Calcium an Important Food Element

What Is Calcium

Calcium is the most abundant and the most important mineral in the body, yet it is the most difficult to get absorbed and utilized by the cells.

Calcium is a metal, bright and shiny like all other metals. It is not the white powdery substance most people think it is. The white powdery substance people think is calcium is actually calcium carbonate, or another compound of calcium with calcium only making up much less than half of the total molecular weight of the substance.

Calcium is used more than any other mineral in the body. In fact there are 179 different known uses for calcium in the human body. Calcium is vital in the formation of and maintenance of strong bones and teeth. It prevents bone loss associated with osteoporosis. It controls muscle contraction and relaxation, and is needed for muscle growth. Calcium is important in the maintenance of regular heartbeat, the transmission of nerve impulses, and the transfer of information between our brain cells. It controls osmosis and diffusion through the cell membranes, and also the passing of information within the cell. Calcium provides energy and participates in the protein structuring of RNA and the DNA formation in chromosomes. This important mineral is also essential in blood clotting, urine filtration, and helps prevent colon cancer. Calcium lowers above range blood pressure.

Calcium controls the formation of enzymes and hormones. It is involved in the activation of several enzymes including lipase. The amino acid lysine is needed for calcium absorption.

And in addition, and perhaps most importantly, it is the main buffer used to neutralize acids and to maintain the proper pH throughout the body.

About 99% of our body’s calcium is deposited in the bones and teeth. The remaining 1% is present in body fluids, approximately equally divided between diffusible calcium and non-diffusible calcium. The diffusible calcium is bound to blood proteins, chiefly to albumin, although a small amount is bound by the globulins in the blood.

Scientists have discovered that the body fluids of healthy people are mildly alkaline (high pH), whereas the body fluids of the sick are acidic (low pH). Calcium is responsible for maintaining the proper body fluid pH.

To stay alive, blood must remain slightly alkaline. When you drink a cola (highly acidic), take medications or consume foods that are acidic to the body, it uses calcium to buffer the excess acid to keep the pH of the blood slightly alkaline. If the body can't get the calcium it needs from its reserves, it takes it from the bones and this leads to more problems. Thus, calcium reserves are extremely important to maintain good health.
**Calcium Deficiency**

Calcium deficiency, which is also known as hypocalcemia, is responsible for approximately 150 different degenerative diseases and conditions, and also other problems that can be harmful or dangerous to the body. A calcium deficiency may result in the following symptoms: muscle cramps, nervousness, heart palpitations, brittle nails, eczema, hypertension, aching joints, increased cholesterol levels, rheumatoid arthritis, tooth decay, insomnia, rickets, and numbness in the arms and/or legs.

All degenerate diseases, such as diabetes, cancer, heart disease, gallstones, kidney stones, arthritis, osteoporosis, and many more have been scientifically linked to deficiencies in calcium. If there is any calcium deficiency, lead will be absorbed by the body and deposited in the teeth and bones. Calcium protects the bones and teeth from lead by inhibiting absorption of the toxic metal. Its deficiency may account for the higher level of lead in children who have higher incidence of cavities.

The following is a partial list of calcium deficiencies. Some of them may be familiar.

<table>
<thead>
<tr>
<th>Arthritis</th>
<th>Gout</th>
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<tbody>
<tr>
<td>Heart palpitation</td>
<td>Muscle cramps</td>
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<tr>
<td>Hypertension</td>
<td>Eczema</td>
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<tr>
<td>(High blood pressure)</td>
<td>Increased cholesterol levels</td>
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<tr>
<td>Loss of mental functions</td>
<td>Insomnia</td>
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<tr>
<td>Indigestion</td>
<td>Headaches</td>
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<tr>
<td>Rickets</td>
<td>Bone spurs</td>
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<tr>
<td>Kidney and gall stones</td>
<td>Hiatal hernia</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>Asthma</td>
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<tr>
<td>Recessed gums</td>
<td>Asthma</td>
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<tr>
<td>Asthma</td>
<td>Allergies</td>
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<tr>
<td>Colitis</td>
<td>Arrhythmia</td>
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<tr>
<td>Heart disease</td>
<td>Cancer</td>
</tr>
<tr>
<td>Acid reflux</td>
<td>And about 125 others</td>
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</tbody>
</table>

From the above list, it is very interesting to note that kidney stones are included. Kidney stones are a buildup of calcium in the kidney which are very painful to pass and surgery is sometimes necessary to remove them. At one time doctors thought that the stones formed because of an over-abundance of calcium in the diet and instructed the patients to restrict their calcium intake. This has been shown, not only to be completely false, but actually the exact opposite is true. Kidney stones are caused by a lack of calcium in the diet. What happens is: for whatever reason, the body becomes acidic, and the body leaches calcium out of the bones to neutralize the acid, to keep the pH from dropping below the level that supports life. The problem is, the calcium from the bones is not very bioavailable and only a small percentage is actually used to correct the acid situation and the rest starts to accumulate in the kidney, or it may form bone spurs.

