Decolonizing Diets Workshop

Urban Indian Health Institute. Seattle, WA. May, 2018
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As Coast Salish People, we view native foods as spiritual, mental, and physical medicine. When we are actively on the land in pursuit of wild game, fishing the rivers, cultivating prairie lands, picking berries, or harvesting medicine with good intention, we are gifted with new memories and those of a distant past. These memories remind us of who we are and the lands we come from. They settle us in a sense of belonging that promotes balance and generosity.

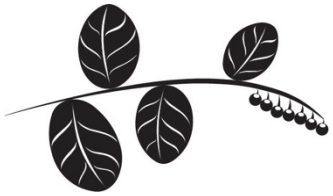
-Valerie Segrest, Muckleshoot Tribe

Stories passed down through generations of Native American People tell us that many types of berries, roots, bulbs, greens, nuts, seeds, animal foods, and sea foods were eaten as part of a well-balanced diet. These nutritious foods contributed to the excellent health and rich cultural traditions of Native Ancestors.

Many tribal elders fondly remember how their happiest times are ones where they gathered and prepared native foods with their friends and family. These were unifying moments when people worked together over a common goal. Stories and laughter were shared while hands processed fish, berries, and nuts.

Despite the introduction of European foods and changes to our modern food system, many Native People continue to harvest, hunt, gather, and grow the native foods that have nourished their ancestors for countless generations. These foods and the traditions that surround them provide people with top-quality nutrition, physical activity, a connection to the land and the seasons, and strong ties to family and community.

Native foods of the Salish Sea region include:
Fish: Salmon, smelt, trout, minnows, halibut, codfish, pollock, hake, rockfish, sculpin, perch, eel, flounder, sole, skates, anchovy, sturgeon
Shellfish: Clams, geoduck, oysters, mussels, barnacles, scallops, limpets, snails, whelk, chitons, crab, shrimp, sea urchin, octopus, squid
Mammals from the water: Whale, porpoise, seal, turtle
Mammals from the land: Deer, elk, bear, mountain goat, cougar, bobcat, rabbit, mountain beaver
Birds: Swans, geese, ducks, grouse, quail, pelicans, hawks, gulls, doves, pigeons
Greens: Nettle, spring beauty, miner's lettuce, cattail, fiddlehead ferns, horsetail fertile shoots, salmonberry and thimbleberry sprouts, purslane, evergreen tree tips from Douglas fir, true fir, hemlock and spruce, violet leaves and flowers
Roots and bulbs: Camas, wapato, wild onion, yampah, bracken fern, chocolate lily, rice root, glacier lily, spring beauty, silverweed, spring bank clover, biscuit root
Berries: Huckleberry, salmonberry, thimbleberry, blackcap raspberry, cranberry, salal, serviceberry, soapberry, wild strawberry, blackberry, elderberry
Fruits: Crabapple, wild cherry, currants, gooseberries, Indian plum, wild rose
Nuts: Hazelnut, acorn



Feeding Seven Generations

Food is a gift. Salish Elders remind us that true wealth is having access to native foods along with the knowledge of how to gather, prepare, and serve them. Our values and food traditions are a living legacy that links us to past, present, and future generations. Several times a day, we encounter opportunities to reflect on what we eat and how our choices change our world. When we harvest native foods and incorporate them in to our modern lifestyle, we strengthen our cultural identity, our relationship to the land, and tribal sovereignty. It will take all of us to feed the next seven generations.

Live with the Seasons – From spring camas prairies to summer huckleberry meadows to autumn fish runs, seasonal foods connect us with the rhythm of the land. For thousands of years we have organized our lives to gather what is in season. In return, we receive peak nutrients that keep us healthy all year long.

Diversify Your Diet – Our ancestors ate a wide variety of foods just a few generations ago. Today, most Americans eat only 12-20 foods on a regular basis, limiting our consumption of minerals, vitamins, and other nutrients. When we eat many types of nutrient-rich foods, we receive the nourishment we need to stay strong. We also promote the diversity and health of the land.

Eat More Plants – All health advocates agree that we need to eat more plants. Plant foods help us maintain a healthy weight and prevent chronic diseases including heart disease, diabetes, and cancer. Eating more plants also reduces climate change and environmental destruction.

