

Are you salt deficient?



American doctor **David Brownstein** uses unrefined sea salt in his clinical practice to correct many problems caused by refined or low-salt salt diets and argues that the former is essential for full health, while the latter should be avoided at all costs

Above: Heaps of freshly raked sea salt in salt fields ready to be harvested, Samut Songkram Province, Thailand.

Salt is bad for you, right? Salt causes hypertension, doesn't it? We would all be healthier if salt was eliminated from our diet, correct?

Well, the surprising answer to all these questions is an emphatic: 'No'. There are many myths and untruths about salt, which I want to try to dispel here.

The Food and Drug Administration thinks salt is a harmful substance. In fact they are making waves about regulating salt because they feel it is such a dangerous substance. However, the FDA is not considering the difference between refined and unrefined salt; in typical FDA fashion, they have lumped all salt products together. In the UK, CASH – Consensus Action on Salt and Health – takes a very similar position and dismisses any difference in effects between various types of salt.

I will demonstrate that we need to avoid refined salt because it is a toxic, devitalized substance that has no value in our diet. However, we need to ingest unrefined salt as part of a holistic treatment regimen.

Like many doctors, I was taught in medical school that salt was a bad substance to ingest. My professors beat it into me that Americans were eating too much salt, which caused the epidemic of hypertension. Furthermore, I was taught that salt use was responsible for swelling, exacerbating Meniere's disease, as well as a host of other negative effects on the body.

After medical school I routinely told my patients to avoid all salt. Many patients did try to eliminate salt from their diet. And the result? Did their blood pressure lower? Were they healthier?

Unfortunately, the answer to all of these questions is the same: 'no'. Most patients had a difficult time staying on a low-salt diet because of how bland the food tasted. Furthermore, I saw little clinical benefit from a low-salt diet.

Mineral deficiency

When I began practising holistic medicine I started to look at the mineral levels of my patients – and was shocked at what I found. Nearly every patient had multiple mineral, as well as vitamin, deficiencies. In fact, those with chronic illness were often more deficient than those without.

Minerals are necessary for life itself. Our bodies cannot function optimally without an adequate supply of them: magnesium, potassium, calcium, sodium and chloride are some of the important minerals our bodies need. Without them we cannot build strong bones and muscles nor run an optimally functioning immune system. What, you might ask, does this have to do with salt?

In my search for safe and effective, natural remedies, I read an article about unrefined salt. I was intrigued. I did not know that unrefined salt contains over 80 essential minerals. I also did not know that unrefined salt helps to raise the pH (alkalinize) of the body (more on this later). Before using any type of salt in my practice, I researched the subject and was surprised to find there are huge differences in various types of salt.

When I started to use unrefined salt clinically I saw many positive health benefits. Many patients with high blood pressure actually lowered their blood pressure. Furthermore, I found unrefined salt improved the immune system and other body functions – I will explain why later. However, first one has to understand the difference between various types of salt.

Unrefined versus refined salt

As previously mentioned, the media, Big Pharma, the AMA, BMA and almost every other conventional medical organization will tell you is that salt bad for you and that you would be healthier if you avoided it. However, these organizations fail to appreciate the important differences between refined and unrefined salt: all salt is not created equal. There are fundamental differences between various salt brands.

Refined salt – toxic, devitalized

We are all familiar with refined salt – nearly every house has some. Refined salt has been harvested mechanically from various salt mines as brine, essen-

tially a highly concentrated solution of salt and water. Prior to mechanical evaporation, the brine is often treated with chemicals to remove the minerals – often referred to as ‘impurities’ – which are then sold to industry. Chemicals such as sulfuric acid or chlorine are often used to bleach the salt white. Finally, all of the fluid is removed in a fluidized bed-dryer.¹

All food-grade salt available in the US must comply with the National Academy of Science’s Food Chemicals Codex Sodium Chloride Monograph (1996). Up to 2% of food-grade salt may contain anti-caking, free-flowing or conditioning agents, which may include sodium ferrocyanide, ammonium citrate and aluminum silicate (see Table 1), none of which have any positive effects in the body. Dextrose, also known as refined sugar, is used as a stabilizer so that iodide will stay in the salt.

The final ‘purity’ of food-grade salt – referring to the absence of anything but the sodium and chloride content – is between 99.7–99.95% ‘pure’. The other ‘impurities’, including healthy minerals and elements, have all been removed. Table 1 shows the percentage contents of refined, iodized salt.

Why is salt refined?

Salt is refined for the same reason the food industry refines other food products, such as flour, sugar and oils: to maximize profits. A refined product, with all its life-sustaining properties removed, now contains nothing to go rancid so it can sit on the shelf forever without an expiry date, thus helping the producers avoid waste and maximize their profits.

