Cooling Herbs and Foods for Climate Change

Medicines of the Earth, May, 2025 Kat Maier, RH (AHG) Sacred Plant Traditions info@sacredplanttraditions.com



- During a heat wave, every one degree increase in temperature can increase the risk of dying by 2.5 percent.
- Higher temperatures can strain the heart and make breathing more difficult, increasing hospitalization rates for cardiac arrest and respiratory diseases like asthma.
- Making adjustments Mortality increases 5.04% (95% PI, 3.06-7.06%) during the first heat wave of the summer versus 2.65% (95% PI, 1.14– 4.18%) during later heat waves, compared with non-heat wave days
- Northern regions actually have higher fatality rates as they are not acclimated to heat as easily. Just that we see more heat related deaths in southern climes.

When you start to heat up, your body works to cool itself by moving warmer blood away from your internal organs and cooler blood toward them.

 Capillaries at the surface of the skin fill with blood, which is why people often look flushed when they are hot.

You also start to perspire. As sweat evaporates, it cools the skin, lowering the temperature of the blood below. That blood then travels back to your internal organs to cool them down.

- In dry climates, sweat evaporation can continue to cool the body even at high temperatures
- That process becomes less effective as humidity increases.
- In very humid conditions, sweat doesn't evaporate; instead, it just drips off the skin without cooling it.
- That's why dry heat can feel cooler than humid heat.



gently.

2025 Medicines from the Earth

Climate Change - Maier

Heat exhaustion Pale, moist skin Usually has a fever over 100.4° F (or 34° C) Nausea	 Move to a cool place and rest. Remove excess clothing and place cool cloths on skin; fan skin. Give electrolytes 	 Warm, dry skin high fever, usually over 104° F (or 40° C) Rapid heart rate Loss of appetite Nausea Vomiting Headache Fatigue Confusion Agitation 	 Move to a cool place and rest. Call 911 or your local emergency medical service. Heat stroke is a life-threatening medical emergency and needs to be treated by a doctor. Remove excess clothing and drench skin with cool water; fan skin. Place ice bags on the armpits and groin areas. Offer cool fluids if alert and able to drink.
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Mineral depletion of the soil is so bad in the US, that in 1997, you'd have to eat 26 apples to get the same amount of iron from an apple eaten in 1950. -Dr. August Dunning



- As soil has been rapidly depleted over the last century and even more intensively in the past 30 years, it's not a surprise that diseases of every kind have accelerated rapidly over the same period:
- In the UK, researchers started tracking nutrient content of food at the University of London's King College. They found that between 1940 and 1991, that fruits and vegetables have lost on average between 20%-60% of their mineral content.
- Dr. Linus Pauling (who won the Nobel Prize... twice) concluded after years of studying that:

You can trace every sickness, every disease, and every ailment to a mineral deficiency.

Electrolytes – Navigating our Inner Waters

- Electrolytes are substances that have a natural positive or negative electrical charge when dissolved in water.
- Electrolytes are minerals until dissolved in your body's fluids or water. We need more minerals than we do trace or ultratrace minerals
- Electrolytes also work together to manage fluid balance and nerve transmission, and have a multitude of functions beyond that: they regulate blood pressure, transport other nutrients around the body, help regulate hormone activity, heal wounds, and support metabolic function.
- Minerals are actually the most potent anti-oxidants as they are the basic building blocks for our endogenous antoxidants (Glutathione, Super Oxidase Dimustase)
- Minerals were the first anti-oxidants on the earth algae created protection for mitochondria via minerals selenium, zinc and copper
 - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7973026/



Potassium - May be most important electrolyte

4700mg and rarely do most folks consume this amount of fruits and veggies

- Sodium potassium pump is formed on surface of cells these 'generators' create electricity to move minerals through the cell – transport of CA is dependent on this pump
- ATPase pump creates stomach acid to digest.
- Hypokalemia low K
- Intimately involved in muscle work, cardiac issues like afib, HBP and higher pulse rate
- Too much NA decreases K
- Low magnesium Mag keeps K in right balance
- Insulin Resistance inhibits K absorption
- Too many refined carbs
- High cortisol stress
- Trauma adrenaline spikes which decreases K
- Surgery
- Diuretics