Traditional Foods are Whole Foods – Imagine walking through the grocery store with your great grandparents. What would they recognize as food? Our ancestors thrived on whole foods that weren't industrialized, genetically modified, refined, packed with sugar or blended with additives, dyes or chemicals. Whole foods feed the wholeness within us.

Gather Wild Foods – Wild foods are some of the most nutritious and flavorful foods we can find. Free and accessible, they thrive all around us from forests to fields to back yards. Tasting wild food connects us to the gifts of the land and attunes us to the seasons.

Cook and Eat with Good Intention – Cooking is a time to offer respect to the plants and animals that gave their lives to nourish us. It is also an opportunity to honor our culture and the people with whom we share food. If we eat while on the go, we miss the pleasure of eating, and do not have sufficient time to savor and digest. Harvesting, preparing, serving. and consuming food with good intention feeds our bodies and spirits.

Give Back to the Land. When we harvest and grow food in a way that supports plant and animal communities, we express native values of generosity. Generosity includes both giving and receiving. Organic and sustainable practices return basic life materials to the soil. Through caring for the land, we continue the ancient practices of our ancestors and pass down a world that supports generations to come.

Ethics of Harvesting Wild Foods

Good harvest ethics are a hallmark of Native teachings. Consider these guidelines when harvesting indigenous foods:

Build Plant Identification Skills – Never eat something if you are identifying it for the first time. If possible, learn from an elder or experienced harvester so you are confident you have the right plant.

Harvest from Clean Land and Waters – Wild foods can pick up toxins from the environment. If you are harvesting from the waters, make sure the area is clean and far away from runoff from a town or industrial site. Avoid harvesting plants along roadsides, in industrial areas, or in agricultural areas.

Gather in the Right Season – Learn the best time to harvest wild foods. For example, spawning chum salmon are not preferred for baking because their meat is soft, but they make good smoked salmon. Dandelion greens are tasty in spring but become very bitter in summer. Shellfish should never be gathered during a red tide.

Processing and Preparation Techniques – How food is processed, stored, and prepared can make the difference between someone being nourished or getting sick. If ever in doubt, contact your local county extension food preservation program, an excellent source for classes, information, publications, and recipes.

Take Only What the Land Can Give – Wise gatherers, hunters, and fishers remind us to take only what the land can handle and leave enough so plant and animal communities continue to thrive. Stories about greedy and disrespectful foragers taking all or most of the plants are too common. It can take years or even decades for an area to recover. Sadly, some plant communities have disappeared entirely because of over-harvesting. Most plants will actually benefit from a little bit of pruning and harvesting if done responsibly. Likewise, it is essential to give back to the land so it will not become depleted. For example, we can return shells to beaches and compost food scraps.

Honor your Commitment – Sometimes harvesting is the easy part and real work comes with processing. Evergreen huckleberry branches are easy to cut, but picking the tiny berries off the stems and cleaning them can take hours. Honor the foods you harvest by using them all.

Additional Notes

Harvesting with Children: teach young children not to eat plants without permission. Consider getting kid-friendly harvest tools. Teach tool safety and demonstrate proper uses.

Create Partnerships with Landholders: Many private and public landholders (like Department of Natural Resources) are willing to give Native People access to harvest grounds.

Traditional versus Modern Diets and Chronic Disease

Before European contact, Salish People ate a great variety of foods that were nutritionally dense. These included many types of leafy greens, berries, fruits, wild game, birds, fish, seafood, dipping oils, seaweeds, roots, and bulbs. Foods were eaten fresh in season and were preserved for use throughout the year. Traditional cooking techniques optimized flavor and nutrient content. Modern chronic diseases including diabetes, high cholesterol, and heart disease were virtually non-existent when people ate an indigenous diet.

Introduced Foods

As Europeans settled the Americas they introduced many new foods including potatoes, wheat, oats, sugar, and alcohol. These carbohydrate-rich foods were rare in the Salish diet, but were a large part of European diets and had been for a long time.