Another reason salt is refined is that manufacturers think that an all-white product will appear cleaner and more appealing to consumers. Also, if the salt comes from a heavily polluted area, the refining process can remove pollutants.

Iodine and salt

Finally, iodine is added to refined salt to prevent goitre. In fact, there may be enough iodine in salt to prevent goitre for the vast majority of individuals; however, there is not enough to optimize thyroid function as well as fulfill the rest of the body’s need. (My book details the need for and functions of iodine.²)

Compared to unrefined salt, many proponents of refined salt claim that refined salt has more iodine and is therefore better for supplying and replenishing iodine levels. It is true that refined salt contains more iodine (74µg of iodide/gm

Element	%	Element	%
Sodium	≈39%	Ferrocyanide, Aluminum Silicate, Ammonium Citrate, Dextrose	Up to 2%
Chloride	≈60%	Iodide	.01%

Table 1: Proportion of elements and additives in refined iodized salt.

Element	mg/1/4 tsp	%	Element	mg/1/4 tsp	%
Chloride	601.25	50.9	Zinc	0.03	.00275
Sodium	460	33.0	Copper	0.02	.00195
Sulfur	9.7	0.82	Erbium	0.02	.00195
Magnesium	5.2	0.441	Tin	0.02	.00192
Potassium	2.7	0.227	Manganese	0.02	.00180
Calcium	1.5	0.128	Cerium	0.02	.00172
Silicon	1.2	0.052	Fluoride	0.01	.00109
Carbon	0.6	0.049	Rubidium	0.01	.00084
Iron	0.14	0.012	Gallium	0.01	.00083
Aluminium	0.11	0.0095	Boron	0.01	.00082
Praseodymium	0.04	0.0029	Titanium	0.01	.00079
Strontium	0.03	0.00275	Bromine	0.01	.00071

Table 2. Percentage of important trace minerals in unrefined salt, totalling approximately 86%; the remaining 14% is water content.

Salt can detoxify bromine build-up

Bromine is a toxic substance with no known beneficial value in the body yet we are being exposed to it in increasing amounts in our modern world. A wide variety of organo-bromine compounds are used in industry as fire retardants, gasoline additives and pesticides. In my practice, I see elevated bromine levels in nearly all patients. However, patients with chronic illness generally have higher levels of bromine compared to those who are not ill. The US Environmental Protection Agency has reported the amount of bromine in human breast milk has increased 10-fold over the last decade.

Many bakery products contain bromine. In the early 1970’s (in the US), bromine was substituted for iodine in the production of bakery products. What was the result? It created a chronic build-up of elevated bromine levels in a large percentage of the population. The problems caused by this substitution are still felt today with ever-increasing numbers of patients suffering from endocrine problems.

High levels of bromine can adversely impact the thyroid gland since thyroglobulin can become brominated instead of iodinated.¹⁰ Further, bromine has been shown to decrease spermatogenesis as well as lower the concentration of testosterone, growth hormone and cortisol in the serum.¹¹ It is also found in many prescription medications such as inhalers and nasal sprays.

How do you detoxify from bromine? I have found salting the bromine out a very effective tool for detoxifying bromine from the body. I have successfully used unrefined salt as a method to help my patients remove bromine from their body but have also found it is impossible to detoxify from bromine when ingesting a low-salt diet.

How much salt is required to detoxify bromine? I have found approximately 5–10g of unrefined salt/day a good way to release body stores of bromine. The chloride in salt helps to competitively inhibit bromine and allow its release from the body. Furthermore, adding iodine to this regimen further aids bromine’s release. (More information about this technique is in my book.)

Unrefined salt treats hypertension

Jack, 63, had been treated for hypertension for seven years. He was taking two antihypertensive medications to control his blood pressure: a diuretic (Dyazide) and a beta-blocker (Lopressor). 'The pills work. My blood pressure is normal if I take the pills. However, I don't feel well on them. My energy level is gone and I am always tired. I can't have intercourse with my wife. Since I started the blood pressure medication I can't get an erection. Worst of all, I feel like my brain has left my head. I can't keep anything straight,' he said.

Jack's complaints about low energy, sexual problems and brain dysfunction are common when taking antihypertensive medications. When I examined Jack, I found him to be deficient in most minerals. Furthermore, he was deficient in salt. When I told Jack that he needed to use unrefined salt in his diet, he was incredulous, saying, 'My other doctors told me to lower my salt intake. I stopped using salt on all foods. I buy only low-salt or no-salt food. I was worried that the additional salt would make my blood pressure go higher.' Blood work showed Jack low in sodium. I encouraged him to use unrefined salt in his diet. Salt and additional mineral supplementation had a positive effect on him.

