Salt

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Salt

Paraclsus: (1493-1541AD) “The human being must have salt, he cannot be without salt. Where there is no salt, nothing will remain, but everything will tend to rot.”

History of Salt

- Once used as money
- Where the word “Salary” comes from salt
- Hippocrates: The power of healing
- Religion: “salt covenant” “salt of the earth”

How Salt is Made?

Vacuum Evaporation

Evaporated salt is extracted from underground deposits lying anywhere from 500 to 2,800 feet beneath the surface. Fresh water is forced down a shaft, which dissolves the salt inside the deposit. The saturated water, called brine, is pumped back up to the surface where the water is removed through a heat process in a vacuum evaporator. This process yields evaporated salt, the purest of all salts: almost 100% pure sodium chloride.

How Salt is Made?

Alberger® Brand Salt

The Alberger® brand salt is produced by using a modified Grainer (open pan) evaporating process. Unlike a traditional cube-shaped salt grain, an Alberger® brand salt crystal has a unique *pyramid* shape. This increased surface area and low-bulk density combine to offer a measurable advantage in terms of blendability, adherence and flavor enhancement in foods.

How Salt is Made?

Solar Evaporation

Solar salt is produced through the natural evaporation of sea water or other naturally occurring brine. Salt water is captured in shallow ponds and allowed to evaporate by means of the sun and wind. During the process, a salt bed forms on the bottom of the pond. The salt is harvested, washed, screened and packaged. The typical solar “crop” takes from one to five years to produce.

How Salt is Made?

Mining

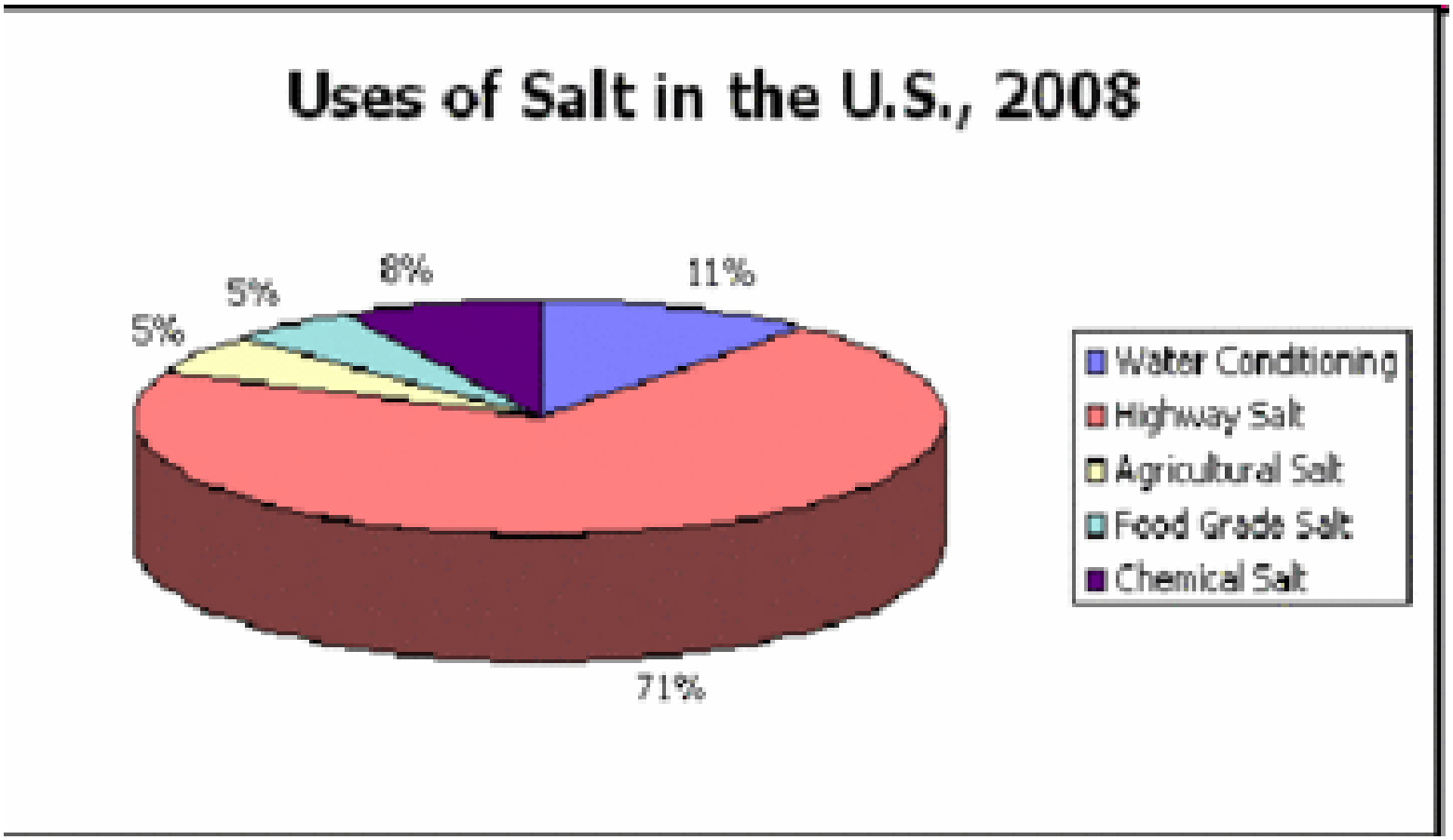
Working in shafts that reach miles underground, miners bring up more than seven million tons of rock salt each year. Explosives are strategically positioned and detonated to fracture the salt from the mine face. Huge pieces of salt are crushed down to a manageable size and brought to the surface, where they are screened and packaged or bulk shipped.