Socurces Acorn squash (1 cup cooked without salt): 896 milligrams Artichokes (1 cup hearts cooked): 480 milligrams Avocado (1/4 of the whole): 272 milligrams Banana (1 medium): 430 milligrams Beets (1 cup raw): 422 milligrams Broccoli (1 cup choped and cooked): 457 milligrams Baby Brussels sprouts (13 pieces): 315 milligrams Beans (1/2 cup dried—amounts vary based on variety): 1,813 milligrams Carrots (1 cup chopped): 420 milligrams Carrots (1 cup chopped): 420 milligrams Cherries (1 cup without pits): 342 milligrams Peas (1 cup traw): 354 milligrams Peases (1 cup chopped): 310 milligrams Peases (1 cup chopped): 320 milligrams Parsley (1 cup chopped): 321 milligrams Potato (1 medium baked with skin): 930 milligrams Oquinoa (1 cup cooked): 318 milligrams Salmon (6 ounces): 730 milligrams Spinach (1 cup cooked): 389 milligrams Spinach (1 cup cooked): 464 milligrams Sweet potato (1 cup hopped): 664 milligrams

Magnesium - studies suggest that approximately 50% of U.S. is below the recommended daily amount of magnesium

- One of its main roles is to act as a cofactor in the biochemical reactions continuously performed by enzymes. It's involved in more than 600 reactions in your body, including
- Energy creation
- Protein formation
- Gene maintenance
- Muscle movements
- Nervous system regulation:
 - Source Chlorophyll 7- 10 cups of veggies Nuts seeds
 - Not Mag Oxide not absorbed well

- Works with the mitochondria to work with the Krebs cycle for creation of ATP
- Magnesium calms nerves, slows rate of nerve impulses and VERY important for heart physiology
 Leg cramps
- Constipation large intestine as a muscle needs to relax
- Insomnia Palpitations
- Chronic back pain
- Migraines
- Insulin resistance makes absorption of all minerals
- difficult ALSO NEED VITAMIN D and Calcium for absorption

Magnesium is needed for more than 300 biochemical reactions in the body. It helps to maintain normal nerve and muscle function, supports a healthy immune system, keeps the heartbeat steady, and helps bones remain strong. It also helps adjust blood glucose levels. It aids in the production of energy and protein.



- The highest levels of magnesium in the whole body are in the heart, specifically in the left ventricle, which does the most work.
- Magnesium is the gatekeeper for calcium being allowed into muscle cells to cause contraction.
- Magnesium ushers the calcium out of the cell.
 Without magnesium to guard the channel, calcium floods the cell and leads to hypercontraction of the muscle cells, which translates into angina and even heart attack.
- Strongly convincing data shows low magnesium levels were behind atherogenesis. Couple this "wrong turn" of focus with a population that's been increasing calcium intake without increasing magnesium intake, and you have an exacerbated problem, according to researchers.

Trace Elements /Minerals

In 1912, Nobel Peace Prize recipient, Alexis Carre foreshadowed that we will only be as healthy as our soil.

Micro minerals – below 100 mgs iron, chromium, copper, zinc, iodine, manganese and selenium.

Facilitating a multitude of biochemical reactions
Crucial building blocks for hundreds of enzymes
Being a requirement for normal growth and development as well as neurological functions
Makes vitamins – like B12 needs cobalt
Serving as anti-oxidants
Supporting the blood system
Being necessary for certain hormones
Being required for normal gonadal development

manganese, selenium, and zinc.

and immune response.

mental health.

Top contenders for addition to the list:

Everything we've made, we've made from fossil fuels: energy, food, medicine, and consumer goods. The world has been organized to burn.



As a consequence, the planet is inflamed. Global temperatures records are being broken...oceans are rising...This is the epoch of endless fire. Human destruction is tearing apart the web of life, shredding the network of relationships between organisms and places in which are lives are embedded. Inflammation is a biological, social, economic and ecological pathway, all of which intersect, and whose contours were made by the modern world.