Europeans developed ways of refining foods to make them more standardized and easier to use. For example, wheat was processed to remove the fiber. Oats were processed to remove the outer sheaf. Sugar cane was processed so the minerals were removed and it became white. Fiber helps to slow carbohydrate metabolism, thereby decreasing our blood sugar. Minerals are essential for normal body functions including building strong hair, bones, and nails, and helping to relax muscles. Chromium, a mineral found in sugar cane and many other whole foods, is needed for insulin to bind to cells and allow nutrients to flow into them. When fiber and minerals are stripped from foods like wheat and sugar cane, these foods can cause health problems including diabetes.

Carbohydrates are now one of the most available and commonly eaten types of food. ***What are carbohydrates?*** They are sugars and starches, which provide energy to our bodies, and cellulose, which is a fiber that makes up many plant structures. Fiber is important for our health because it promotes healthy digestion, lowers cholesterol, and moderates blood sugar.

There are two types of carbohydrates, **simple**, or *monosaccharides* and **complex**, or *polysaccharides*. Simple carbohydrates are found in fruits, dairy products and refined foods like white flour and white sugar. They are easily digested and are quickly used for energy. They cause blood sugar levels to rise high quickly and then drop abruptly. Complex carbohydrates are common in vegetables, whole-grain foods, brown rice, beans, lentils, peas and peanuts. They take longer to digest and raise blood sugar more slowly. If you eat complex carbs like whole-grain versus white bread, you will have longer-lasting energy and more stable blood sugar levels.

Dairy products were NOT a part of a traditional Salish diet. Dairy contains high amounts of calcium. Calcium and other minerals are easily absorbed from leafy greens, meats. and bone broth. People around the world whose ancestors did not eat dairy may lack the enzyme to break down lactose in dairy. Dairy has been linked with decreased production of insulin. Cow's milk is linked with excess mucus, asthma, and chronic ear infections in children. Many people use dairy milk substitutes from plants including rice, almond, oat, coconut, and hemp. Soymilk is not recommended as it can affect the thyroid and cause digestive disturbances.

The Insulin Response:

1. You eat a meal – let's say pasta with meat sauce. The carbohydrates are broken down into glucose and the protein is broken down into amino acids in your digestive system. This is absorbed into your blood.
2. Your pancreas detects this and secretes insulin. Insulin binds to cell membranes along with its partner, chromium and this opens channels for nutrients to enter.
3. Glucose, fats, amino acids, magnesium, and other nutrients enter the cell.
4. Once glucose and other nutrients are cleared from the blood the pancreas stops secreting insulin. Under normal body conditions this takes about three hours.

Our bodies can use **glucose from carbohydrates** or **ketones from stored fat** for fuel. When insulin is secreted, your body prefers glucose as a source of fuel instead of ketones from burning fat. In the presence of insulin and glucose, our body stores fuel (fatty tissue) so we can access it later when there is not as much food. This is almost like having lots of canned goods in the cupboard. White fat around our waist is the place we store fuel (fat) and we can burn it easily when we need it. During the insulin response, your body has plenty of glucose for fuel and will not burn fat. *What happens if you eat/snack all day and stay in the insulin response constantly?*

What is Diabetes?

People with diabetes have high blood sugar (glucose) levels. Glucose is a source of fuel that is needed by tissues in the body to perform everyday activities. Insulin, a hormone secreted from the beta cells of the pancreas, allows glucose and other nutrients to enter cells all over the body from the blood. Insulin is like a key that opens the lock of the cell so nutrients can enter. If this does not happen, cells are deprived of the food they need to function optimally. In addition, high blood glucose levels harm the organs and tissues exposed to it.

- **Type 1 diabetes** is also called insulin-dependent diabetes or juvenile-onset diabetes. It occurs most often in children and adolescents. Type 1 diabetics need to take insulin because the beta cells in their pancreas cannot produce it.
- **Type 2 diabetes** was once called adult-onset diabetes, but many children are now developing the disease. It most often occurs after age 40, is much more common than type 1 diabetes, and is fairly preventable and treatable. Usually, people with type 2 diabetes have enough insulin, it just will not work well to open the cells and allow glucose in. Later in the disease, people may become deficient in insulin. Achieving ideal body weight through exercise and a healthy diet can often prevent or reverse this type of diabetes.