Salt needed for:

- ✓ **Protein digestion**
- ✓ **Carbohydrate digestion**
- ✓ **Development of brain**
- ✓ **Adrenal function**

Ready access to salt is needed for civilizations to develop

Salt


Uses of Salt in the U.S., 2008
8%
11%
5%
5%
71%
Water Conditioning
Highway Salt
Agricultural Salt
Food Grade Salt
Chemical Salt

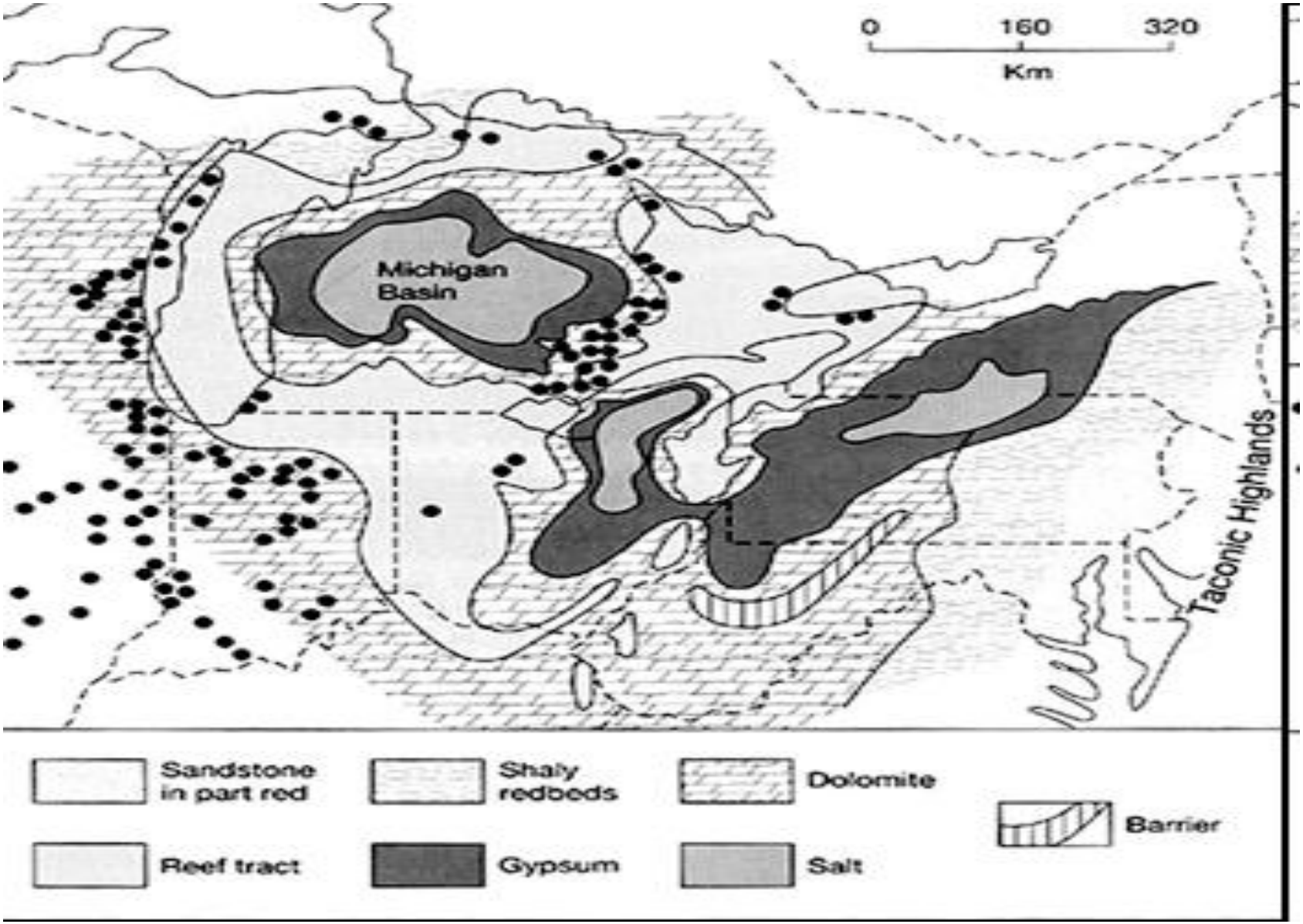
Salt

Detroit Salt Company

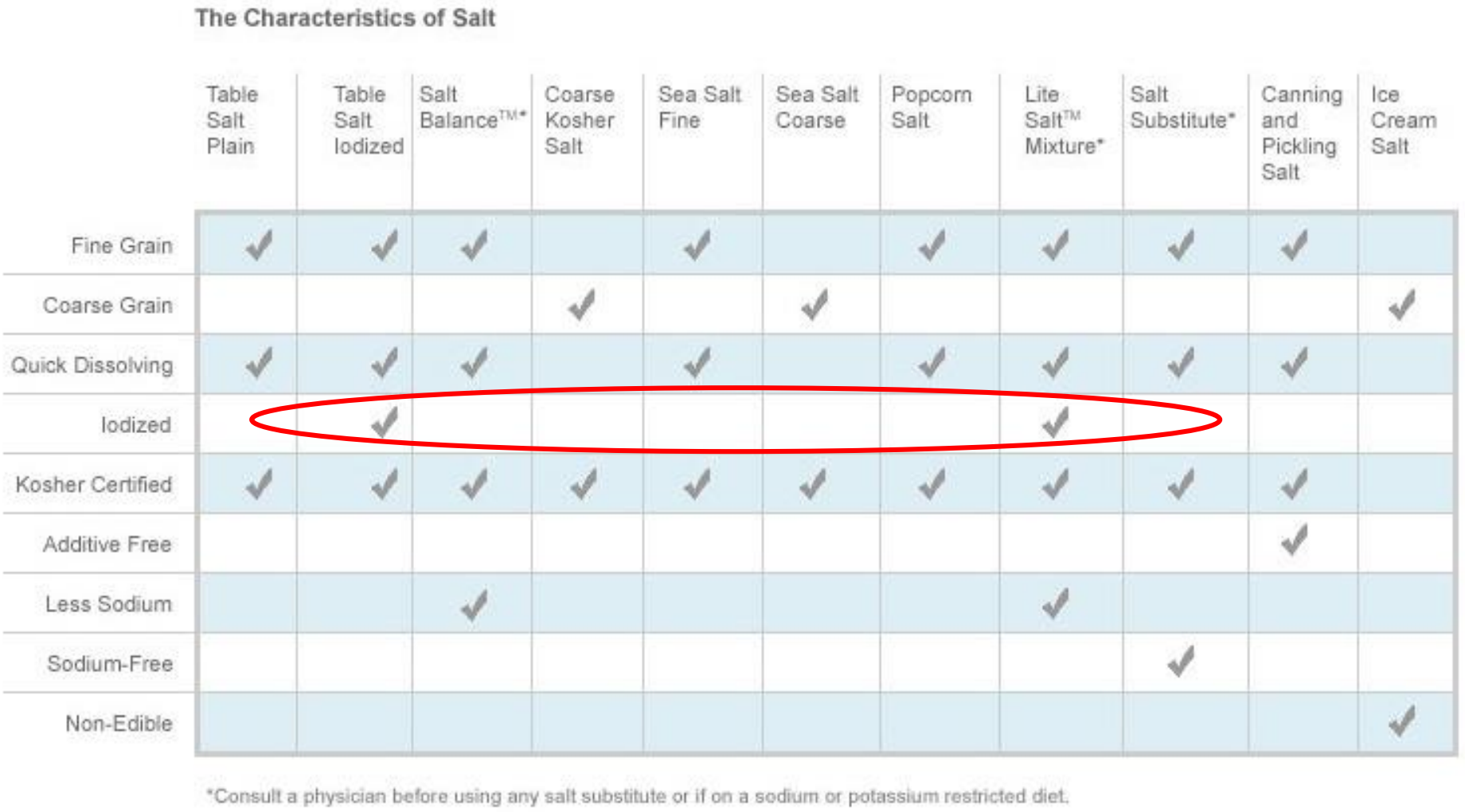
Salt

Winter deicing

Harvesting commercial solar salt


0
160
320
Km
Michigan Basin
Taconic Highlands
Sandstone in part red
Shaly redbeds
Dolomite
Barrier
Reef tract
Gypsum
Salt

