

SIGNIFICANCE STATEMENT

Dietary intake of phosphate has increased significantly in recent years mostly due to increased intake of processed food. Despite strong epidemiologic evidence for increased cardiovascular morbidity and mortality associated with increased dietary phosphate intake in healthy humans, no intervention studies with controlled phosphate intake have been reported. This exploratory, physiologic study shows that a controlled increase in dietary phosphate (within the range observed in a representative United States population) significantly and reversibly increases BP and pulse rate in young, healthy human adults. The effect is associated with a phosphate-specific increase in sympathoadrenergic activity. These results provide an important explanation for the association of dietary phosphate intake with increased cardiovascular morbidity and mortality in the general population. These conclusions, if supported by larger studies in diverse populations, are of public health importance.