'My food tasted better and I felt better. After a week of the salt and supplements, my head began to clear,' Jack claimed. Within two months, Jack was able to drop one of his medications (Dyazide) and reduce the other (Lopressor) medication by half.

salt), while unrefined salt contains negligible amounts. But, besides the fact that the amount of iodine in both refined salt and unrefined salt is insufficient to supply the body's need for it, only 10% of the iodine in refined salt is bio-available.³ If iodine supplementation is needed, it is best to use inorganic, non-radioactive iodine supplements to help achieve iodine sufficiency.

Unrefined salt

Unrefined salt, on the other hand, contains over 80 trace minerals – as well as not having ferrocyanide and other toxic chemicals added to it. Unrefined salt has not been exposed to harsh chemicals to remove the minerals that are naturally occurring in the salt. Some of the most common trace minerals in unrefined salt are shown in Table 2.

Is 'sea salt' unrefined salt

Just because a product is labeled 'sea salt' does not mean it is unrefined. All salt could be called 'sea salt' because, at some point, all salt came from the sea. Many refined salt products are labeled as 'sea salt' to convince the consumer they are buying a healthier product. What you really want to buy is unrefined salt, with its full complement of minerals.

So, how do you tell if a salt product is refined or unrefined? Sometimes I have trouble telling the difference on the shelf. Here are a few tips:

1. An unrefined salt product should have its full complement of minerals. The minerals will generally give the salt a colour, which may differ depending on the minerals. Some unrefined salt prod-

ucts will be grey, some may have a reddish tinge.

2. If it is white, the product may have been bleached.

3. If it is very fine and can pass through a traditional salt shaker, you can assume it has been processed. Unrefined salt is generally larger in size than refined salt – you may need to get a salt grinder (which I use at home).

These tips are not definitive; if in doubt, contact the company and ask if their product has been refined.

What is unrefined good for?

I have used unrefined salt in my practice for over 15 years. I encourage my patients to avoid refined salt and get it out of their households: no one should ingest any refined, devitalized product such as refined salt.

Unrefined salt, supplying over 80 minerals for the body, has proven helpful for:

- Balancing adrenal gland function
- Detoxification
- Elevating pH (alkalinizing)
- Improving lipids
- Lowering blood pressure
- Lowering insulin
- Muscle aches and cramps.

Although there are many benefits from unrefined salt, due to lack of space I will focus on just three: the blood pressure controversy, pH level and bromine detoxification (see box, page 17). Details on the other uses are in my book, *Salt Your Way to Health* [see review].

Does salt use cause hypertension?

The government's own studies, *The National Health and Nutrition Examination Survey*, have found for over 30

years that higher sodium diets are not associated with elevated blood pressure.⁴ They found that low mineral levels were associated with high blood pressure and they also found an inverse correlation between dietary sodium levels and blood pressure: the lower the sodium intake, the higher the blood pressure.⁵ In Japan, the coastal population is estimated to have a salt intake double the average of the US population, yet the Japanese have a longer life-span and less chronic illness than Americans.

A review of 57 hypertensive trials found almost no change in individuals with normal blood pressure who ate a low-salt diet,⁶ while such diets have also been found to increase the risk of heart attacks by 400%.⁷

Low-salt diets that are meant to prevent hypertension are a fallacy for the vast majority of Americans. There is a small subset of salt-sensitive individuals who need to monitor their salt intake; also, those with kidney disorders need to closely monitor their condition. However, for the vast majority of people, eating adequate amounts of the right type of salt – unrefined – can have many positive health benefits (see box).

The pH factor

As mentioned, unrefined salt has many healthy minerals associated with it. By contrast, refined salt contains primarily sodium and chloride as well as toxic additives. Unrefined salt is a whole food product that is easily utilized by the body. The additional minerals such as magnesium and potassium are essential for a healthy immune system and these additional, 'buffering' agents are meant to be ingested at the same time as the sodium and chloride.

Refined salt, in its highly processed form, is an unnatural substance to the body. Over millennia of time our bodies were not exposed to salt as just sodium and chloride but rather ingested natural, unrefined salt with its full complement of minerals. Enzymes and hormones in our bodies were designed to utilize salt in its whole, natural form, not in a refined and adulterated state. The consequence of utilizing salt in a devitalized form is a poorly functioning immune system, initiation and acceleration of chronic illness, and promotion of acidity.

Acidity and alkalinity

The pH of the body is a measure of the acidity or alkalinity of the body on a scale from 0 to 14 respectively. In an acidic body the pH is lowered, while in an alkaline body, the pH is elevated. In a diseased state, the body can either too

acidic or too alkaline. The body has many overlapping mechanisms designed to keep the pH of the body in a neutral state – around a pH of 7.2.