The Characteristics of Salt



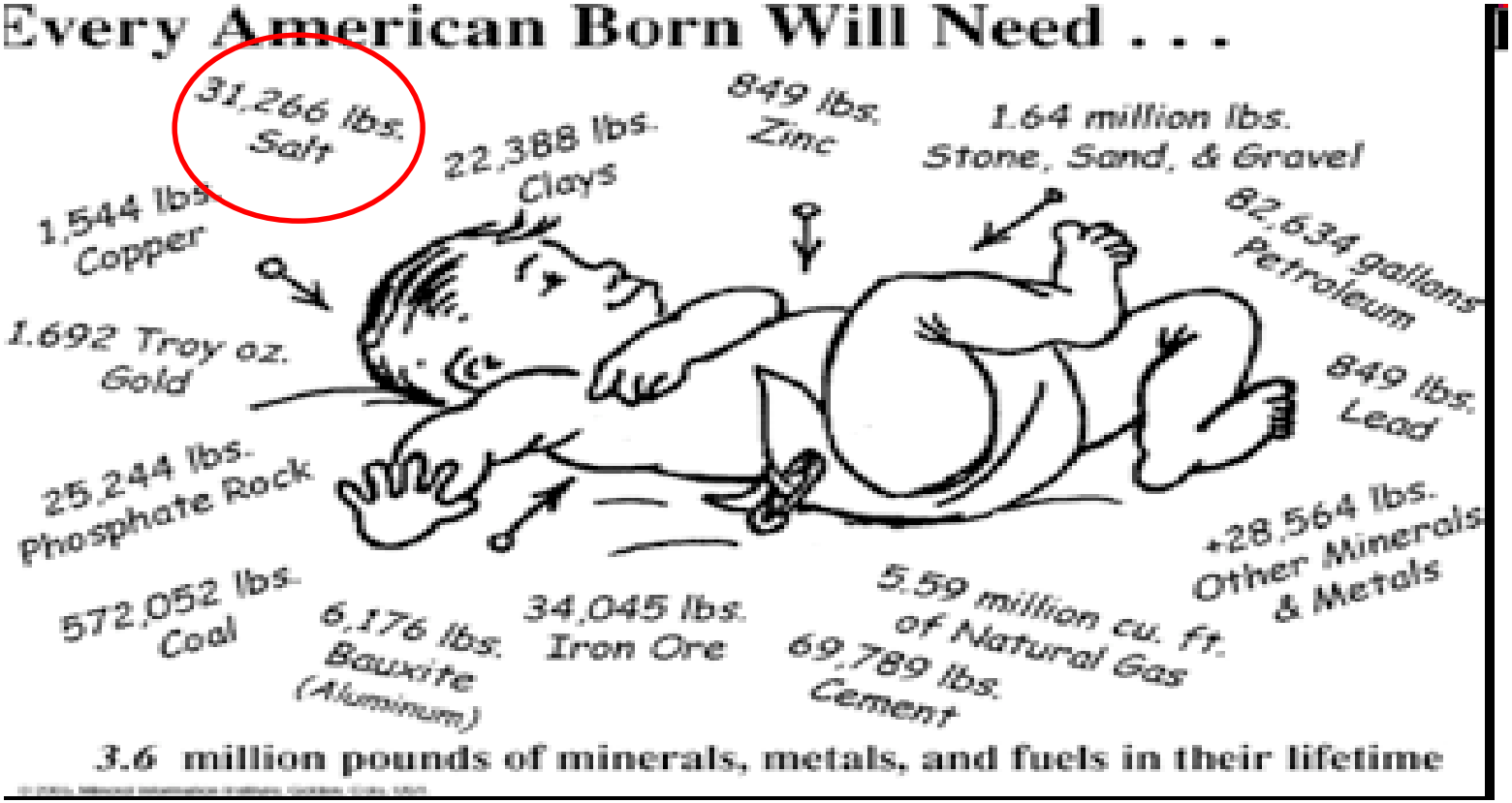
The Characteristics of Salt

	Table Salt Plain	Table Salt Iodized	Salt Balance™*	Coarse Kosher Salt	Sea Salt Fine	Sea Salt Coarse	Popcorn Salt	Lite Salt™ Mixture*	Salt Substitute*	Canning and Pickling Salt	Ice Cream Salt
Fine Grain	✓	✓	✓		✓		✓	✓	✓	✓	
Coarse Grain				✓		✓					✓
Quick Dissolving	✓	✓	✓		✓		✓	✓	✓	✓	
Iodized		✓						✓			
Kosher Certified	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Additive Free										✓	
Less Sodium			✓					✓			
Sodium-Free									✓		
Non-Edible											✓

*Consult a physician before using any salt substitute or if on a sodium or potassium restricted diet.

Morton Salt web page

Salt


Every American Born Will Need . . .
31,266 lbs. Salt
22,388 lbs. Clays
849 lbs. Zinc
1.64 million lbs. Stone, Sand, & Gravel
1,544 lbs. Copper
82,634 gallons Petroleum
1,692 Troy oz. Gold
849 lbs. Lead
25,244 lbs. Phosphate Rock
+28,564 lbs. Other Minerals & Metals
572,052 lbs. Coal
6,176 lbs. Bauxite (Aluminum)
34,045 lbs. Iron Ore
5.59 million cu. ft. of Natural Gas
69,789 lbs. Cement
3.6 million pounds of minerals, metals, and fuels in their lifetime

The Difference Between Refined and Unrefined Salt

Refined Salt

- Made from brine
- Mineral “impurities” are removed
- Made white with sulfuric acid or chlorine
- Contains anti-caking, free flowing, or conditioning agents
- Stabilized with dextrose
- Iodine added
- Toxic to the body

The Difference Between Refined and Unrefined Salt

Why is Salt Refined?

- 95% of all salt has an industrial use
- For long shelf life
- An all-white salt looks cleaner and more acceptable to the buyer
- If taken from a polluted source refining will remove toxins

The Difference Between Refined and Unrefined Salt

Table 1: Contents of Refined Iodized Salt

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

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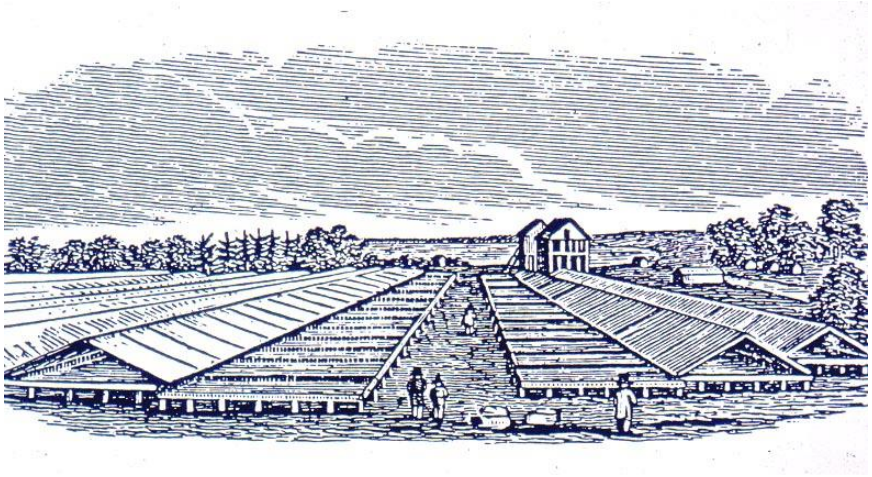