Scientific evidence has proven the stones are not formed from calcium in the diet by using radioactive markers on the dietary calcium. When the stones and spurs were
later examined there was not one bit of radioactive calcium contained in them. Fully 100% of the kidney stones and bone spurs came from calcium leached out of the bones in order to neutralize the acids in the body fluids. Some doctors still haven't received the new information and are telling their patients to restrict their calcium intake. That, of course, is going to make the problem worse and cause more stones and spurs to develop.

The average diet of meats, refined grains, and soft drinks (high in phosphorus) has been documented to contribute to increased bone loss in adults. It is important to remember that proper calcium absorption absolutely requires an adequate level of vitamin D, through diet or by supplement. This vitamin controls the absorption of calcium ions. So one can see that biochemical absorption of calcium is not an easy matter. The excretion of calcium is largely through the mucosa of the small intestines, and a comparatively small quantity (25-35%) is excreted in the urine as calcium phosphate. Since excretion is a normal continuous process, a negative calcium balance can result if dietary intake is too low.

**Can Cola & Sodas Kill?**

Over the long term the effects of colas are devastating to the body. Acidity, sugars, and artificial flavors and sweeteners can shorten life. It would take 32 glasses of alkaline water at an alkaline pH of 9 to neutralize the acid from one 12 oz. cola or soda. Drinking a cola or soda, the body will use up reserves of its own stored alkaline buffers, mainly calcium from the bones and DNA, to raise the body's alkalinity levels, especially to maintain proper blood alkaline pH levels. Acidic blood levels cause death! There are enough acids in one soda to kill if there is no mechanism to neutralize them. This can occur if the body's mineral buffers are used up.

Sodas, like water and other liquids, pass very quickly through the stomach into the small intestine where it is quickly assimilated into the bloodstream through the openings in the villi in the walls of the intestines. They can also be absorbed right through the stomach's lining directly into the blood. Liquids do not stay in the digestive tract like solid food does. All liquids go into the bloodstream, is filtered through the liver and the kidneys, and what is not needed is sent to the bladder and urinated out. These liquids come in contact with virtually every cell in the body.

When a substance is an acid, there are a large number of positively charged hydrogen ions. These positively charged ions are lacking electrons and steal electrons from other atoms in the body which themselves become electrically unstable and seek other electrons from other atoms. Acids are free radicals that create a chain reaction of electron stealing. Whenever an electron is torn from an atom a little spark is produced that can damages cell membranes. It's called free radical damage and can be seen under a microscope in a live blood cell analysis.

If there are not enough minerals in the body, the process cannot stop. Then the supply of available minerals to neutralize the acids will result into a very serious degenerative disease. Every soda that one drinks will contribute to this acidity. Even without soda our bodies naturally produce acids. Minerals are needed in our diets to stop the deterioration process. Unfortunately, most of the food that we eat no longer contains the minerals that we need. This may be the reason for all the degenerative diseases
Most degenerative diseases are called Old-Age Diseases. Memory loss, osteoporosis, arthritis, diabetes, hypertension, and many more are actually life style diseases caused by acidosis, the lack of minerals in our diet, what acids we ingest, or toxins not properly eliminate.

**Benefits of Drinking Alkaline Ionized Water (Kangen Water)**

**High Colloidal Minerals:** The ionization converts the minerals in the water into an ionic or colloidal form, considered the best bio-active form. Every OH- ion will be bonded with an ionic mineral like calcium. Each glass of alkaline water has many billions of these life enhancing molecules. Remember, just dissolving calcium in water and drinking does not mean that your body will assimilate the calcium - your body can only assimilate minerals that are in ionic form.

The colloidal minerals in Ionized Alkaline Water will depend upon the water supply, and include Calcium, Magnesium, Sodium, Potassium, Iron and Manganese. This means that you get the beneficial antioxidant OH-oxygen ions as well the ionic minerals in the same drink.

**Ionic Calcium** \{Ca++\}. Total molecular weight of ionic calcium is 40.09 mg. So ionic calcium is 100% calcium. Scientists tell us that 98% of the ionic calcium is absorbed.

