REVIEW ARTICLE

Health Effects of Alkaline Diet and Water, Reduction of Digestive-tract Bacterial Load, and Earthing

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ABSTRACT

In the article, the author discusses the issue of chronic, low-grade acidosis that is thought to be brought about primarily by 2 factors: (1) advancing age, with a consequent decline in renal function; and (2) diet. An acid-forming diet can induce low-grade metabolic acidosis, which causes very small decreases in blood pH and plasma bicarbonate (HCO_3^-) that remain within the range considered to be normal. However, if the duration of the acidosis is prolonged or chronically present, even a low degree of acidosis can become significant. This article reviews supporting evidence in the literature that has shown that consumption of abundant alkaline-forming foods can result in improvement in bone mineral density (BMD) and muscle mass, protection from chronic illnesses, reduced tumor-cell invasion and metastasis, and effective excretion of toxins from the body. In addition, a large number of studies showing the benefits of alkaline water (mineral water) have revealed that people consuming water with a high level of total dissolved solids (TDS) (ie, with a high mineral content) have shown a lower incidence of coronary heart disease (CHD), cardiovascular disease (CVD), and cancer and lower total mortality rates. Consumption of alkaline water also may prevent osteoporosis and protect pancreatic beta cells with its antioxidant effects. In addition, this article discusses the literature that shows that reducing digestive-tract bacterial load can play an important role in increasing blood alkalinity toward the normal upper limit. That change occurs through good oral hygiene, flossing of teeth, perfect chewing of food, and bowel evacuation as soon as possible. Finally, the author reviews the literature that shows that earthing (ie, the direct contact of the human body with the earth) can supply a current of plentiful electrons. Earthing has been shown to reduce acute and chronic inflammation, blood glucose in patients with diabetes, red blood cell (RBC) aggregation, and blood coagulation. It also has been shown to produce symptomatic improvement in chronic, muscle and joint pain, a reduction in overall stress levels and tensions, a boost in positive moods, an improvement in heart rate variability, and an improvement in the immune response. (*Altern Ther Health Med.* 2016;22(S1):24-33.)

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The human body tends to maintain a tightly controlled pH range of approximately 7.35 to 7.45 in the extracellular fluid through respiratory excretion of carbon dioxide and renal excretion of a noncarbonic (ie, a nonvolatile) acid or base.[1] Everyday metabolism produces acid as nonvolatile sulfate from amino-acid catabolism, nonmetabolized organic acids, and phosphoric and other acids. The kidney reabsorbs all of the filtered bicarbonate (HCO_3^-) and generates new HCO_3^- in the collecting duct. Under normal steady-state conditions, the net quantity of acid secreted and the consequent renal generation of new HCO_3^- equals the rate of metabolic proton generation, preserving pH balance.

In metabolic acidosis, either nonvolatile acid accumulates or HCO_3^- is lost (eg, in diarrhea) and that result can occur even when the plasma HCO_3^- is within the range considered to be normal (24-28 mmol/L).[2] An acid-forming diet can induce low-grade metabolic acidosis, which causes very small decreases in blood pH and plasma HCO_3^-, that remain within the range considered to be normal. Within that range, the system equilibrates nearer the lower end rather than the higher end of normal.

However, if the duration of the acidosis is prolonged or chronically present, even a low degree of acidosis can become significant. A less severe but more chronic, low-grade acidosis is thought to be brought about primarily by 2 factors: (1) advancing age, with a consequent decline in