Traditional Salt Production



Traditional salt production involved the simple evaporation of sea water. The salt was rich in magnesium and trace minerals.

Modern salt has all the magnesium and trace minerals removed and contains aluminum-based additives.

The Difference Between Refined and Unrefined Salt

Salt in its natural form is referred to as unrefined salt

- Never exposed to high heat
- Gathered gently, dried by wind and sun
- Contains essential trace minerals
- Not exposed to harsh chemicals
- Trace minerals alkalinize the body

The Difference Between Refined and Unrefined Salt

Acidity and Alkalinity

One teaspoon of refined salt in ½ cup of water with a baseline pH of 6.4 had its pH decreased to 6.0 (more acidic)

One teaspoon of unrefined (Celtic) salt in ½ cup of water in water with a baseline pH of 6.4 had its pH increased to 6.8-7.0 (more alkaline)

The Difference Between Refined and Unrefined Salt

Mineral makeup of unrefined salt

(partial list)

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Table 2: Major Contents of Unrefined Celtic Sea Salt®

Element	%	Element	%
Chloride	50.9000	Zinc	0.00275
Sodium	33.0000	Copper	0.00195
Sulfur	0.82000	Erbium	0.00195
Magnesium	0.44100	Tin	0.00192
Potassium	0.22700	Manganese	0.00180
Calcium	0.12800	Cerium	0.00172
Silicon	0.05200	Fluoride	0.00109
Carbon	0.04900	Rubidium	0.00084
Iron	0.01200	Gallium	0.00083
Aluminum	0.00950	Boron	0.00082
Praseodymium	0.00290	Titanium	0.00079
Strontium	0.00275	Bromine	0.00071

Problems with Low-Salt Diets

A low-salt diet can be helpful for certain individuals. People with hypertension have a better response to a low-salt diet than people without hypertension. However, the effect of salt restriction, even in those patients with hypertension, is modest, at best, with systolic blood pressures declining approximately 4.9 mm Hg and diastolic pressures declining 2.6mm Hg.

