Sea asparagus is a relative of the amaranth plant and grows along marshy saltwater ocean basins, coastal flats and saline lakes on and around the non-polar continents. If you have ever walked along a muddy bay marsh you may have noticed the smallish green shoots and thought that it was just a useless weed. Not so! The nutritional benefits are outstanding!

Other common names for sea asparagus are pickleweed, mash samphire, dwarf saltwort and dwarf glasswort. The Latin name is *Salicornia bigelovii*. It’s not related to asparagus, and although it is also marketed under the name “sea beans,” it is not related to any kind of bean. And although it grows in aquatic environments, it is not an alga.

Sea asparagus is a halophyte, meaning it is “salt-tolerant.” However, it does not absorb straight salt water: if you’ve tasted it, you might be thinking “this guy is totally wrong—it’s as salty as can be!” Yes—it tastes downright salty, but the saltiness is not what you may think it is. Let me explain.

When “Salty” Does Not Mean “Bad”

Firstly, sea asparagus does not absorb sodium chloride (the toxic, caustic alkali salt compound); through its roots it absorbs dissociated sodium, chloride and other ions which occur in saline bodies of water. The salty-tasting juice inside sea asparagus is not equivalent to drinking a glass of water mixed with dissolved table salt or sea salt, nor is it equivalent to drinking straight sea water. Those solutions contain sodium in its ionic form as well as undissociated sodium chloride and other mineral compounds which are harmful. Although the conductive properties of those mineral solutions can be useful in emergency situations of critically low electrolyte levels, they are not fit for human nutrition because are not in the proper form and balance that nature serves up in plants which comprise the natural human diet.

Sea asparagus, like other vegetables and vining fruits, such as celery, bok choy, spinach and tomatoes, offers healthful salty-tasting plant nutrients, as offered up by Nature with none of the ill effects of salted foods and salty condiments. With the mineral-deficiency prevalent in today’s soils and rampant malnutrition worldwide, most people relish Nature’s foods with gusto, and rightly so.

On the other hand, there are unhealthy ionic mineral solutions which are derived from sea water and alkaline lakes and solid mineral compounds obtained from the Earth’s mineral deposits and fossilized deposits of formerly living creatures, such as diatoms and plants. There are also sea vegetables and blue-green algae products. Although they offer an abundance of nutrients, they contain sodium chloride and other caustic mineral salts on their outer surface. Some salt typically remains despite the most vigorous rinsing, thus giving them their salty taste appeal.

Ingest too much of these products and the symptoms concomitant with salt overdosage will ensue: puffiness, swelling, fatigue and metabolic disarray. The harvested sea asparagus shoots grow above the water’s surface. Therefore, their outer skin is not impregnated with mineral salts as occurs with sea vegetables. Some wind-driven salt spray and tidal fluctuations may leave a thin salty deposit on the skins when they dry; however, this is easily removed by rinsing, as is commonly done in commercial processing operations.

If you place the tips of a few rinsed sea asparagus stalks in your mouth, there will be no flavor response—they do not taste salty at all. However, if you bite into one or more sea asparagus stalks, your mouth will become dazzled by the saltiness. At first, the sensation may be too intense, and some may opt to never eat it straight again. No problem! Sea asparagus is perhaps best used in vegetable patés, salad dressings, fruit and vegetable juices and smoothies. In vegetable recipes, the saltiness can be quite pleasing. If you enjoy a lot of it, does that mean you have a salt addiction? Not necessarily. You may simply be lacking minerals, and your body may be sending that message loud and clear.

Remember that the salty flavor from sea asparagus is not from “salt.” That is, it is not from the toxic, caustic sodium chloride condiment or sea water which dehydrates our cells, destroys human flesh, wreaks metabolic havoc and perverts our taste buds, setting up eating disorders. Rather, the “saltiness” is from the ionic minerals which are benign to the body, unless we ingest huge quantities, which we are unlikely to do with vegetable cuisine.

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Are you perplexed and wondering, “Isn’t an ion an ion—what is the difference between the sodium ions which enter the bloodstream from dissolved salt crystals and those from plant juices?” Both are indeed ions. At this time, there is no clear scientific explanation as to how the ions become changed; however, there is conclusive evidence that the biochemical (and possibly vibrational) properties of minerals in plants are different and useful for human nutrition.