What Causes Diabetes?

Diabetes is thought to be caused by a modern diet and a modern lifestyle. Just 150 years ago, diabetes was ***unheard of*** among Indian People in the Pacific Northwest. Some of the factors that may be contributing to the diabetes epidemic include:

Changes in diet – The traditional diet of Northwest Coastal People was rich in protein, high-quality fats, and nutrient-rich berries, nuts, seeds, roots, and wild greens. Many tribes lost access to their traditional foods during the time of colonization. Introduced European foods, commodity foods, and modern industrialized foods are high in simple sugars, starches, poor

quality fats, and refined ingredients, which were *not* a part of a traditional diet. These foods are known to cause weight gain, insulin resistance, and other chronic diseases.

Changes in Mobility – Northwest Coastal People traditionally hunted and gathered their food, which meant people got plenty of exercise and time outdoors. Now that people rely more on cars and other modes of transportation and can buy food in local groceries, it is much easier to gain weight. It was recently discovered that when fat cells (especially around the abdomen) become full of fat, they secrete hormones that both inhibits insulin secretion and action *and* promote glucose production by the liver, thereby increasing the risk for diabetes. This is why simply losing weight can help prevent or reverse diabetes.

Stress and Generational Trauma – It is well known that stress affects blood sugar. Long-term stress can impair people's ability to regulate glucose. Trauma seems to play a role in diabetes as well. Research with holocaust survivors has shown that even when families have had traumatic experiences generations back, it can affect people's ability to balance blood sugar. Colonization here in the Pacific Northwest including people being moved onto reservations, a loss of traditional gathering sites, children being moved to boarding schools and religious practices and language becoming illegal has left a legacy of trauma on many Indian People today. Some tribes are now addressing community trauma and are reviving cultural traditions as a way to improve their community's health.

Environmental Toxins – Recent research has shown that environmental toxins including persistent organic pollutants (which are found in the fat of most animals including humans) inhibit blood sugar regulation. As we clean up the environment and reduce environmental toxins this may reduce the incidence of diabetes and other chronic diseases.

Demystifying Fats

Native diets across the Americas included quite a large amount of healthy fats. Fatty foods represented as much as 50% of Coast Salish People's traditional diets. Oils were traded long distances and prized for many things including food, medicine and waterproofing. Techniques for rendering oils preserved precious nutrients that contributed to peoples' health. Many Salish families had richly decorated containers for storing and eating fats. Local sources of fats include bear, deer, elk, crab, herring, halibut, fish eggs, oolichan, salmon, seal, shellfish, whale, nuts and seeds.

We absolutely need fat to be healthy. Humans have the highest requirement of fat of all species on the planet because our large brains and nervous systems are mostly made of fat. Cell membranes in our body are also built from fats. This may be confusing when our modern world tells us that eating fatty foods makes us fat. As it turns out, it is not just about the *amount of fat you eat,* but also the *type of fat you eat*. Some fats promote good health and others hinder it.

Fats for Good Health

We need essential fatty acids (EFA's) in our diet and they feed every part of our body. The two types of EFA's are Omega 3 fatty acids and Omega 6 fatty acids. Omega 9 fatty acids are also important, but most people can make them in their bodies, so they are not essential to eat.

Omega 3 fatty acids (alpha-linolenic acid) – Most Americans do not get enough Omega 3 in their diets. In fact, we only get an average of 1/6 the amount we did in 1850! Omega 3 deficiency symptoms include weakened vision, learning and growth problems, insulin resistance, poor immune function, inflammation, high blood pressure, allergies, dry skin, and low energy. Omega 3's are found in fatty fish and seafood like salmon, halibut, mackerel, herring, sardines, trout, anchovies, crab, and smelt. They can also be found in modern foods like flaxseeds, grass-fed cows, eggs from insect-fed chickens, nuts, and seeds.

Omega 6 fatty acids (linoleic acid) – Most Americans get too much Omega 6 in their diet and not enough Omega 3, which can lead to health problems. It is best to focus on consuming more Omega 3 fats since you probably get enough Omega 6 fats. Omega 3 fats are necessary for proper brain function and hormone production. Omega 6 is found in some vegetable oils, fish, dairy products, eggs, nuts, and in small amounts in vegetables and grains.