JA Cutler: An overview of randomized trials of sodium reduction on blood pressure, *Hypertension*

Problems with Low-Salt Diets

A review of *56* trials showed that a low-salt diet had minimal effect on blood pressure in the vast majority of people studied. In those studies, systolic blood pressure was lowered by an average of 3.7mm Hg and diastolic blood pressure was lowered by an average of 0.9mm Hg.

J Midgley: Effect of reduced dietary sodium on blood pressure. *JAMA*

Problems with Low-Salt Diets

Researchers studied the relationship between a low-sodium diet and cardiovascular mortality. Nearly 3000 hypertensive subjects were studied. The result of this study was that there was a 430% increase in myocardial infarction (heart attack) in the group with the lowest salt intake versus the group with the highest salt intake.

❖Leads to a depletion of magnesium, calcium, and potassium

M Aldreman: Low urinary sodium is associated with greater risk of myocardial infarction among treated hypertensive men. *Hypertension*

Problems with Low-Salt Diets

The hormone, insulin, has been shown to increase in a low-salt diet. Elevated insulin levels have been associated with numerous metabolic disorders including diabetes, polycystic ovaries, and obesity. The use of refined salt makes it nearly impossible to treat insulin resistance and diabetes. Unrefined salt is a necessity when treating any condition associated with elevated insulin levels.

Salt and Water

- Average human has 250 grams of salt in their body (8.8 oz.)
- Salt has an effect on body water balance especially between intra and extra cellular fluids
- One can suffer dehydration even when drinking water in abundance
- Dry skin, and tongue from no salt or refined salt

Salt and Water

Refined salt, lacking potassium and other minerals, will not nourish the intracellular ocean. The osmotic pressure of the refined sodium in the extracellular ocean will pull water from the interior of the cell, leaving the cell in a dehydrated condition. Drinking water won't help; the cell needs minerals. As the cell becomes more dehydrated, waste products begin to build up in the cell, causing acidosis (i.e., low pH). Eventually, cell death will be accelerated. The medical consequences of this include an increase in chronic illnesses such as cancer, autoimmune disorders, arthritis, as well as accelerated aging.

Salt and Water

Sodium pulls water out of the cells into the extracellular ocean resulting in edema and elevated blood pressure/congestive heart failure.