Rupa Marya and Raj Patel, Inflamed

Red Lining

Minerals that are required in small amounts for human health are known as trace minerals or trace elements. These include chromium, copper, fluoride, iodine, iron,

•Boron: Important for healthy bone health, brain function,

•Lithium: Considered a calming mineral and important for

• In the 1930s, the federal government created maps of hundreds of cities, rating the riskiness of different neighborhoods for real estate investment by grading them "best," "still desirable," "declining" or "hazardous."

- Race played a defining role: Black and immigrant neighborhoods were typically rated "hazardous" and outlined in red, denoting a perilous place to lend money. For decades, people in redlined areas were denied access to federally backed mortgages and other credit, fueling a cycle of disinvestment
- City planners also targeted redlined areas as cheap land for new industries, highways, warehouses and public housing, built with lots of heat-absorbing asphalt and little cooling vegetation.
- In Gilpin, a Richmond neighborhood, the average life expectancy is 63 years. Just a short drive over the James River sits Westover Hills, a largely white, middle-income neighborhood that greets visitors with rows of massive oak trees spreading their leaves over quiet boulevards. Life expectancy there is 83 years.
- Today, some of these neighborhoods can be up to 16 degrees hotter than tree-covered parts of the same city.
- Richmond's four hottest ZIP codes all have the city's highest rates of heatrelated emergency-room visits.

Effects on Cardiovascular System

- When the air temperature is hotter than skin temperature, which is typically about 90 degrees, the body gains more heat than it can release.
- When ambient temperature is high, the human body responds via thermoregulation: Blood vessels dilate near the skin to transfer heat from the body's core to the skin, then sweat transfers heat from the skin by evaporation
- The higher the temperature or the longer the heat wave, the more work required of the cardiovascular system to maintain normal temperature; therefore, more intense or longer heat waves are likely to have greater health effects.

CRP is a protein produced by the liver

- When bacteria or other cellular invaders threaten the body, the liver releases CRP as part of the immune response
- Elevated C- reactive proteins are now considered as importantly as blood lipids as a marker for CV health
- This early response is called an acute phase response. It is also referred to as inflammation or an inflammatory response.
- The acute phase response also can occur in chronic conditions, including some autoimmune

diseases.

The Inflamed Heart







- The primary issue with PUFAs is that they are highly unstable. All fats have a temperature with which they oxidize (i.e. become unstable, go rancid, become toxic).
- For PUFAs that temperature is very low. Unstable fats are prone to oxidation.
- Oxidation lead to free radicals. Free radicals lead to cellular damage in your body that can manifest both internally in the form of damaged organs/glands and externally in the form of rapidly aging skin.
- In addition, many of these fats can become unstable before they even enter your body. During processing, many of these "seed" oils are exposed to high heat (imagine trying to extract oil from a grape seed) which can often make the oils go rancid.
- In addition, these oils may be exposed to high heat during travel which can also lead to a damaged and unstable product. This is one of the reasons many of these oils are shipped in dark containers and are required to be refrigerated.

Anti-oxidants – Cooling foods

- Polyphenols- Flavonoids
- Flavonoids: Water soluble plant pigments • The human body cannot produce
- bioflavonoids, so they must be supplied in the diet.
- Yellow & Orange color (Fall leaves i.e. Ginkgo)
- Reduce capillary permeability-Bruising, edema, venous issues
 Inversely associated with
- coronary diseaseProtect Cholesterol from
- oxidative damage
- Antihistaminic- Stabilize mast cell

Polyphenol - Flavonoids Aronia berry (Aronia melanocarpa) - chokeberry Quercetin- Most abundant and most potent flavonoid in plants. High antioxidant activity Onions,(esp onion skins) Increase stabilization of collagen apples, green tea, violets, Maintenance of elastin in pansies, citrus. connective tissue, blood vessels Quercetin may help relieve hay and muscle. fever, sinusitis, and asthma Reduction of edema because it can block allergic Supports vision reactions to pollen and reduce inflammation in the airways Found to cross blood brain and lungs. barrier: ADD. Alzheimer's. Quercetin blocks an enzyme that leads to accumulation of sorbitol, which has been linked to nerve, eye, and kidney damage in those with diabetes.

