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PERSONAL HEALTH

Exploring a Low-Acid Diet for Bone Health

By [JANE E. BRODY](#)

The science of [osteoporosis](#) and its resultant fractures has long been plagued by some vexing observations. Why, for example, are osteoporotic fractures relatively rare in Asian countries like Japan, where people live as long or longer than Americans and consume almost no [calcium](#)-rich dairy products? Why, in Western countries that consume the most dairy foods, are rates of osteoporotic fractures among the highest in the world? And why has no consistent link been found between the amount of calcium people consume and protection against osteoporosis?

An alternative theory of bone health may — or may not — explain these apparent contradictions. It is the theory of low-acid eating, a [diet](#) laden with fruits and vegetables but relatively low in acid-producing protein and moderate in cereal grains. Its proponents suggest that this menu plan could lead to stronger bones than the typical American diet rich in dairy products and animal protein, often enhanced by calcium supplements.

These dietary changes might even prevent or delay other chronic conditions that rob far too many people of a wholesome old age.

The low-acid theory was first fully promulgated in 1968 by two American doctors in the leading medical journal *The Lancet* and has since been the subject of much debate and confusion among bone specialists.

The science behind low-acid eating and the research findings that do, and do not, support it have been spelled out in a new book, "[Building Bone Vitality](#)," by Amy Joy Lanou, an assistant professor of health and wellness at the [University of North Carolina at Asheville](#), and Michael Castleman, a health writer.

At the same time, researchers at the Yale School of Medicine are studying the possible bone benefits of adding protein supplements to the diets of older Americans who habitually consume low levels of protein.

Dr. Karl Insogna, a professor of internal medicine directing the study, said in an interview that the 18-month placebo-controlled study would determine whether raising protein intake to a more normal range could increase bone mineral density and help prevent osteoporosis in people over age 60.

Science of the Skeleton

Bones are not immutable. Rather, they are continually being broken down and rebuilt, and when

breakdown exceeds buildup, they get progressively weaker. Vital to the solid framework of the body, bones play an equally important metabolic role hidden from casual observation.

Bones are the storage tank for calcium compounds that regulate the acid-base balance of the blood, which must be maintained within a very narrow range. When the blood becomes even slightly too acid, alkaline calcium compounds — like calcium carbonate, the acid-neutralizer in Tums — are leached from bones to reduce the acidity.

Studies by Dr. Bess Dawson-Hughes, at the [Jean Mayer U.S.D.A. Human Nutrition Research Center on Aging](#) at [Tufts University](#), and collaborators have demonstrated the acid-neutralizing ability of fruits and vegetables and the crucial role they can play in maintaining healthy bones.

The researchers note that fruits and vegetables are predominantly metabolized to alkaline bicarbonate, whereas proteins and cereal grains are metabolized to acids. The more protein people consume beyond the body's true needs, the more acidic their blood can become and the more alkaline compounds are needed to neutralize the acid.

In [one study](#) by Dr. Dawson-Hughes and colleagues, published in January in *The Journal of Clinical Endocrinology and Metabolism*, 171 healthy men and women age 50 and older were treated with either bicarbonate or no bicarbonate. Those receiving bicarbonate, in an amount equivalent to nine servings of fruits and vegetables daily, experienced much lower levels of calcium loss in the urine, as well as a loss of N-telopeptide, the biochemical marker of bone resorption.

(By contrast, Dr. Insogna said that although eating more protein raised the loss of calcium in urine, it also improved intestinal absorption of calcium and thus might not result in bone loss.)

The Dawson-Hughes team concluded that increasing the alkaline content of the diet by eating more fruits and vegetables should be studied as a safe and low-cost approach to preventing osteoporosis and improving bone health in older Americans.

The finding is consistent with current recommendations from several federal health agencies to consume nine servings daily of fruits and vegetables. That amount has been shown to lower [blood pressure](#) and has been linked to a reduced risk of developing heart disease, stroke, [diabetes](#), some cancers and [Alzheimer's disease](#). Now prevention of osteoporosis might be added to the list.