In her article titled “Minerals’ Role in Detoxification and Body Building” in Living Nutrition vol. 4, Dr. Griselda Blazey wrote:

“Plants as a Natural Source of Concentrated Mineral Nutritional Supplements” reads:

While further studies involving human nutritional trials and in vitro cell culture are required to confirm the dietary benefits derived from trace elements supplied by plant tissue, the results presented here suggest that they may be more bioavailable than their current inorganic counterparts with the added benefits of other phytochemicals present in the plant tissue.

Here are two other sources of relevant studies supporting the bioavailability premise:

Bioavailability: Physical, Chemical, and Biological Interactions by Hamelink, Landrum, Bergman and Benson. (1994) Benson writes: “Minerals in plants have a noted change from the inorganic minerals in the soil.”


It has been my and others’ experience that sodium content and saltiness of sea asparagus is not unhealthful. Please prove this for yourself!

The Nutritional Value

Sea asparagus is an outstanding source of many minerals in bioavailable form, and that is the major reason why I am writing about it. It is a great source of sodium and chloride and a good source of calcium, riboflavin, iodine, magnesium, copper, vitamin A, vitamin B2, vitamin C, iron, potassium and dietary fiber.

Vol.4, No 9B, 40-44 (2013) Agricultural Sciences
http://dx.doi.org/10.4236/as.2013.49B007, 2013 SciRes, reports the following:

The nutrients of sea asparagus include at least protein, amino acids, beta-carotene, vitamins (vitamin C, vitamin B1, etc.), marine mineral and trace elements (sodium, potassium, calcium, magnesium, phos-phorus, iron, zinc, manganese, iodine, selenium, etc.) and a number of biologically active substances (polysaccharides, alkaloids, etc.).

Vitamin Profile of Kahuku Sea Asparagus Performed by FQB Labs

<table>
<thead>
<tr>
<th>Per 100 Grams Wet Weight</th>
<th>Vitamin A</th>
<th>968 IU</th>
<th>Vitamin C</th>
<th>1.5 mg</th>
<th>Vitamin C</th>
<th>1.5 mg</th>
<th>Vitamin B2 (Riboflavin)</th>
<th>0.42 mg</th>
<th>Vitamin B9 (Folic Acid)</th>
<th>0.2 mg</th>
</tr>
</thead>
</table>

Sea asparagus can be considered a “bio-salt” source owing to its richness of sodium and chloride. Here is a comparison of some of the most sodium-rich vegetables our natural diet:

Mg of Sodium Per kg Wet Weight

<table>
<thead>
<tr>
<th>Sea Asparagus</th>
<th>Kale</th>
<th>Dulse</th>
<th>Celery</th>
<th>Kale</th>
<th>Spinach</th>
</tr>
</thead>
<tbody>
<tr>
<td>11,800</td>
<td>3007</td>
<td>2085</td>
<td>126</td>
<td>75</td>
<td>71</td>
</tr>
</tbody>
</table>

Are you scared by the sodium figure? In a serving of 0.5 ounces of sea asparagus per day we obtain 0.17 grams of sodium. For most adults under age 50, the DRI (Dietary Reference Intake) for sodium is 1.5 grams. The body’s sodium/potassium ratio is also a critical health factor—too much sodium and too little potassium has been linked to heart disease. However, typical vegetarian, vegan and rawfood diets are rich in potassium. Please read on for more good news.

Sodium & Chloride

Sodium has gotten a bad rap due to the salt-rich SAD diet most people eat. However, sodium is not a bad guy! It’s the abusive use of the sodium chloride in salt shakers, cooking and food products that are the culprits. We need sodium—sodium that naturally occurs in plant foods! Do not fear sodium!

In her article titled “Minerals’ Role in Detoxification and Body Building” in Living Nutrition vol. 4, Dr. Griselda Blazey wrote:

Sodium is the major positive ion (cation) in fluid outside of cells. When combined with chloride, the resulting substance is table salt. Excess sodium (such as that obtained from dietary sources) is normally excreted in the urine; however, the body is not efficient at ridding extreme excesses under all conditions.

Sodium regulates the total amount of water in the body, and the transmission of sodium into and out of individual cells also plays a role in critical body functions. Many processes in the body, especially in the brain, nervous system, and muscles, require electrical signals for communication. The movement of sodium is critical in generation of these electrical signals. Therefore, too much or too little sodium can cause cells to malfunction, and extremes in the blood sodium levels (too much or too little) can be fatal. Ions of sodium, potassium and chloride trigger muscle contractions and nerve impulses when they pass across cell membranes.