Benefits of eating healthy fats:

1. **Insulation** – Fat creates a deep internal heat that we need in order to maintain our core temperature.
2. **Protection** – A thick hard layer of fat covers our intestines, holding them in place. Women naturally have a higher amount of fat than men due to their gift of being 'life-givers' or protecting a fetus.
3. **Energy** – Fats can improve energy levels because they can make red blood cells more flexible and the inside of arteries more slippery. Oxygen and nutrients are more easily delivered to tissues.
4. **Vitamin & Mineral Absorption** – Without fats our bodies couldn't absorb crucial vitamins like A, D, E and K. Healthy fats are required for mineral transport. Vitamins and minerals help us to build strong healthy bones, hair, nails and skin.

5. **Promotes Satiety** – Healthy fats can make us feel good and full when we eat it and it suppresses appetite, helping us to reduce cravings for sugar and junk food.
6. **Improves Cholesterol** – Eating Omega 3 fatty acids lowers bad cholesterol (LDL) levels and increases good cholesterols (HDL).
7. **Hormones** – Fats are excellent chemical messengers that create hormones, stabilize moods, and can decrease depression. Your body uses healthy fats to make serotonin – a neurotransmitter with calming and antidepressant effects.

Unhealthy, Hydrogenated, and Trans-fats- DE-BUNKED

Oils that are derived from plants like corn, canola, and safflower are very delicate and go rancid easily, especially when they are exposed to elements like heat, light, and air. Nowadays, our food travels long distances and is exposed to all kinds of unknown elements, only to sit on the shelves of the grocery store awaiting purchase. The food industry wants to extend the shelf life and stability of these fats as long as possible. As a result, food chemists have developed a method called "hydrogenation." Hydrogenation is a process that involves blasting a vegetable oil with hydrogen, making it solid at room temperature and converting it to saturated fat. Although some saturated fats are found in foods like wild game, beef, and butter, *saturated hydrogenated fats* are created in a laboratory and are host to many health problems.

Hydrogenation leads to the formation of trans-fats, which are linked to serious health risks including high cholesterol and coronary heart disease. These fats can cause damage to cell membranes, red blood cells, DNA and RNA, leading to poor function and inflammation. Hydrogenated and trans-fats block our body's ability to absorb healthy fats. These types of fats have been linked with diabetes, weight gain, atherosclerosis, and heart disease.

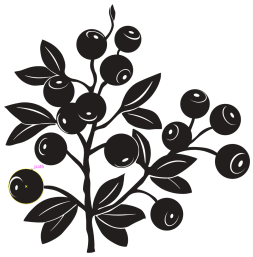
Avoid these foods with hydrogenated and trans-fats: margarine, Crisco, baked goods, fried foods, and snack foods. Read food labels, and if you see the words "hydrogenated" or "trans-fat" anywhere, the product contains unhealthy fats.

How to Incorporate Healthy Fats into Your Diet

- Eat cold-water fish including wild salmon, smelt, halibut, crab, or other foods that are high in omega-3 fatty acids at least twice per week.
- Add flax, borage, or evening primrose to smoothies, salad dressings, sauces, dips, or starches like potatoes. Add them to cold or hot dishes, but do not fry them.
- Extra virgin olive oil is rich in antioxidants. Use it for a medium heat sauté, but not for frying. Try olive oil in dressings or dipping sauces.
- Eat nuts. Studies have shown that people who eat nuts have fewer problems with obesity than people who do not. Raw walnuts, pumpkin seeds, and hazelnuts are especially high in healing fats. Roasted and salted nuts are not as healthy.
- Take fish oil supplements. Buy gel capsules that are tested to be lead and mercury-free. The best brands are Nordic Naturals and Carlson.

If possible, buy vegetable oils that are cold-pressed, unrefined, and organic. Heat damages the oils' natural vitamin E and antioxidants and can create free radicals that cause tissue damage. Store oils in the refrigerator or use them quickly. The best oils are stored in dark glass bottles.