Salt and Water

Sodium

Sodium

Sodium

Sodium

Sodium

Sodium

Sodium

Sodium

Intracellular fluid

Sodium

Extracellular fluid

Sodium

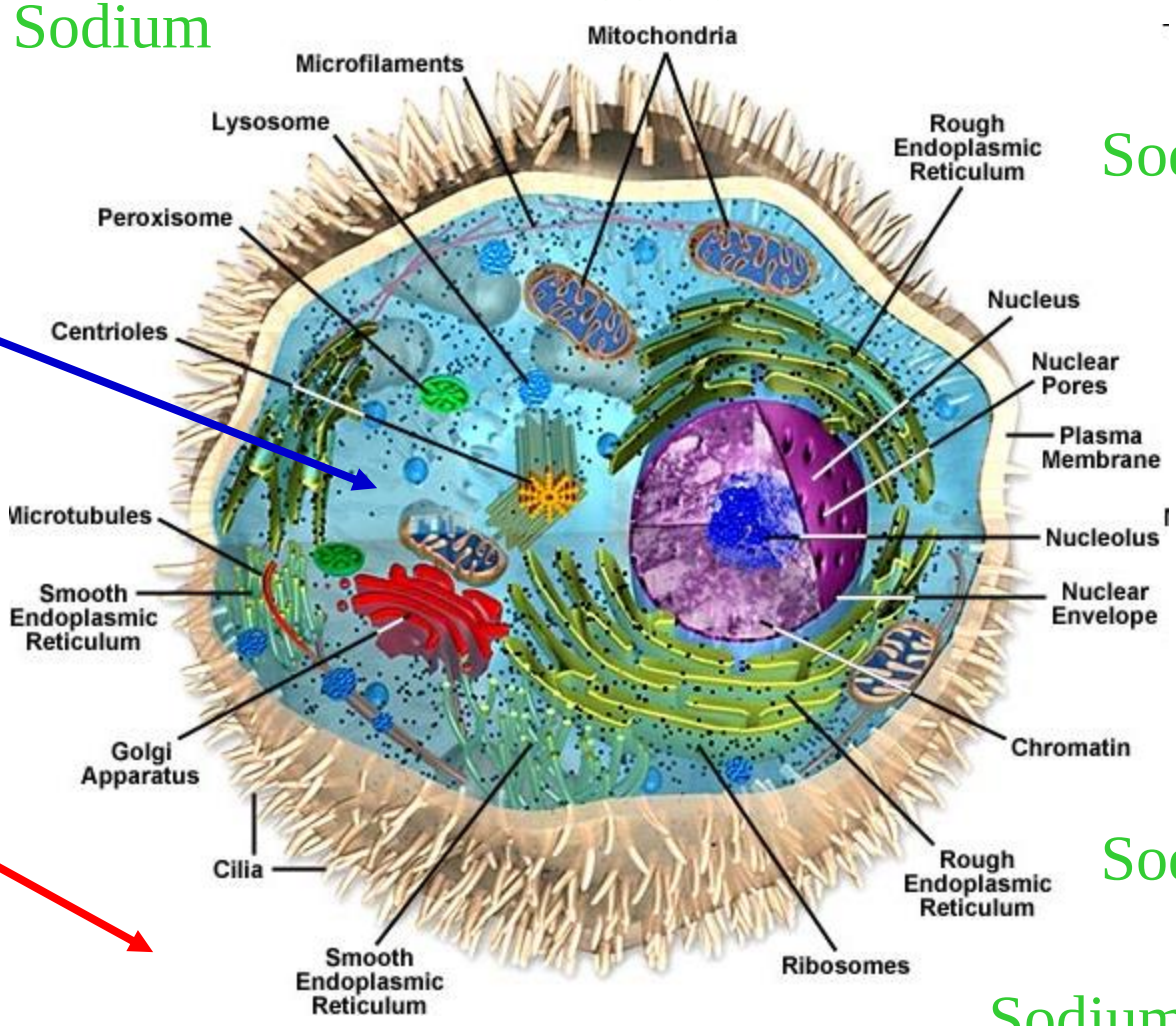
Sodium

Sodium

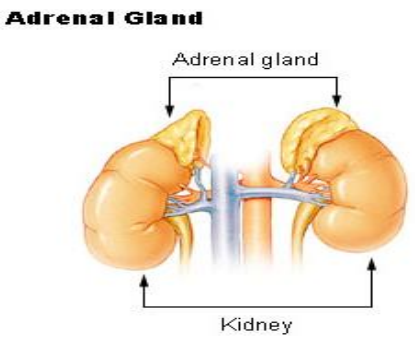
Sodium

Sodium

Sodium



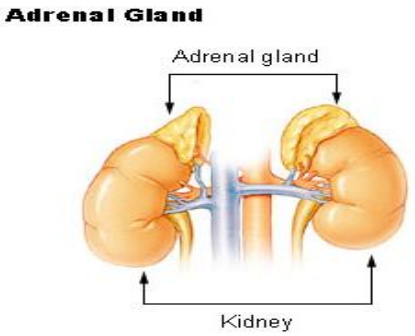
Salt and the Adrenal Glands



- The adrenal glands are known as the "fight or flight" glands.
- In a stressful situation, the adrenal glands will secrete a hormone (epinephrine) to prepare our bodies for action.
- In a resting state, the adrenal glands are responsible for maintaining adequate energy levels, blood sugar control, blood pressure control, muscle strength.

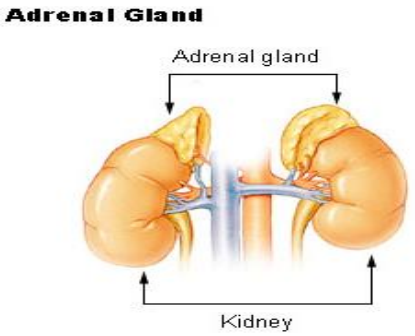
Salt and the Adrenal Glands

Resting state adrenal hormones



1. Aldosterone (salt balance)
2. Cortisol (anti-stress)
3. DHEA (mother hormone to sex hormones)
4. Estrogen (female)
5. Pregnenolone (mother hormone to all hormones)
6. Progesterone (female)
7. Testosterone (male)

Salt and the Adrenal Glands



Adrenal Cortex

Estrogens

Aldosterone

Adrenal Medulla
Norepinephrine, epinephrine

DHEA

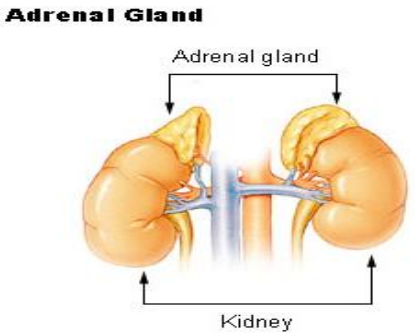
Cortisol

Pregnenolone

Progesterone

Testosterone

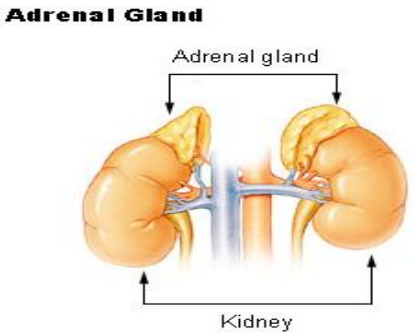
Salt and the Adrenal Glands



Adrenal exhaustion

A salt-deficient diet and/or a mineral-deficient diet will lead to a cascade of events that starts with suboptimal adrenal function and eventually leads to adrenal exhaustion.

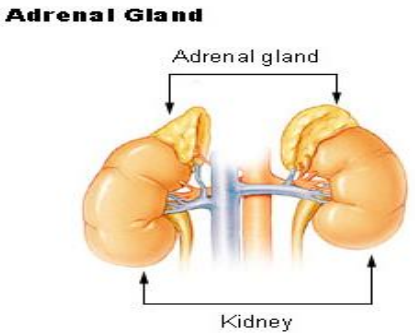
Salt and the Adrenal Glands



Adrenal exhaustion

Adrenal exhaustion (or adrenal fatigue) is an epidemic problem in today's stressful world. The consequences of adrenal exhaustion include fatigue, a poorly functioning immune system, cancer, thyroid disorders, obesity, arthritis, fibromyalgia, chronic fatigue syndrome, autoimmune disorders, and many other chronic illnesses.

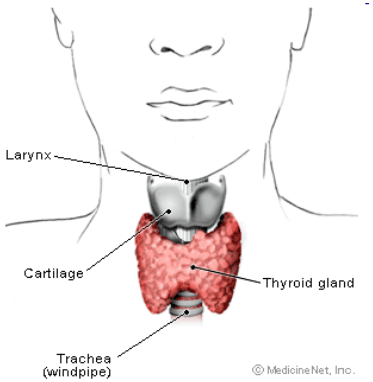
Salt and the Adrenal Glands



The adrenal glands are responsible for regulating salt absorption in the body. An adequate amount of healthy salt—unrefined salt—is vital for the adrenal glands to optimally function. An excess of refined salt will lead to a state of depleted minerals and, ultimately, adrenal exhaustion. Adrenal exhaustion is frequently associated with immune system disorders.