Sodium also works in concert with potassium to maintain normal water balance in the body. Each of the minerals chemically attracts water to itself, thus assuring that optimal levels of hydration are maintained both inside human cells and outside the cells. In healthy people, the body has a built-in mechanism to guard against the effects of occasional excesses level of sodium, but continued intake of high amounts of sodium can eventually override this safety valve and lead to hypertension.

Sodium is also important in the body’s regulation of blood volume and thus blood pressure. If either blood volume or sodium levels become too high, the body stimulates the kidneys to excrete excess sodium, returning blood volume to normal levels.

Chloride is also a highly valuable nutrient. It is needed to keep the proper balance of body fluids. It is an essential part of the stomach’s digestive juices. It combines with hydrogen in the stomach to make hydrochloric acid, the powerful digestive enzyme that is responsible for the break down of proteins, absorption of other metallic minerals, and activation of intrinsic factor, which in turn absorbs vitamin B12. With sodium and potassium, chloride works in the nervous system to aid in the transport of electrical impulses throughout the body, as movement of negatively-charged chloride into the cells propagate the nervous electrical potential.
It’s the Minerals!

Most people are unaware of the great importance of minerals for our health—especially trace minerals. Minerals give us the strength, mental acuity and vibrant vitality we deeply desire. We need a broad spectrum of mineral elements in our diet, not just a handful of the most common ones. Don Weaver has long emphasized the dearth of minerals, especially trace minerals, in our soils and diet. He champions the need to remineralize the Earth’s soils by using rock dust and other powdered mineral amendments in order to feed the microbes of our soils and, in turn, the crops which nourish us and impart the high level of health we desire.

Regarding the importance of minerals, Dr. Blazey also wrote:

There are 103 known minerals, at least 18 of these are necessary for good health. Mineral imbalance is epidemic.

There are two categories of minerals which essential to our health: macro-minerals and micro-minerals, also known as trace minerals. They all must be maintained in specific ratio balance within the body. When the mineral ratios are imbalanced, we suffer serious consequences.

**Macro-Minerals**
- calcium, phosphorous, potassium, magnesium, sulfur, sodium, chloride

**Micro-Minerals**
- iron, boron, chromium, iodine, molybdenum, selenium, silicon, vanadium, zinc, lithium, germanium, rubidium, cobalt, copper

Minerals have many vital roles in the body. They:
- act as co-factors for enzyme reactions, catalyzing their functionality and giving us our vitality.
- maintain the body’s pH balance.
- facilitate the transfer of nutrients across cell membranes.
- maintain proper nerve conduction.
- facilitate the contraction and relaxation of muscles.
- assist the regulation of tissue growth.
- provide structural and functional support for the body, as in the formation of bones and teeth.
- regulate proper heart function.
- facilitate energy production.

Minerals are basically the spark plugs of life. They are the catalysts that keep our “batteries” going and holding their “charge.” The only thing that will activate an enzyme is a mineral.

Every one of the ten trillion cells in our body contains thousands of enzymes. The majority of enzymes require minerals in minute amounts, acting as “cofactors.” This means that minerals are essential for enzymes to function, and they need to be present in sufficient amounts for the enzymes to function well.

If we are short of minerals, our enzymes function below par, and we feel a lack of energy—the cells lose their ability to transport molecules across the cell membrane. This means that the cells can no longer feed themselves properly. It also means that the cells can no longer rid their waste materials properly, causing a build-up of toxic waste within the cells.

Minerals compose about 4% of the human body. We cannot produce minerals within our bodies, so we must obtain them through our food. They ultimately come from the Earth. Good soil is 45% minerals, yet our soils today are quite lacking due to synthetic fertilizers, mono-cropping and more. In the U.S. our soils contain 86% less minerals than they did 100 years ago (based on a study made in 1992).

An Impressive Profile

Sea asparagus is a powerhouse of a broad spectrum of macro- and micro-minerals, as is to be expected from a vegetable that grows in sea water, the best source of every mineral available on the planet. The comparative mineral analyses on the next page illustrate this point.

Other Nutritional Highlights

Sea asparagus has another exceptional nutritional benefit: it is the richest known source of betaine with 5% per dry weight. In comparison, the next richest sources of betaine are guinea (0.63%), spinach (0.55%) and beets (0.13%).