Berry Medicine



Summer is berry season! What better way to embrace the season than to pick sweet sun-warmed berries right off the bush or vine. Some people say happiness is having juice stained fingers and lips. Many delicious wild edible berries and fruits thrive in our forests, fields and city landscapes including:

Blackberry, Black Cap Raspberry, Cranberry, Currant, Elderberry, Gooseberry, Hawthorn, Huckleberry, Indian Plum, Salal, Salmonberry, Saskatoon (June-berry, Service-berry), Soapberry, Strawberry, Thimbleberry, Wild Cherry

Many Native American People historically put great effort into cultivating, harvesting and preserving berries. Some local berries, like salmonberry and strawberry, mark seasonal changes and celebrations. Others including salal are dried and preserved to eat throughout winter. For centuries, families have traveled great distances to harvest mountain huckleberries, which are equated with health and long life. Berry picking is also a time to gather with friends and family and to celebrate the gifts of the land. Today we can go to the grocery store in any season to purchase berries, but there are still compelling reasons to harvest wild berries including:

Berry Medicine: Berries are loaded with nutrients that keep us healthy and strong including fiber, minerals, and vitamins. The seeds of some berries, like salal, contain a significant amount of protein and omega fatty acids that give us sustained energy. Wild berries are generally higher in nutrients than commercially grown berries.

Berries are among the most potent antioxidant foods. Antioxidants protect the health of our cells and are said to slow aging, reduce inflammation and increase immune health. Vitamin C, Vitamin E, and carotenes are examples of antioxidants that have been shown to lower the risk for type 2 diabetes. Antioxidants help protect us from exposure to pollution, cigarette smoke and unhealthy food, including refined and fried food. In a sense, they are anti-aging compounds that help protect us from chronic diseases, including heart disease, cancer and arthritis. Perhaps this is why many Coast Salish elders say that eating berries helps us live a long and healthy life.

Flavonoids are plant pigments that give berries their color. They protect the body in many ways, like protecting and strengthening blood vessel walls and healing tissue. Eating berries or drinking berry leaf tea can help protect us from cardiovascular disease, varicose veins, Alzheimer's disease, cataracts, glaucoma, and the side effects of diabetes including diabetic retinopathy, kidney damage, and vascular degeneration.

Local Flavor: Many store-bought berries are transported from far-away places and are picked before they are ripe. This makes them inferior in both flavor and nutritional content to local berries. When you eat wild berries, you taste the flavors of your local land.

Seasonal attunement: Wild berries teach us to pay attention to the seasons. Many berries have a short season, so if you miss their precious gifts, you have to wait a whole year. Some berries, like salmonberry, indicate seasonal changes

Eat organic: Many commercially-grown berries are treated with herbicides and pesticides. For example, non-organic strawberries are number one on the "dirty dozen" list for being very high

in pesticides, which are linked with many health risks including cancer. If you grow or wild-harvest berries from a clean area, pesticides and other harmful substances are avoided altogether.

Wild berries are free! Organic produce can be very expensive and it also costs precious resources including fuel to transport berries from where they are grown. Many wild berries are readily available, even in neighborhood parks and local woodlands.

Wait! Important tips for berry pickers:

- Avoid poisonous berries: While most wild berries are safe to eat, there are a few poisonous ones you should know about, including deadly nightshade and baneberry. Many toxic berries taste bitter. Consult a plant expert before you pick for the first time.
- Harvest from safe areas: Avoid harvesting from roadsides, industrial areas or other places that might have been sprayed with herbicides or pesticides. Plants can absorb toxins including heavy metals from the soil and pass them on to you.
- Don't take too much: Other animal species rely on berries for food, so leave enough for them to eat and never take more than half. Also, berries contain seeds that will grow into new plants, so when you leave some, you help ensure future harvests.

Grow Your Own Native Berries: Berries are easy to grow in your own yard or community garden. Native berries are uniquely adapted for this environment and often need less water and care. They make beautiful additions to gardens and public landscapes and can be found at many plant nurseries.

Minerals in Your Diet

Minerals are vital to our health. Bone and blood composition depend on the right balance of minerals along with healthy cell function. Plants are able to draw up minerals from the soil and concentrate them in their own tissue. They provide an excellent source of minerals that are usually easy for us humans to absorb. If the soil is depleted of minerals, plants will suffer through weak structure and a decreased resistance to disease.