When the pH of the body becomes either too acidic or too alkaline, normal physiologic functions decline. The organs of the body (kidneys, liver, brain, etc) do not function efficiently unless the pH of the body is neutral (≈ 7.2); the brain does not function well when the body is either acid or alkaline. Enzymes, the catalysts for the body, are very sensitive to pH changes and will lose most of their function when the pH is altered. Enzymes can become deactivated with either an acidic or an alkaline pH.

Immune system cells are unable to protect us when the pH is imbalanced. In fact, no part of the body will work efficiently if the pH is not properly balanced. An acidic pH is associated with many chronic illnesses including cancer, arthritis, osteoporosis and candida, as well as hormonal imbalances. Majid Ali, one of holistic medicine's foremost practitioners, has stated, 'An acidic pH is a marker of the absence of health in the body'.⁸ In a diseased state an acidic pH is more common than an alkaline one and, generally, the more ill one is, the more acidic one's body.

Food affects pH

The food one eats can have a dramatic effect on pH. In nearly every case refined foods, devitalized of all the healthy vitamins, minerals and enzymes, acidify the body. Minerals are one of the most alkalizing agents for the body but, due to poor diets full of refined foods, many people today are mineral deficient, which is often associated with a lowered pH (<7.0). Refined salt contains no minerals, while unrefined salt is loaded with them. It does not take much to realize that unrefined salt will thus promote a healthy pH whereas refined salt will act against it by increasing acidity.

In fact, all refined foods (including refined sugar, flour, oils, etc) lack minerals, vitamins and enzymes. When we eat these devitalized foods, our body has to use its own store of vitamins, minerals and enzymes to break down food. Over time this leads to nutrient deficiencies and chronic illness. Furthermore, eating devitalized food leads to acidity in the body. Thus, due to the prevalence of refined food, it is no wonder that most people run on the acidic side.

My experience has shown that it is impossible to overcome chronic illness when there is an acidic condition present.

Cancer and chronic illness are two of the consequences of an acidic pH. Can-

Unrefined salt alkalizes pH and reduces allergies

Sue, 61, has numerous food allergies. Over the years she has become more and more allergic. Sue was reacting to nearly everything she was in contact with including foods. 'I don't know what to eat. Everything seems to bother me,' she complained. Now, she even has difficulty with taking supplements because she reacts to them. 'I can't even take vitamins because they upset my body. I feel like I am allergic to everything,' she said. Sue had tried different techniques to help her allergies with minimal effects.

When I had Sue check the pH of her urine and saliva she found that it was very acidic. On further investigation, Sue found that foods containing refined salt caused her pH to become more acidic. She said, 'I could not believe that the foods that you eat can change the pH so dramatically.' When Sue removed refined salt from her diet and added Celtic Sea Salt, her pH significantly increased. 'The most important thing I found was that when my pH elevated, my food allergies went away. I also felt much better. My energy improved and I could think more clearly. Also, I am able to take supplements when my pH is elevated,' she said. Now, Sue monitors her pH daily and adjusts her diet accordingly. Update: Sue is still monitoring her pH and using Celtic Sea Salt. She continues to do well if her pH stays above 6.5.

cer cells will proliferate in an acidic environment. In fact, most chronic illnesses will occur in an acidic environment. It is very difficult to overcome any chronic illness if the pH of the body is acidic (ie. $\text{pH} < 7.2$).

In an experiment at home (performed by my daughter Jessi), one teaspoon of Celtic Sea Salt in $\frac{1}{2}$ cup of filtered water increased the pH of the water from 6.4 (baseline) to 6.8–7.0. The same amount of refined salt, on the other hand, decreased the pH from 6.4 to 6.0.⁹ Refined salt, lacking the buffering effect of the minerals, is an acidifying substance for the body. On the other hand, unrefined salt helps to maintain a more neutral pH and can actually help elevate an acidic pH (see box).

In order to promote a more neutral pH, unrefined salt needs to be the salt of choice; refined salt should be avoided at all costs. Finally, adding iodine supplementation to unrefined salt has a further alkalizing effect.

What kind of salt do I recommend?

Over the last 15 years I have tested various brands of unrefined salt for mineral content and toxicity. I have found the Celtic Sea Salt brand (from The Grain and Salt Society, www.celticseasalt.com) – which I've used in my practice for over 15 years with very good results – and Redmonds sea salt (www.realsalt.com) have both tested clean of toxicities and contain a full complement of minerals. Furthermore, both of these products are inexpensive compared to other unrefined salt products on the market.

The amount of salt you can use in your diet will vary depending on how much water you drink and your health issues. The best results can be achieved

working with a holistic health care practitioner who is knowledgeable about natural products. As a general rule, 1.4 teaspoons of salt per quart of water ingested supplies an adequate amount of salt. Some may need more, some less. You can add it to your food, water or just eat small amounts of it throughout the day. ☺

A previous article on seasalt by Simon Best appeared in issue 65, Winter 2004–5.

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