Betaine, also known as trimethylglycine or TMG, is an N-trimethylated amino acid which plays very important role in the control of homocysteine and supporting methylation. Methylation is a regulation process which enables our physiology to adapt to various conditions. It involves hundreds of chemical reactions that regulate cellular energy, toxicity resistance, healing and genetic expression of DNA and RNA. Methylation controls homocysteine levels and figures in the synthesis of neurotransmitters such as dopamine, serotonin and in the biosynthesis of melatonin and the electron transport chain constituent coenzyme Q10. Betaine is also an organic osmolyte which plays an important role in maintaining cell volume and fluid balance. Interestingly, betaine helps the sea asparagus to thrive in the stressful saltwater environment.

Some sources implicate the seeds of sea asparagus as a high source of saponins, soapy foam-forming substances which can cause intestinal bloating, while other sources state that saponins may play a useful role in reducing cholesterol levels. In actuality, Kahuku Sea Asparagus has tested very low in saponin: 0.06% of the dry weight of the vegetable. The sea asparagus products sold for human consumption are collected from the tips growing in the vegetable stage, and they contain no seeds; only mature sea asparagus contains seeds. In our combined five years of eating Kahuku sea asparagus, my wife Annette and I have experienced no gastrointestinal distress. When I juices sea asparagus with cucumber, celery and kale, some white foam does float to the top of the juice. I skim that off and enjoy the salty juice with no ill effects. Salty mineral-rich juices really satisfy. If I want a sweet energy booster, I add some grapes or apples when I am making a juice, or I add some bottled raw sugar cane juice to the green juice.

Dietary Therapy & Lifestyle Practice

A few people who have adopted a raw food diet and have shrunk salt have experienced low sodium levels in their blood, and resultant weakness, fatigue, loss of appetite and other health issues. A majority of the clients whom I’ve worked with who have had severe inflammatory bowel conditions marked by high numbers of bowel movements and hyperacidity have experienced low sodium levels. Bringing one’s sodium level up to the normal range is a slow and sometimes agonizingly long process. Natural health practitioners have traditionally employed the most commonly recognized source of sodium in the diet: celery. However, in some extreme cases this has been inadequate for improving sodium deficits within a reasonable time frame. In those instances, some health practitioners have advised either sea salt supplementation or intravenous saline as options to help further physiological dysfunction and avoid the specter of seizures and cardiac arrest. Sea asparagus can be a safe and healthful answer to sodium deficiencies.

When I moved to Maui almost four years ago, I was experiencing foot and leg cramps. I had fasted many times to heal a condition which stemmed from a physical injury and I became low in sodium. I discovered Kahuku Sea Asparagus at a local health food store and was curious about it. The produce manager, a fellow rawfooder and long-time acquaintance, crowed about its mineral-rich benefits, saying he added some to his smoothies every day. I tried some right out of the package and my body said “yes!”

I regularly ate 2 to 4 ounces straight out of the package per day. A few days I ate 8 ounces per day. I later got into a habit which I have continued of juicing two handfuls (about one-half ounce) of sea asparagus with cucumber. I drink the juice and especially enjoy eating the salty pulp leftover from the juicing operation—it makes for a delicious salty paté, which is nice eaten plain or with a bit of avocado mashed in. I also add some sea asparagus to fresh-made apple and grape juice, as well as to fruit smoothies. With all of that sea asparagus in my diet, the foot and leg cramping has gone away and I feel more balanced and vital. When my wife Annette and I got together three years ago, she, too, had been experiencing foot cramps. She added sea asparagus to her diet and the cramps vanished.

Annette and I have eaten small and large amounts—over 4 ounces—of sea asparagus at one sitting with no ill effects. I have eaten similar large quantities of un-rinsed and rinsed sea vegetables and salted raw food recipes and suffered salt poisoning, the symp-
and promote a long and robust life. Consider adding sea asparagus—to sustain peak energy and strength, nourish mental acuity and protect the body from chronic disease. Whether we are putting our best face forward or managing chronic health problems, we cannot depend upon even a 100% organically grown diet of raw foods. Our blood tests have shown sodium levels in the middle of the normal range. And although we enjoy some sea asparagus in our diets, we do not have the strong salt cravings that are common for people who eat salt laden food items and recipes. We have not heard any reports of negative effects from eating sea asparagus. Some of our friends swear by its goodness; they regularly include it in their smoothies.

