococcaceae UCG-004, Flavonifractor* and *Cronobacter* were enriched in patients treated with ferric citrate phosphate binder.

Conclusion: Ferric citrate therapy results in a more diverse microbiome community compared to calcium carbonate therapy in hemodialysis patients with phosphate binder treatment. The gut microbiome reflects the phosphate binder choice in hemodialysis patients, further affecting the physiological environment in the gastrointestinal tract.