

HIGH SODIUM/POTASSIUM RATIO

The sodium to potassium ratio on a hair mineral analysis has been called the vitality ratio, the life-death ratio, electrical ratio or the internal ratio.

THEMES BY WHICH TO UNDERSTAND THE SODIUM/POTASSIUM RATIO

Adrenal strength indicators. Sodium and potassium are both associated with the activity of the adrenal glands. Aldosterone, an adrenal cortical hormone, causes sodium retention and affects serum potassium as well. An elevated sodium/potassium ratio is an indicator of adrenal strength.

Electrical charging, discharging and cell membrane potential. Sodium is pumped out of the cells, while potassium is pumped into the cells by the so-called sodium pump mechanism. This causes an electrical charge or potential across all cell membranes. It is very important for our health.

A higher sodium/potassium ratio is associated with a higher electrical charge on the cells or a charging state. A low sodium/potassium ratio is associated with a discharging state and a lower electrical potential between the inside and the outside of the cells.

This is to be contrasted to the calcium/magnesium ratio which measures the electrical potential or charge of a person with respect to their environment

Yin and yang. A higher sodium/potassium ratio is more yang. A lower ratio is more yin.

A movement indicator. The idea of movement is that one can use certain indicators on a hair mineral analysis to tell how a person is moving ahead in one's life

When elevated, the sodium/potassium ratio is associated with movement in the proper direction and faster forward movement.

Power versus will. Sodium is associated with basic strength and power, such as that found in the adrenal glands. Potassium is associated with the quality of the strength of the will, as represented by the thyroid gland.

Sodium covers and protects potassium. When sodium is high relative to potassium, a person generally has plenty of power or energy with which to function and express one's will. When the ratio is low, there is not enough power to cover the willfulness of the person. As a result, stress and disease begin to set in and stress becomes chronic and more intense.

Potassium liberates and frees sodium. This means that potassium, the will, assists sodium - the adrenal energy, adaptive energy or vitality of the person - to act in the world.

The chakra system of the body. Sodium is related to the first and second chakras of the physical body, which is the location of the adrenal glands. Potassium may be associated with imbalances in the fourth and fifth chakras of the physical body, which is where the thyroid gland is located. An elevated or normal sodium/potassium ratio indicates better chakra balance, in general, than a low sodium/potassium ratio.

A directional indicator of the oxidation rate. A high sodium/potassium ratio is more associated with an increasing or speeding up of the oxidation rate. A low sodium/potassium ratio is more associated with a collapse or slowing of the oxidation rate.

Hormonal relationships. Hormonal relationships are rough associations, however, they are important and interesting relationships. Among the adrenal hormones, sodium is associated with aldosterone (a pro-inflammatory hormone), while potassium is related to cortisol and cortisone (an anti-inflammatory hormone).

Sodium is associated with the fast-acting adrenal hormones, while potassium is associated with the longer-acting or slower-acting adrenal hormones.

Among the female hormones, sodium is associated with estrogen levels, while potassium is associated with progesterone levels. This can become important in conditions such as premenstrual syndrome and estrogen dominance.

For this reason, a higher sodium/potassium ratio may be associated with estrogen dominance, although this is not always the case, as many people with a low Na/K ratio also have some estrogen dominance due to liver toxicity and sluggishness.

An inflammation indicator. Higher aldosterone than cortisol, represented by a high sodium/potassium ratio, is associated with inflammation because aldosterone is a pro-inflammatory hormone, whereas cortisol and cortisone are anti-inflammatory hormones.

Acute versus chronic stress. A high Na/K ratio is associated with acute stress, while a low Na/K is associated with chronic stress.

An important emotional/mental indicator. A mildly elevated sodium/potassium ratio is associated with a more positive response to life, forward-looking, upbeat and moving ahead. A low sodium/potassium ratio is associated with a more negative attitude, chronic stress, and negative emotions such as frustration, resentment and hostility.

Other mineral relationships. Zinc raises potassium and lowers sodium. Copper, in contrast, raises sodium and tends to lower potassium. This is one way that these trace minerals control the levels of the macrominerals or electrolytes.