I recommend sea asparagus to all of my clients whose blood tests indicate low or marginal sodium and/or chloride (which is typical with inflammatory bowel disease sufferers who have experienced drastic weight loss). I also recommend it to everyone who is experiencing low blood pressure, cramping, gastrointestinal spasm, salt cravings, disordered eating and acidosis. When the body’s pH levels are tipped into the acid range, an alkalizing diet is necessary. An acidic body condition forces the body to rob its bones, blood and tissues of alkaline minerals to buffer the acidity to preserve its life. Sodium is one of the most readily available alkaline minerals which the body can draw upon. With severe acidosis, people become deficient in sodium, and muscular cramping and weakness will ensue. Vegetable juices, such as sea asparagus with celery, lettuce, kale, spinach and bok choy with some cucumber, carrot, or tomato, or apple or grape will benefit this condition. Note: do not combine carrot, tomato, apple, grape, tomato or grape-grape.

Contraindications
If someone has been including table salt, sea salt, Himalayan salt and/or salted items in his or her diet and the blood level of sodium and blood pressure are in the high zones, sea asparagus is not a prudent choice for those current conditions. In such cases, a salt-free detox program is recommended. After that person’s blood factors drop to healthy levels, sea asparagus can be a key component of the diet to help avoid salt cravings and more serious health problems.

Products
Whether your health is sub-par, good or great, I hope you realize how important it is to get a broad spectrum of minerals in your diet. We cannot depend upon even a 100% organically-grown diet of raw foods to secure all the minerals we need—especially the trace minerals—to sustain peak energy and strength, nourish mental acuity and promote a long and robust life. Consider adding sea asparagus to your juices, smoothies, vegetable patties, soups and dressings. Even if you are not fond of the saltiness, if you add only a few shoots you may barely notice the difference in flavor—but, after a few weeks you might notice enhanced vitality.

In 2006, scientist Dr. Wenhao Sun and partners founded Marine AgriFutura LLC to produce and distribute premium agricultural crops grown with an innovative salt-water cultivation system. Olakai Hawaii is marketing division of Marine AgriFutura located in Honolulu on the Hawaiian island of Oahu. Of the Olakai Hawaii products we have tried, we enjoy most the fresh sea asparagus which we buy at a local health food store. It is available in 4 and 16 ounce packages. We include it in our diet in these ways:

- Nibbling on the whole stalks, one at a time, while eating vegetable meals.
- Blended them along with other vegetables and either avocado, nuts or seeds to make salad dressings, pates and dips.
- Added to veggie handwiches and other vegetable recipes.
- Juiced with fruit and vegetables.
- Blended in fruit smoothies.

For a salty, crunchy snack, we occasionally enjoy the dehydrated sea asparagus product called Olakai Tea. It is dried at 130 degrees Fahrenheit to achieve a pleasant crunchiness. (Lower drying temperature result in a gummy texture.) Thirty and 100 gram packages are available. For those who are transitioning to a salt-free diet with no salty junk foods, this product will satisfy any salt cravings in a completely healthful way. The Olakai Tea product can be added to the blend. The solids may be added to a salad dressing or used as pet food.

Zesty Salad Dressing
Blend your choice of tomatoes, red or yellow bell pepper, sea asparagus and orange juice. Optional additions: basil, fennel, mango, or avocado, or sesame tahini, or almond butter, or germ-nated sunflower or pumpkin seeds.

Salty Cucumber or Zucchini Paté
Option 1: Run peeled cucumbers and/or zucchini and sea asparagus through your juicer. Save the juice for later. Remove the pulp and eat it plain or blended with avocado or nut or seed butter.
Option 2: Run peeled cucumbers and/or zucchini and sea asparagus through a Champion juicer using the blank plate attachment. Eat the pulp and eat it plain or blended with avocado or nut or seed butter.
Option 3: Process peeled cucumbers and/or zucchini and sea asparagus in a food processor or blender such as the Blendtec. You can add some avocado or soaked and germinated seeds, or nut or seed butter, tomato, lemon juice and herbs.

Vegetable Tacos or Handwiches
Lay out some green leaves—lettuce, cabbage, kale, collards, bok choy, etc.—on a platter. Option: instead of the greens, use red or yellow bell pepper halves. Top with sprouts, sea asparagus, chunks of tomato, slices of avocado or a dollop of nut or seed butter. Fold in half and enjoy!