Minerals are categorized into two categories – major minerals and trace minerals. We use a larger amount of major minerals, although trace minerals are essential for health too. Major minerals include calcium, magnesium, phosphorous, potassium, sulfur, sodium, and chloride. Trace Minerals include zinc, iron, manganese, copper, boron, silicon, molybdenum, vanadium, chromium, selenium, and iodine.

Calcium

This is the most abundant mineral in our bodies, comprising as much as 2% of our total body weight. Calcium is needed for bone formation, muscle contraction, heartbeat regulation and blood clotting, just to name a few. The general recommendation for adults is 800-1200mg. Low calcium levels can lead to muscle spasms, leg cramps, high blood pressure, and osteoporosis.

Foods high in Calcium – kelp (1,093 mg per 100-gram serving) and other seaweeds, dark leafy vegetables, nettles, dandelion (187), chard and kale (249), Cheddar cheese (750), nuts, seeds, yogurt (120), and apricots (67) are also high in calcium.

Magnesium

Magnesium activates many enzymes and maintains the electrical charge of cells, especially nerves and muscles. People with magnesium deficiency may have symptoms including mental confusion, irritability, weakness, heart disturbances, muscles cramps, headaches, insomnia, and a predisposition to stress. Magnesium deficiency is common in menstruating women, which may be one of the reasons they are naturally drawn to chocolate. The recommended daily amount of magnesium for adults is 300-350 mg.

Foods high in magnesium – kelp (760 mg per 100-gram serving), wheat bran (490), almonds (270) and other nuts, brown rice (88), dried figs (77).

Phosphorus

This is one of the most essential minerals in our bodies. It is usually bound in calcium phosphate crystals in bones and teeth. It is active in energy metabolism, DNA synthesis, and calcium absorption. Phosphorous is found in most high-protein foods like yogurt, beans, meat, eggs, cheese, and nuts. The balance of calcium to phosphorous in our food is important and should be balanced at about 2:1. Sugary soft drinks have about 500 mg. phosphorous and almost no calcium. This ratio causes calcium to be lost in the urine, thereby affecting mineral balance and bone health.

Potassium, Sodium, and Chloride

Potassium, sodium, and chloride are electrolytes that can conduct electricity when they are dissolved in water. Electrolytes are always found in pairs because their positive and negative charges balance each other. They are important in maintaining water balance, adrenal and kidney function, acid-base balance, muscle and nerve function, and heart function. If you are working hard on a hot day, you might feel better when you drink an electrolyte mix like Gatorade or

Emergen-C. We quickly sweat out electrolytes, especially potassium, which can lead to muscle fatigue, mental confusion, and irritability.

Potassium, sodium, and chloride should be in balance to feel healthy. Studies have shown that a diet high in sodium chloride (table salt) and low in potassium can lead to cancer, heart disease, and high blood pressure. A diet high in potassium and low in sodium will often help return blood pressure to normal. In the U.S. only 5% of our sodium intake comes from natural ingredients in food. This is usually all we need for health. Increasing fruits and vegetables in the diet and lowering high-salt prepared foods will lead to better mineral balance and overall health.

Foods high in potassium – avocado, lima beans, potatoes, spinach, tomatoes, bananas, peaches, dried apricots, chicken, and fish.

Boron

This trace mineral has been shown to lower the risk of osteoporosis. It helps to maintain calcium and estrogen levels and is thought to help activate some hormones. Boron may also be helpful for arthritis. Daily requirements for boron are 1-6 mg. per day. Foods high in boron include dried fruit, nuts, bananas, apples, and other fruits and vegetables.

Chromium

Chromium is important for blood sugar regulation. Chromium supplementation has been shown to improve glucose tolerance and lower body weight, total cholesterol and triglyceride levels. It seems to increase sensitivity to insulin. The recommended daily dose is at least 200 micrograms (mcg) per day. Chromium levels can be lowered by refined sugars, white flour, and a lack of exercise.