Hawthorn leaf, flower & berry (Crataegus oxycantha)

- Increases the pumping force of the heart muscle to boost cardiac output
- Causes direct dilation of smooth muscle in coronary vessels thereby lowering their resistance and increasing blood flow
- Vitamin C content helps to strengthen tiny capillaries
- Anthocyanidins and proanthocyanidins in the herb help to stabilize collagen
- Good source of rutin and OPC's





Pomegranates

- Pomegranate juice protects nitric oxide against oxidative destruction and enhances the biological actions of nitric oxide. by LJ Ignarro, et al. Nitric Oxide, 2006
- Pomegranate juice inhibits oxidized LDL uptake and cholesterol biosynthesis in macrophages, by B Fuhrman, et al. Journal of Nutritional Biochemistry, 2005
- Pomegranate juice consumption for 3 years by patients with carotid artery stenosis reduces common carotid intima-media thickness and LDL oxidation. by M Aviram, et al. Clinical Nutrition, 2004
- Pomegranate extract inhibits androgen-independent prostate cancer growth through a nuclear factor-ĸB-dependent mechanism. by MB Rettig, et al. Molecular Cancer Therapy, 2008
- Nitric oxide helps keep blood vessels elastic and open. This is a mechanism involved in prevention of ED associated with plaque and narrowing of blood vessels
- Plaque is made by LDL uptake by macrophages. Inhibiting this uptake inhibits plaque production in the blood vessels.
- Pomegranate studies for prostate cancer are encouraging. Activity on NF-kB signifies potent antiinflammatory activity

Tissue State of Heat

Caused by

Lack of fluids and nutrition to cool – fails to counterbalance the natural warming nature of vital energy.

Builds up when stagnation or tension blocks the flow of vital energy - vital energy is <u>very</u> active and does not sit still and tends to build up heat when blocked.

Over-stimulation (physiological or psychological). Response to threat. Adrenaline is heating.



Elder Flower (Sambucus canadensis) Dried flowers – sweet, sour, slightly acrid, cool, sedative and stimulating

> diaphoretic – brings sweat in those with weak circulation Dried – sedative diaphoretic, reducing heat, opening pores and disperses blood Elder opens all the tubes





- Bitter, pungent, acid, diffusive, astringent, aromatic
- One of the primal remedies of Western herbal traditions
- "Master of the blood"
- Along with diaphoretic power makes this the "master of fever"
- Moves blood to or from surface to cool or maintain heat and regulate fluids



Heat clearing herbs

Cooling tonic herbs

Hawthorn leaf, flower & berry (*Crataegus oxycantha*)

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Sour – this flavor is very helpful with irritation and is cooling, especially to the liver

- Rosa Family
 - Hawthorn lf, flower and berry Crataegus spp (also great for capillary fragility due to high proanthocyanidin)
 - Rose hip/flowers Rosa spp
- Strawberry Fragaria
 Peach Prunus persica
- Sumac berry Rhus spp
- Lemon Balm Melissa off.





Self-heal (Prunella vulgaris)

- Draws out heat and infection
- Great poultice for hot /infected wounds
- Indicated specifically for tonsillitis







Rose petals, Tulsi and Oats tea

Roses are an amazing remedy for the heart and soul. Aside from all the medicinal qualities, there is the essence of rose that transcends to a deeper place like no other.

Oats (Avena sativa) is especially useful in dealing with nervous debility surrounding grief or loss

Tulsi is an adaptogen that can easily be grown in our region, where we can harvest abundantly





Bitter tonics Oregon Grape Root Burdock Root Dandelion Root Motherwort Blue Vervain Skullcap

Remember the use of these plants is to increase digestive fluids so as to better assimilate nutrients and help a dry/atrophic system. These can be cooling and dry themselves so either warm and moisten them with other botanicals or use small amounts for shorter time.





Refrigerants

Summer heat - heat disorder of the summer season from exposure to too much heat and humidity.