Salt and the Thyroid Gland

Symptoms of Hypothyroidism



1) **Brittle Nails**
2) **Cold Hands and Feet**
3) **Cold Intolerance**
4) **Constipation**
5) **Depression**
6) **Difficulty Swallowing**
7) **Dry Skin**
8) **Elevated Cholesterol**
9) **Cramps**
10) **Muscle Weakness**
11) **Nervousness**
12) **Slower Heartbeat**
13) **Throat Pain**
14) **Essential Hypertension**
15) **Eyelid Swelling**
16) **Fatigue**
17) **Hair Loss**
18) **Hoarseness**
19) **Hypotension**
20) **Inability to Concentrate**
21) **Infertility**
22) **Irritability**
23) **Menstrual Irregularities**
24) **Poor Memory**
25) **Puffy Eyes**
26) **Weight Gain**

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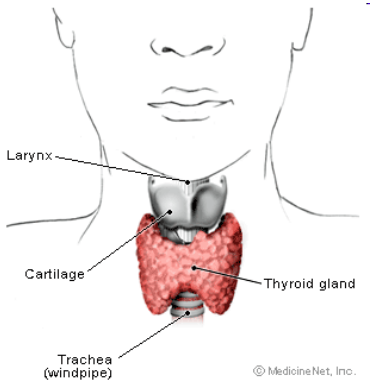
Salt and the Thyroid Gland

Poor Converter of T4 Into T3



Pituitary Gland (Brain)

↓

TSH

↓

Thyroid Gland

↓

T4

~~↓~~

T3

↓

Effects on the Body

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Salt and the Thyroid Gland

Items that block the T4 to T3 conversion include nutrient deficiencies. Selenium, magnesium, and iodine, and other minerals impact the enzyme that facilitates the conversion of inactive (T4) to active (T3) thyroid hormone. Refined salt, lacking all of the basic minerals, will not provide the proper nutrition for the thyroid and its use will lead to a poor conversion of inactive (T4) to active (T3) thyroid hormone.

Unrefined salt, containing over 80 minerals including selenium, will help the thyroid function better and improve this conversion.

Also soy, fluoride, and coffee block T4.

Salt and the Thyroid Gland

Iodine and Salt

Studies by the National Health and Nutrition Examination Survey I (NHANES-1971-1974) and NHANES 2000 show iodine levels have dropped 50% in the United States. This drop was seen in all demographic categories across the U.S.: ethnicity, region, economic status, population density, and race. The percentage of pregnant women with low iodine concentrations increased 690% over this time period. Low iodine concentrations in pregnant women have been shown to increase the risk for cretinism, mental retardation, possible attention deficit disorder, and other health issues in the child.

Salt and the Thyroid Gland

Iodine and Salt

Why have iodine levels fallen over the last 30 years?

1) Neither refined or unrefined salt contain enough iodine
2) Only 10% of the iodine added to refined salt is available
3) Salt causing high blood pressure leads to a low-salt diet
4) Without an iodine supplement, a low-salt diet will guarantee an iodine deficient state
5) Bromide (an inhibitor of iodine) added to our food supply has further worsened the condition
6) Fluoride and chlorine also inhibits iodine uptake in the body
7) Environmental toxicity

Salt and Detoxification

Bromine intoxication

Bromine intoxication has been shown to cause delirium, psychomotor retardation, schizophrenia, and hallucination. Subjects who ingest enough bromine feel dull and apathetic and have difficulty concentrating. Bromine can also cause severe depression, headaches, and irritability.

Salt and Detoxification

Uses of Bromine

1) As an antibacterial agent for pools and hot tubs
2) Fumigant for agriculture
3) Fumigant for termites and other pests
4) Carbonated drinks (e.g., Mountain Dew, AMP Energy Drink, Squirt, Fresca, and some Gatorade products)
5) Bakery products today, including breads, cookies, cakes, etc (used to bleach flour)

Salt and Detoxification

Bromine Toxicity

1) When bromine is absorbed in the body, it tends to stay in the body for long periods of time.
2) The half-life of bromine is 12 days.
3) In rats, the half-life of bromine is 3 days.
4) Rats on a low salt diet, the half-life is 25 days
5) Bromine—stays in the body for a longer period of time in, a low-salt environment.
6) Increasing the amount of salt in the diet will allow the kidneys to excrete more bromine

Uses of Salt

- **Adrenal Exhaustion:** Adequate salt intake is vitally important to restoring and maintaining optimal adrenal gland function.
- **Allergic Rhinitis (runny nose):** Mix ½ tsp of salt with ¼ tsp baking soda in 8 oz of pure water and use as a nasal spray. It acts as an antibacterial agent, and salt has antihistamine properties.

Uses of Salt

- **Asthma:** At the onset of wheezing, place one large pinch of salt on your tongue and drink 8 oz. of pure water (room temperature). Repeat in 15-*30* minutes.
- **Circulation:** Salt helps to expand the blood vessel volume and can help improve circulation.
- **Detoxification:** Adding 2 cups of salt and 2 cups of baking soda to the bath water can help stimulate the lymph system.

Uses of Salt

- **Diabetes:** Adequate salt intake is vital for diabetics.
- **Dry Skin:** Rubbing your skin with salt after bathing or showering can help remove dry skin.
- **Exercise:** At the start of exercise, take one large pinch of salt with a glass of water. If the exercise results in a large amount of sweating, repeat at the end of the exercise session.

Uses of Salt

- **Fatigue:** Salt is necessary to produce energy in the body.
- **Gastritis:** Taking a large pinch of salt with meals helps to prevent reflux problems. Salt is an alkalinizing agent and helps to buffer excess acidity in the stomach.
- **Hyponatremia (low sodium levels):** Sodium is important for many different areas of the body including brain function, hormone production, and energy production. Those with low serum sodium levels (< l4l mmol/L) need to increase their salt intake.

Uses of Salt

- **Insect Bite including Bee Sting:** Cover area with a warm salt paste. Pain and itching will be lessened.
- **Insomnia:** One large pinch of salt with a small amount of warm water acts as a hypnotic agent.
- **Muscle Cramps:** For nighttime cramps, take one large pinch of salt at bedtime with a small amount of water.
- **Osteoporosis:** Salt is essential for proper bone density and strength.
- **Phlegm:** Salt and water are the most effective expectorants known. One large pinch of salt and a glass of water will help to thin sputum.

