# Calcium-Based Phosphate Binders and Plasma Oxalate Concentration in Dialysis Patients

Pfau *et al.*[1] demonstrated that high serum oxalate levels are a new risk factor for sudden cardiac death in patients receiving hemodialysis. Cardiovascular death in patients receiving hemodialysis has been a major problem for a long time. Various studies on CKD–mineral and bone disorders have been conducted to improve this, and some non–calcium phosphate adsorbents have been developed to prevent calcium overload caused by calcium-based phosphate binders. However, there is still a lack of evidence to suggest these drugs reduce cardiovascular death in patients receiving dialysis.

A small, randomized trial showed that a non–calcium phosphate adsorbent was superior to calcium agents in reducing total mortality for patients receiving dialysis.[2] A meta-analysis of non–calcium phosphate adsorbents supported this finding.[3] However, even in these studies, no significant differences in cardiovascular mortality were observed.

We would like to acknowledge the work of Pfau *et al.* because their study may be a catalyst to break the current impasse and bring about a significant change in treatment for patients receiving dialysis. However, this study has some limitations.

For example, the authors mention new pharmacologic advances, such as the oral administration of oxalate decarboxylase, and potential therapies, such as RNA-silencing techniques, to reduce oxalate production. In contrast, we would like to mention the potential influence of changes in diet and conventional drug therapies. For example, a diet limiting vegetables high in oxalic acid, or where such vegetables are boiled to remove oxalic acid, and taking calcium with each meal containing oxalate could also influence oxalate levels. Dietary calcium intake is recommended for the prevention of urinary tract stones, which are formed of calcium oxalate. Calcium taken orally combines with oxalate in the gastrointestinal tract to form calcium oxalate, which is insoluble and difficult to absorb. Currently, the optimal calcium intake for patients with urinary tract stones in Japan is 600–800 mg/d. However, many patients on dialysis are restricted from consuming calcium-rich foods, such as dairy products and small fish, because they also contain a lot of phosphate. Previously, we pointed out that calcium-based phosphate binders may also be advantageous binders for oxalate.[4]

It is hoped that future research will elucidate whether calcium-based phosphate binders reduce plasma oxalate more effectively in patients receiving dialysis compared with non–calcium phosphate adsorbents, and that the measurement of plasma oxalate concentration will be used in clinical practice to prevent sudden cardiac death in patients receiving dialysis.

## DISCLOSURES

All authors have nothing to disclose.

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## AUTHOR CONTRIBUTIONS

H. Matsuda reviewed and edited the manuscript; M. Miyazaki provided supervision; Y. Oka wrote the original draft; and S. Takatsu was responsible for validation.

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See related reply, "Authors' Reply: Calcium-Based Phosphate Binders and Plasma Oxalate Concentration in Dialysis Patients," on pages XXX–XXX, and original article, "High Oxalate Concentrations Correlate with Increased Risk for Sudden Cardiac Death in Dialysis Patients," in Vol. 32, Iss. 9, on pages 2375–2385.

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