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Contact: Tracy Hampton
thampton@nasw.org
312-339-9067
[American Society of Nephrology](#)

Fruits and vegetables may help protect the kidneys

Dietary changes reduce metabolic acidosis and kidney injury in kidney disease patients

Highlight

- Adding fruits and vegetables to the diet is an effective alternative to medication to reduce metabolic acidosis and kidney injury in late-stage chronic kidney disease.
- Metabolic acidosis is a common complication of kidney disease.

Washington, DC (February 7, 2013) — Adding fruits and vegetables to the diet may help protect the kidneys of patients with chronic kidney disease (CKD) with too much acid build-up, according to a study appearing in an upcoming issue of the *Clinical Journal of the American Society of Nephrology (CJASN)*.

Western diets that are based in animal and grain products are highly acidic and can lead to metabolic acidosis, when too much acid builds up in the body. This is particularly common in patients with CKD because the kidneys are responsible for removing acid through the urine. Metabolic acidosis can cause rapid breathing, confusion, and lethargy. Severe cases can lead to shock or death.

Alkali supplementation therapy such as bicarbonate is used to treat CKD patients with severe metabolic acidosis, but simply adding more fruits and vegetables—which contain alkali—to the diet might also help.

Nimrit Goraya, MD, Donald Wesson, MD (Texas A&M College of Medicine) and their colleagues tested this by randomizing 71 patients with hypertensive stage 4 CKD to receive added fruits and vegetables or an oral alkaline medication for one year. The treatments were dosed to decrease dietary acid by half.

Among the major findings:

- Kidney function was similar between the two groups after one year.
- One-year plasma total carbon dioxide (PTCO₂) increased in both groups, which

is consistent with a lessening of metabolic acidosis. PTCO₂ was higher in patients receiving bicarbonate than in those receiving added fruits and vegetables.

- Urine measurements of kidney injury were lower after one year in both groups.
- Although fruits and vegetables are rich in potassium and might raise blood potassium to dangerous levels, levels did not increase in either group.

"We showed that by addition of alkali such as bicarbonate or alkali-inducing fruits and vegetables, patients had a favorable response by reduction of urinary kidney injury markers," said Dr. Wesson. "Our study suggests that these interventions will help maintain kidney health in those with kidney disease," added Dr. Goraya.

In an accompanying editorial, Muhammad Yaqoob, MD (Bartshealth NHS Trust and William Harvey Research Institute, in London) noted that the study is likely to have a limited impact on clinical practice. "A small group of highly motivated patients wishing to reduce their pill burden through dietary modification may benefit from the results of this study. However, many patients find it difficult to follow a diet high in fruits and vegetables and might therefore be more adherent to a supplement," he wrote. He added that a large multicenter randomized controlled trial examining the impact of supplemental bicarbonate, with and without dietary intervention, in patients with chronic kidney disease is urgently needed.

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Study co-authors include Jan Simoni, PhD and Chan-Hee Jo, PhD.

Disclosures: The authors reported no financial disclosures.

The article, entitled "A Comparison of Treating Metabolic Acidosis in CKD Stage 4 Hypertensive Kidney Disease With Fruits and Vegetables or Sodium Bicarbonate," will appear online at <http://cjasn.asnjournals.org/> on February 7, 2013, doi: 10.2215/CJN.02430312.

The editorial, entitled "Treatment of Acidosis in Chronic Kidney Disease," will appear online at <http://cjasn.asnjournals.org/> on February 7, 2013.

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