

Understanding A High Sodium/Potassium Ratio

A normal sodium/potassium ratio is between 2.5:1 and 4:1. Commonly, the sodium/potassium ratio is elevated on a hair analysis. A high ratio is associated with specific symptoms including acute stress, inflammation, and at times symptoms associated with zinc and/or magnesium deficiency. This pattern also may indicate the emotion of anger or an aggressive personality. It may also be due to the presence of toxic metals.

ACUTE STRESS

Sodium and potassium are regulated mainly by the adrenal hormones aldosterone and cortisol. Aldosterone causes sodium absorption and simultaneous excretion of potassium. This occurs in the kidneys, the intestines, and in the sweat and saliva. (Guyton, P. 945-946). Cortisol has a somewhat opposite effect. A high sodium/potassium ratio on a hair analysis is an indicator of a relatively greater secretion of aldosterone in relation to cortisol.

Sodium retention by aldosterone is part of the alarm reaction or fight-or-flight reaction to stress. Early in the alarm reaction, the potassium level remains low. Thus, on a tissue mineral test, the ratio of sodium to potassium is elevated. In contrast, a low sodium/potassium ratio indicates chronic stress, higher cortisol secretion and an exhaustion stage of stress.

What if a person has a high sodium/potassium ratio but is a slow oxidizer? That is, the levels of sodium and potassium remain low even though the ratio of sodium to potassium is high. Slow oxidation often indicates an exhaustion stage of stress. However, within the exhaustion stage one can have an acute stress response indicated by a high sodium/potassium ratio. This is a common occurrence. A slow oxidizer with a low sodium/potassium ratio means a double exhaustion stage pattern, which is definitely less desirable.

INFLAMMATION

Aldosterone is a pro-inflammatory hormone because 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 high sodium/potassium ratio is associated with greater secretion of aldosterone in relation to cortisol. Because there is a greater amount of pro-inflammatory hormone, a tendency for inflammation exists in the body. This is particularly true when the sodium/potassium ratio is greater than 10:1.

Inflammation can take the form of any *'itis'*, such as arthritis, bursitis, colitis, or tendinitis. It is a tendency for aches and pains. A high sodium/potassium ratio also indicates a tendency for mental excitation. A ratio that persists between 3 and 6 suggests a forward-looking person. A ratio greater than 6:1 suggests aggressiveness and anger.

HIDDEN COPPER, MERCURY AND CADMIUM TOXICITY

A high sodium/potassium ratio may reflect hidden copper toxicity, especially in the slow oxidizer. This is because copper elevates sodium and depresses potassium readings. The copper may be present even if the hair copper level is low or normal. Hidden copper toxicity must be considered if the potassium level is less than 4 mg%, or if the calcium level is over about 80 mg%.

Cadmium, mercury, nickel and at times aluminum, manganese and iron toxicity can also elevate sodium levels and can cause a high sodium/potassium ratio. This is true even if the toxic metals are hidden within body tissues and not

revealed on the hair test. As cadmium, copper, mercury or other toxic metals 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 as cadmium, for example, is being eliminated. This occurs because cadmium passes out of the body through the kidneys. As cadmium is eliminated, it may stress the kidneys slightly. This causes the sodium/potassium ratio to rise further. The ratio will normalize when the elimination is complete.

ZINC AND MAGNESIUM DEFICIENCY

A high sodium/potassium ratio often indicates a zinc and/or magnesium deficiency. Zinc lowers sodium and raises the potassium level. Zinc deficiency is very common today. Magnesium also has a lowering effect upon sodium, and is deficient in many diets today.

The zinc or magnesium levels on the hair analysis may appear normal or even elevated. However, we recommend supplementing with zinc, or a product containing zinc, when the sodium/potassium ratio is elevated. More zinc is needed if the ratio is very high. Magnesium or Pamin may also be very helpful to correct the ratio.

SALT 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 has

little impact upon the sodium/potassium ratio. A high ratio frequently occurs in people who consume no salt whatsoever! The main causes of a high sodium/potassium ratio are excessive aldosterone secretion due to stress, or a zinc and magnesium deficiency. Salt plays a secondary role.

We recommend restricting salt in individuals with a high sodium/potassium ratio, especially if the blood pressure is elevated. However, it is not usually necessary to eliminate all salt from the diet. Also, sea salt is often tolerated better than table salt because it has more magnesium and other trace elements. We do not recommend eating table salt, as it is missing its trace minerals and often has aluminum or other toxic metals added to it.

KIDNEY STRESS AND THE IMMUNE SYSTEM

A very high sodium/potassium ratio may indicate kidney stress and an imbalanced immune system. While a low sodium/potassium ratio is associated with a weak immune system, a high ratio may indicate autoimmune problems, or an overactive immune system. Rheumatoid arthritis and Hashimoto's thyroiditis are examples of autoimmune diseases.

REFERENCES

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