Effects of other minerals on the sodium/potassium ratio. Many minerals raise the ratio such as manganese, chromium, selenium, iron, aluminum and nickel.

Vitamins can also affect the ratio. Vitamin C, E and the B-complex vitamins raise the Na/K ratio. Vitamins A and D and F tend to lower it.

MORE DETAILS ABOUT A HIGH NA/K RATIO

As the sodium/potassium ratio rises on a hair mineral analysis above 5, more symptoms involving this ratio are likely to arise. These may include a tendency for acute stress, inflammation, pain, water retention, edema, higher blood pressure or a fluctuating blood pressure due to water retention and/or kidney stress. These are among the prominent physical symptoms that come with higher aldosterone levels in relation to cortisol.

When the Na/K ratio is above 12, it is an indicator for liver and kidney stress.

The Na/K Ratio and PMS. In young adult women, a high sodium/potassium ratio can be more associated with high-estrogen premenstrual tension with symptoms of inflammation, anger, acne, bloating, breast swelling and tenderness. As a general rule, the sodium/potassium ratio rises before the menstrual period.

Emotional and mental symptoms of a high sodium/potassium ratio. These may include a tendency for anger or acute emotional stress. A mildly high ratio may also indicate a forward-looking attitude, moving ahead in life and a more positive, future-oriented approach to life

STRESS AND THE SODIUM/POTASSIUM RATIO

Acute stress. A high sodium/potassium ratio above 5 on a hair analysis is more associated with acute stress. The reason is as follows:

- 1) Acute stress causes increased adrenal gland activity.
- 2) This results in a rise in the secretion of the hormone aldosterone.
- 3) Aldosterone secretion causes sodium to be retained in the body by the kidneys. Thus the sodium level in the soft tissues rises.

Sodium retention by aldosterone is part of the alarm reaction or fight-flight reaction to stress. Early in the alarm reaction, the potassium level remains low. Thus, on a hair mineral analysis, the ratio of sodium to potassium is elevated early in the alarm stage of stress.

Acute stress or alarm reactions in slow oxidation. Some people ask how it is possible to have an alarm reaction if one is a slow oxidizer or in an exhaustion stage of stress. The answer is that fast and slow oxidation are indicators of a more yang or more yin body situation or posturing. They are also associated with the alarm and the exhaustion stages of stress according to the stress theory of disease.

Slow oxidation or an exhaustion stage of stress or a yin condition, one can still mount an acute stress response. This is indicated by a high sodium/potassium ratio and is a common occurrence. This is essential if a person is to move out of slow oxidation.

Double acute stress. A fast oxidizer with a high sodium/potassium ratio is a double inflammation pattern.

Double chronic stress. A slow oxidizer with a low sodium/potassium ratio means a double exhaustion pattern, which is definitely less desirable.

MORE ON INFLAMMATION

Aldosterone is a pro-inflammatory hormone. It tends to increase inflammation in the body. Cortisol and cortisone, associated more with potassium levels, are anti-inflammatory hormones because they diminish inflammation. The pro and anti-inflammatory hormones must be in a good balance with each other for optimum health.

A person with a high sodium/potassium ratio may be secreting more aldosterone, in relation to cortisol. Because there is more pro-inflammatory hormone, a tendency for inflammation exists in the body. This is particularly true when the sodium/potassium ratio is greater than 10.

Inflammation can take the form of any 'itis', such as arthritis, bursitis, colitis, or tendonitis. It is a tendency for aches and pains. A high sodium/potassium ratio is also a tendency for mental excitation. A ratio that persists between 3 and 6 suggests a forward-looking person. A ratio greater than 6 suggests aggressiveness and anger.

SYMPATHETIC DOMINANCE – A SECONDARY INDICATOR

A hair sodium/potassium ratio above 5 is a secondary indicator of a sympathetic dominant personality type. These are individuals who overuse the sympathetic or fight-or-flight nervous system. They are usually very mentally and/or physically active. The tendency is greater when the Na/K ratio is above 12.