- Treatment Principle Clear summer heat, restore fluids.
- In addition to clearing heat, these herbs also produce fluids and relieve thirst.
- Watermelon
- Cucumber
- Summer squash
- Mung bean
- Hibiscus flower
- Lemon Balm
- Sumac berry

Symptoms of dryness

- 1. Dry skin, hair, eyes
- 2. Bloating (dry digestive juices)
- 3. Gas
- 4. Constipation/hard stool
- 5. Insomnia caused by heat rising at night
- 6. Joint stiffness
- 7. Anxiety
- 8. Excess heat possibly at first because there are no coolants to help dampen the temperature but then after awhile without nutrition there can be cold because there is no vital energy

Demulcents

- Oftentimes the heat that arises is secondary to a dry/atrophic state where there is a lack of fluids to lubricate/calm the tissue. This is what is referred to as yin deficiency.
 - Marshmallow Althea
 - off.
 - Linden *Tilia spp*Shatavari *Asparagus*
 - Shatavari Aspurugu racemosas
 - Licorice Glycyrrhriza glabra



Demulcents - emollients • Marshmallow (Althea off)

- Slippery Elm (Ulmus fulva)
- Plantain (*Plantago spp*)
- Violet (Viola spp.)
- Mullein (Verbascum thapsus)

Since these are mostly water-soluble nutrients, teas are the preferred method of preparation



Hydration can be with water or oil

Water needs to be soft as it is more easily assimilated than hard water

Since water follows salt, it is also important to have a proper amount of good quality salt in the diet as salt pulls water into tissues that are dried

In this manner salt is an emollient



Sweet Tonics

This is a category that has been brought to us by Traditional Chinese Medicine. At the same time many North American traditional remedies are included here. When you sit and really taste the flavor of an herb, you will often taste a sweetness that might have been underneath the immediate bitter or sour flavor. All sweet herbs are nutritive and building.

Vegetable oils

Good oils are

therapeutic for dryness as well as atrophy

Essential Fatty Acid

Evening Primrose

Black Cumin

Borage Black Currant

Olive Sunflower seeds



Sweet Tonics (Carbohydrates)

- American Ginseng (Panax quinquefolium)
- Siberian Ginseng (Eleutherococcus senticosus)
- Codonopsis (Codonopsis pilosula)
- Rehmannia Root (Rehmannia glutinosa)
- Slippery Elm (Umla fulva)
- Astragalus (Astragalus membranaceus)
- Licorice (*Glycyrrhiza glabra*)





Ganoderma lucidum/applanatum Highly nutritious Polysaccharide



Cooling foods

- Eat vegetables, especially those high in water content, like cucumber, cabbage, and lettuces.
- Eat lighter meals.
- Eat liquid-based meals, like soups and stews.
- Eat fruit, especially melons.
- Try adzuki or mung beans, which are refrigerants.
- Black beans, kidney beans
- Reduce your use of ice, which can dilute digestion.
- · Focus on foods that are sweet, astringent, and bitter.

Berry Betterment

- 2 Bilberries Vaccinium myrtillus
- 2 Elderberries Sambucus nigra
- 2 qt. Water
- ½ c Honey
- ¹/₂ c Blueberry concentrate Vaccinium corymbosum
- ı c Brandy (optional)
- This formula is meant to be made into a syrup. Begin by either measuring out 1 cup of each of the berries or weigh 2 ounces each. Into sauce pot add the herbs and water. Bring to a boil then simmer until the water is reduced by half. Strain through a tightly woven sieve so that you can mash the berries extracting the pulp with out skins or seeds, discard the herbs.
- The pulp with out skins or seeds, discard the herbs.
 Mix in the honey while it is still warm. Add the blueberry concentrate, you may want more or none at all. The brandy is optional, for longer shelf life of the formula it is helpful unless you can refrigerate and consume the syrup in two weeks.

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- Green space can be transformative.
- Trees cool down neighborhoods by several degrees during a heat wave.
- When planted near roads, trees can help filter air pollution.
- The presence of green space can even reduce stress for people living nearby.



Botanica Mobile Clinic, Charlottesville, VA



- With Herbalista.org as our mentor, we have set up medicinal herb and gardening classes at local community gardens.
- This is a direct way herbalists can engage with their communities to introduce food and medicine plants but more IMPORTANTLY, it provides a forum to learn from communities we work with.



