

NEWS

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****Potassium supplements may lower blood pressure in patients treated with diuretics

DALLAS--"We've been looking at potassium's role in the treatment of high blood pressure, and we have good news for patients who take diuretics," said Norman Kaplan, M.D., professor of Internal Medicine at The University of Texas Health Science Center at Dallas and chief of its hypertension unit.

The results of a study conducted by Kaplan and his colleagues--Alfred Carnegie, M.D., Marcia Simmons, R.N. and Jo Ann Heller, R.N., all of UTHSCD--showed that taking potassium supplements lowered the blood pressure of certain hypertensive patients being treated with diuretics. Their study was published in the March 21 issue of *The New England Journal of Medicine*.

One of the most common treatments for high blood pressure is treatment with diuretics. While this may be the only medication required to control moderately elevated blood pressure, prolonged treatment with diuretics can cause a measurable drop in the potassium level of the blood, with undesirable side effects.

"When the potassium level falls below 3.5 mmol per liter, there is a chance of setting off arrhythmias, or irregular heartbeat, particularly in times of stress. This can be a hazard. And we think that a drop in potassium may be responsible for the fact that people on diuretic therapy don't metabolize glucose as well as they might and that their serum cholesterol levels sometime rise. We wanted to overcome these side effects," said Kaplan.

"In the past, research on animals with high blood pressure seemed to indicate that a potassium deficiency had the effect of lowering the blood pressure. But more recent research on people with normal potassium levels showed that giving potassium supplements lowered blood pressure, whether the people had normal blood pressure or high blood pressure to begin with. The two results seemed to contradict one another and led us to the research we have just concluded," Kaplan explained.

For the study, the researchers chose 16 patients whose only medication was diuretics. All of these patients showed low potassium levels as a result of their medication. The patients received either a placebo or a supplement of 60 mmol of potassium a day for six weeks; the patients then received the opposite dosage for another six weeks. Neither the doctors nor the patients knew which was being taken at any given time.

Every two weeks the patients had their blood pressure taken and recorded. At the end of each six weeks, a thorough test was made of the patient's blood sugar and blood lipids, as well as the levels of potassium, sodium and creatinine. The patients' blood was also analyzed for the hormone aldosterone, which helps to regulate mineral metabolism, and for the enzyme renin, which affects the elasticity of blood vessels.

Taking the potassium supplement each day for six weeks lowered the blood pressure approximately 5.5 mm Hg for most of the 16 patients. It also raised the potassium and aldosterone levels in the blood and reduced plasma renin activity. "In analyzing the data, the drop in blood pressure seemed to correspond most closely with the reduction in plasma renin activity, not with the higher potassium level in the blood or the slightly higher aldosterone level," said Kaplan.

(More)

Potassium supplements in hypertension--add one

Renin is an enzyme released by the kidneys that works on the blood to produce angiotensin II. The angiotensin makes the blood vessels' walls more rigid, increasing blood pressure. "We believe that potassium's ability to reduce the renin activity accounted for about one-third of the drop in blood pressure we observed," Kaplan reported.

"However, we think that correcting the potassium deficiency may have helped to lower the blood pressure through several other mechanisms, too," he added. "Other studies have suggested that potassium helps to rid the body of excessive sodium by increasing its excretion in the urine--a process called natiuresis. On the other hand, potassium may directly reduce the high resistance within the blood vessels, which is the major mechanism for elevating blood pressure."

Kaplan pointed out that this study may be of particular interest to blacks. In the first place, blacks have a higher statistical incidence of hypertension than other groups, and the blood pressure of blacks with hypertension tends to be more responsive to treatment with diuretics. "In addition," he said, "black hypertensive patients seem to eat less potassium in their diets. All of these factors contributed to the fact that more than half of the people in the study were black females with a problem of overweight who had developed abnormally low potassium levels during long-term treatment with diuretics."

Kaplan believes that it would be better to prevent diuretic-induced potassium deficiency by using the smallest effective dose of diuretics, by reducing sodium intake and by using potassium-sparing agents. "However, our study showed that a potassium supplement may lower the blood pressure in many patients who are taking diuretics and develop potassium deficiency," he concluded.

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