Chromium-rich foods – brewers yeast (112 micrograms per 100-gram serving), liver, whole wheat bread and wheat bran, rye bread, potatoes, and common fruits and vegetables.

Iodine

Iodine is needed for our body to make thyroid hormones. Low iodine in the diet can lead to a goiter. This was once common when soils were overly depleted of minerals. Now iodine is added to table salt. Too much iodine can also cause thyroid imbalances. Foods high in iodine include seaweeds and seafood including clams.

Iron

Iron is needed for our red blood cells to carry oxygen throughout the body and carbon dioxide out of the body. Iron deficiency is the most common mineral deficiency in the U.S. As we age, our bodies have a harder time absorbing iron because of a decrease in hydrochloric acid in the stomach. Antacid use can also decrease iron absorption. Excessive menstrual bleeding can lead to low iron. Anemia is where the blood is deficient in the hemoglobin (iron-containing) portion of red blood cells. Extreme fatigue, bruising, mental confusion and other symptoms of anemia are caused by low oxygen and high carbon dioxide levels in tissues. Low iron levels can lead to decreased physical and mental performance and learning disabilities in children. Iron is important for proper growth and development. The recommended dose for iron is 10-15 mg per day.

Foods high in iron – clams, steak, shrimp, lentils and other beans, molasses, quinoa, nettles, chard, and other dark leafy greens.

Manganese
Manganese is needed for many enzymes to function and for optimal central nervous system function. It is also an important antioxidant that is used clinically for sprains, strains, and inflammation. Low manganese is linked with epilepsy. Foods high in manganese include nuts, whole-grains, and dark leafy greens.

Selenium
Selenium works with vitamin E to prevent free-radical damage to cells. Low selenium levels may lead to an increase risk of cancer, cardiovascular disease and inflammatory diseases including asthma. Whole grains, fish, meat, and eggs are the richest sources of this mineral.

Silicon
This mineral is responsible for cross-linking collagen strands, which increase the strength and integrity of connective tissue and bones. Unrefined grains are a rich source of silicon and horsetail is high in silica.

Zinc
Many people in the U.S. have marginal zinc deficiency, especially elders. People with this may have increased susceptibility to infection, poor wound healing, low sperm count, prostate enlargement, decreased sensitivity to taste and smell, and skin disorders. Zinc is necessary for immune function. It has also displayed viral-inhibiting activity and recent research shows that it can reduce the duration and severity of the average cold. Zinc is high in oysters, pumpkin seeds and other nuts, shitake mushrooms, legumes, and whole grains.

Mineral-rich Herbs Include:

Alfalfa, dandelion, chickweed, comfrey, nettle, horsetail, oat straw, raspberry leaf (and other rose family leaves), red clover, seaweeds

References:

Bergner, P. (2014) *Insulin Resistance, Pathophysiology and Natural Therapeutics for The Metabolic Syndrome*. North America Institute of Western Herbalism. Portland.
Chace and Deane. (1999). *What to Eat if You Have Diabetes*. Chicago: Contemporary Books.
Diamond, S. (2004). *Nature's Best Heart Medicine*. Vancouver: Alive Books.
Erasmus, U. (2001). *Choosing the Right Fats*. Vancouver: Alive Books.
Fallon, S. (2001). *Nourishing Traditions*. Washington, D.C.: New Trends.
Krohn, E. (2007). *Wild Rose and Western Red Cedar*. N.W. Indian College.
Murray, M. (2005). *Healing Foods*. New York: Atria Books.
Murray, M. (2003). *How to Prevent and Treat Diabetes with Natural Medicines*. NY: Riverhead.
Nestle, M. (2006). *What to Eat*. New York: North Point Press.
Pedersen, M. (1998). *Nutritional Herbology*. Whitman.
Ryser, R. (2004). S*alish Country Cookbook*. Olympia: DayKeeper Press - Center for World Indigenous Studies.
Schmid, R. (1987). *Native Nutrition*. Rochester: Healing Arts Press.
Anderson,R., Cheng, Bryden, Polansky, Cheng, Chi, Feng. *Elevated intakes of supplemental chromium improve glucose and insulin variables inindividuals with type 2 diabetes.* Diabetes 46.n11 (Nov 1997): pp1786(6).