These people may overdo on exercise, run around a lot, worry a lot or keep themselves in a fight-or-flight mode. Note that the body becomes exhausted from this tendency and has gone into a parasympathetic state of slow oxidation. However, the person keeps right on using the sympathetic system instead of slowing down. This prevents the recovery of health.

Note: the primary indicator for sympathetic dominance is a low potassium level, not the sodium/potassium ratio.

SOME TOXIC METALS CAN ELEVATE THE SODIUM/POTASSIUM RATIO

A hidden or overt copper, cadmium and mercury toxicity usually elevates sodium levels and can cause a higher sodium/potassium ratio. This is true even if the cadmium or mercury are hidden within body tissues and not revealed on the hair mineral analysis.

As cadmium, copper or mercury are eliminated, a retest mineral analysis will reveal an improved sodium/potassium ratio.

An exception is if a retest is performed during a toxic metal elimination. The sodium/potassium ratio may temporarily rise or fall as any toxic metal is being eliminated. This occurs because the metals irritate the kidneys. This may cause the sodium/potassium ratio to be temporarily skewed. The ratio will normalize when the metal elimination is complete.

ALUMINUM TOXICITY, ALONG WITH BIOUNAVAILABLE IRON AND/OR MANGANESE, CAN ELEVATE THE SODIUM/POTASSIUM RATIO

A higher ratio of sodium to potassium may also be due to an accumulation of toxic amounts of aluminum in the body. This will elevate the Na/K ratio, as will an excess of biologically unavailable manganese or iron. This is a very common situation, and true in practically all slow oxidizers. The metals appear to be in the form of oxides, which are damaging and can cause oxidant damage and tissue irritation.

Manganese and iron are not toxic metals. However, when present in excess, usually in a biounavailable form, they seem to raise the sodium level in relation to the potassium level. This may occur because they irritate the adrenal glands or kidneys in such a way as to alter the balance of sodium in relation to potassium.

We know this because as excesses of these metals are eliminated, the sodium to potassium ratio decreases, often substantially.

SALT-EATING AND THE SODIUM/POTASSIUM RATIO

Many people assume that a high sodium/potassium ratio indicates an excessive salt intake. While possibly true, in many instances salt eating has little impact upon the sodium/potassium ratio.

A high ratio frequently occurs in people who consume little salt. The main causes of a high sodium/potassium ratio are excessive aldosterone secretion due to stress or anger, toxic metals or a zinc and magnesium deficiency. Salt-eating plays a secondary role.

We recommend everyone avoid table salt, which is a very poor quality food. One may have sea salt (unrefined salt), which contains more magnesium and trace elements.

We recommend limiting salt slightly when the sodium/potassium ratio is above 12, especially if blood pressure is elevated. However, it is not usually necessary to eliminate all salt from the diet. Sea salt is often tolerated much better than table salt.

KIDNEY AND LIVER STRESS AND THE IMMUNE RESPONSE

A sodium/potassium ratio greater than 10 or less than 1.5 often indicates kidney stress, liver stress and perhaps an impaired immune response.

MORE ADVANCED CONCEPTS

The ratio of sodium to potassium in the soft tissues of a human being is probably the most critical ratios to consider when interpreting a hair mineral analysis. The sodium/potassium ratio is not just critical for human beings. It also appears to be critical for animals, plants, rocks and minerals. This is quite extraordinary and speaks of a universality of the ratio of sodium to potassium in all of nature, both living and non-living.

The ratio in human beings is about 2.5. In animals it is about 0.5. In plants, it tends to be between 0.1 and 0.2. In the soil it tends to be about 0.12-0.15. In minerals, it tends to be roughly 0.02 although it varies with each mineral. You will notice that as one moves up the ladder of the complexity of life, the ratio goes up by about a factor of 5 each time.

© This material was edited and adapted from an article by Dr. Lawrence Wilson, the Center For Development. Any information missing from the original article was deemed to be irrelevant or unnecessary for our purposes. Dr. Wilson is an amazing resource for hair mineral analysis education. He may be contacted at POB 54, Prescott, AZ 86302-0054, 928-445-7690.