Uses of Salt

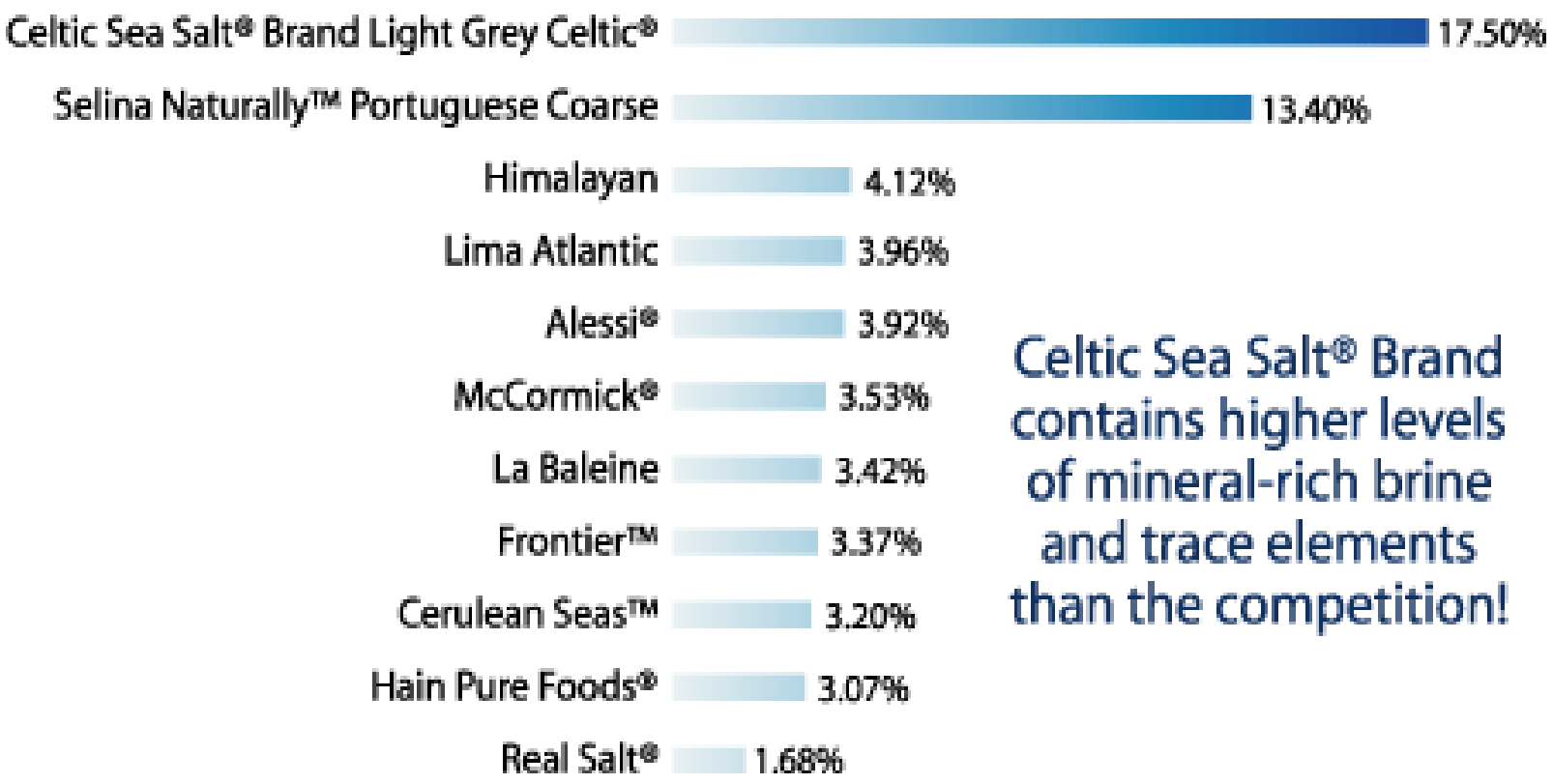
- **Poison Ivy:** Soak affected area in hot salt water (1/4 tsp per quart of water).
- **Preservative:** Salt has been used for thousands of years to help reserve food. There is no better preservative for canned foods.

Unrefined Salt

Salt should be gray, beige or pink (not white), indicating the presence of minerals.

Celtic Sea Salt

Celtic Sea Salt



Celtic Sea Salt® Brand contains higher levels of mineral-rich brine and trace elements than the competition!

Baja Gold Sea Salt

Unrefined *Baja Gold Sea Salt*

Competitive Mineral & Trace Element Analysis

MINERAL/ELEMENT	Baja Gold**	Celtic Sea Salt*	Redmond Mineral*	Himalayan Pink Salt***
	ppm / %	ppm / %	ppm / %	ppm / %
Boron (B)	34	8.2	2.05	<0.001 ppm
Sulfur (S)	11,000	8,200	1,600	12.4
Copper (Cu)	0.2	19.5	28	0.56
Potassium (K)	10,300	2,270	1,980	3.5
Magnesium (Mg)	14,400	4,410	937	0.16
Iron (Fe)	140	120	472	38.9
Calcium (Ca)	7,680	1,280	4,180	4
Salt (NaCl)	71%	84%	97%	97%
Sodium (Na)	28%	33%	38%	38%
Chloride (Cl)	49.80%	50.90%	59%	59%
Manganese (Mn)	7	18	8	0.27

Unrefined Salt

Unrefined Salt

Unrefined Salt

Summary

- ✓ Avoid refined salt at all costs
- ✓ Lack of trace minerals promotes hypertension not excess sodium
- ✓ Diabetes and hypothyroidism maybe caused by a deficiency of salt & minerals.