As the book authors point out, “animal foods, especially cheeses and meats, don't contain much alkaline material” and hardly enough to “neutralize all the acids they introduce into the bloodstream; the body must draw calcium compounds from bone to restore optimal blood pH,” a measure of acidity. On the other hand, the alkaline material in fruits and vegetables, which are low in protein, can buffer that acidity.

Except for hard cheeses, which are acid-producing, most dairy foods, including milk, are “metabolized to compounds that are essentially neutral,” Dr. Dawson-Hughes said.

In their exhaustive review of the scientific literature, Dr. Lanou and Mr. Castleman found that “two-thirds of clinical trials show that milk, dairy foods and calcium supplements do not prevent fractures.” They conclude that the high [fracture](#) rate in countries that consume the most milk and

dairy products results from the fact that “these affluent Western countries also consume the most meat, poultry and fish.”

Lessons From Research

This does not mean that older people, many of whom chronically consume too little protein, should avoid this essential nutrient, which helps prevent frailty and the falls that result in fractures. Nor must people become [vegetarians](#) to maintain strong bones.

But it does suggest that those at the high end of protein consumption may be better off eating less protein in general and less animal protein in particular and replacing it with more fruits and vegetables. Consider adhering to the amount of protein that health experts recommend, which has a built-in safety factor of 45 percent above the minimum daily requirement and is based on ideal (not actual) body weight and age.

For an adult, that amount in grams is 0.36 multiplied by ideal body weight. Thus, a woman who should weigh 120 pounds needs only 44 grams of protein a day, the amount in 3 ounces of flounder, one piece of tofu and a cup of cooked bulgur. A 60-pound 8-year-old (the multiplier is 0.55) would need only 2 ounces of chicken and one-half cup of cottage cheese to get the recommended 32 grams of protein.

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In health there is diurnal variation of the specific gravity; in morning, the most concentrated portion of the urine, it can be to 1.020-1.026. Assessment of the specific gravity of the urine is of great diagnostic significance, because these parameter gives information about concentrating ability of the kidneys. The specific gravity can also be depends on the volume of urine excreted (Tab. 2). Tab. 2. Clinical significance of specific gravity changes. Specific Extrarenal causes. Renal causes. Penicillin DZ is obtained by drawing the mold in a medium containing allylmereaptoacetic acid. This antibiotic is useful in cases where patients are sensitive to penicillin G. The 2-chloroprocaine salt of penicillin DZ is insoluble depot form. Phenoxymethyl penicillin (penicillin V) is produced biosynthetically by P. Chrysogenum Q 176 in a special culture medium. Low-Acid Diet May Help. Stomach acid has long been blamed for acid reflux, heartburn and other ills. But now some experts are starting to think that the problems may lie not just in the acid coming up from the stomach but in the food going down. Recent studies have shown a link between bone health and a low-acid diet, while some reports suggest that the acidity of the Western diet increases the risk of diabetes and heart disease. This year, a small study found that restricting dietary acid could relieve reflux symptoms like coughing and hoarseness in patients who had not been helped by drug th The benefits of a low oxalate diet and whether avoidance of high oxalate foods is effective for reducing health issues such as kidney stones.Â Benefits and Risks of Avoiding Oxalic Acid on a Low Oxalate Diet. by Sarah Pope MGA / Affiliate Links âœ”. Table of Contents[Hide][Show]. What is a Low Oxalate Diet? What are Oxalates. High and Low Oxalate Foods.Â Low calcium intake as recommended by certain health authorities can actually contribute rather than resolve a propensity to form kidney stones. Other Factors Affecting Kidney Stones. Other factors that affect a problem with stones forming in the kidneys include excessive vitamin C and high protein intake. An essential amino acidâ€”keto acid diet. 997. Table 3. Clinical and biochemical details of patients taking the diet.Â The figure of 6.5 represents an estimate of bone area in the lethargy, nausea and anorexia. After about two months most. upper arm for women.Â The remaining 12 patients took the diet for a minimum of six the diet for at least 12 months, creatinine clearance decreased. months each. Details of these participants are shown in Table 3. by 1.7 1.7 mliter/min during this period, P <0.05.