Dr. Kancho Kuninaka, one of the pioneers of the alkaline ionic water treatment in Japan, states that virtually without exception, the patients with high blood pressure have an acidosis condition. He has many successful clinical cases where the acid free high pH alkaline ionic water lowered blood pressure.

Dr. Keijiro Kuwabara of Japan has been clinically treating diabetes quite successfully by use of alkaline ionic water. The pancreas produces one of the highest pH body fluids, pancreatic juice, with its pH value of 8.8. A shortage of calcium ions in the body impairs the production and the release of the insulin hormone. This eventually leads to an acidic blood condition. Clogged blood vessels caused by excess protein build up also impairs pancreatic function. Alkaline ionic water, by supplying calcium in an ionized form and by helping prevent excess protein buildup, can help prevent and heal this condition.

Dr. Russell Woolfe of the famed Quebec’s Woolfe Clinic, a specialist in the study of water reportedly said, “the only cause to all illnesses and diseases is due to the rapid accumulation of acidic waste in our body, a condition what medical practitioner called acidosis. And our greatest weapon against this is to create an alkaline body by daily consumption of alkaline ionic water. If your inner terrain is always alkaline and in balance it will not be a breeding ground for diseases.”

Some interesting articles from PubMed

**Evidence for absorption of ionic calcium and soluble calcium complexes by the duodenum and cecum in the rat.**

Abstract
The absorption of dietary calcium (Ca) may in part be determined by the formation in the intestinal lumen of soluble Ca complexes and insoluble Ca salts. This study was undertaken to test the assumption that ionic Ca concentration (Ca^{2+}) is the only species of Ca that is available for absorption. Bidirectional steady-state Ca fluxes were measured in vitro under short-circuit conditions across segments of the proximal duodenum and the cecum in the presence and absence of varying concentrations of soluble Ca citrate complexes. The presence of 5.0 mmol/L medium citrate reduced medium Ca^{2+} and cecal Ca mucosal-to-serosal fluxes (Jms) (29 +/- 18 versus 108 +/- 7 nmol Ca/cm2/h, P <.001), but did not reduce duodenal Ca Jms (31 +/- 5 versus 23 +/- 9, P not significant). Duodenal Ca Jms increased 106% as medium Ca citrate complex increased to 1.018 mmol/L and Ca^{2+} remained constant; cecal Jms increased by 48% under the same conditions. The formation of soluble Ca organic anion complexes with lactate, malate, and fumarate reduced medium Ca^{2+} and cecal Ca Jms decreased with the reduction of medium Ca^{2+}. The results of this study indicate that Ca^{2+} is the form of Ca most readily absorbed by the small intestine and the colon. Soluble Ca citrate complexes are absorbed by the duodenum and, to a much lesser extent, by the cecum. The reduction of Ca Jms by citrate is caused by the reduction of medium Ca^{2+} through formation of Ca citrate complexes and not caused by a direct interaction of the anion with the intestinal epithelium.

Ionized alkaline water: new strategy for management of metabolic acidosis in experimental animals.


Abstract
Metabolic acidosis can occur as a result of either the accumulation of endogenous acids or loss of bicarbonate from the gastrointestinal tract or the kidney, which represent common causes of metabolic acidosis. The appropriate treatment of acute metabolic acidosis has been very controversial. Ionized alkaline water was not evaluated in such groups of patients in spite of its safety and reported benefits. So, we aimed to assess its efficacy in the management of metabolic acidosis in animal models. Two models of metabolic acidosis were created in dogs and rats. The first model of renal failure was induced by ligation of both ureters; and the second model was induced by urinary diversion to gut (gastrointestinal bicarbonate loss model). Both models were subjected to ionized alkaline water (orally and by hemodialysis). Dogs with renal failure were assigned to two groups according to the type of dialysate utilized during hemodialysis sessions, the first was utilizing alkaline water and the second was utilizing conventional water. Another two groups of animals with urinary diversion were arranged to receive oral alkaline water and tap water. In renal failure animal models, acid-base parameters improved significantly after hemodialysis with ionized alkaline water compared with the conventional water treated with reverse osmosis (RO). Similar results were observed in urinary diversion models as there was significant improvement of both the partial pressure of carbon dioxide and serum bicarbonate (P = 0.007 and 0.001 respectively) after utilizing alkaline water orally. Alkaline ionized water can be considered as a major safe strategy in the management of metabolic acidosis secondary to renal failure or dialysis or urinary diversion. Human studies are indicated in the near future to confirm this issue in humans.