

Latest Fad: ASEA Water

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I don't normally write about fad supplements, but a patient asked me about this one and I believe it is dangerous, deserving of exposure.

So someone electro-magnetizes water, calls it ASEA and markets it as the latest cures-whatever-you've-got miracle. Lowly little salt water morphs into (according to the ASEA website) a "perfectly balanced mixture of redox signaling molecules, ready to "enhance and activate the native antioxidants needed to protect and detoxify the cells and at the same time supplement the signaling molecules needed to repair or replace damaged cells and restore healthy tissue and immune function."

Theoretically it works by exposing the body to highly reactive oxygen species (ROS), which stimulate the body's anti-oxidant systems. To fight these dangerous compounds, which you knowingly swallowed, the body boosts its anti-oxidant mechanisms to fight off the onslaught. Can this be good for you?

First a bit of background about ROS and the body.

Most oxygen in the air is O₂, with an equal number of protons and electrons and an innocuous, net zero charge. ROS form when oxygen, in the presence of radiation, sunlight or heat, reacts with something else and ends up unbalanced, with an extra electron or two. The extra electron makes ROSs highly chemically reactive, meaning they'll attack anything, trying to find a proton for balance. Hydrogen peroxide, nitrous oxide and ozone are some examples.

ROSs also form as natural byproducts of the body's metabolism. They trigger signals to the body about where there is injury and inflammation, and the body sends in platelets, white blood cells and anti-oxidants to heal. These compensatory events also ensure ROSs own demise, before they can cause too much damage.

Normally, cells attenuate ROS damage with enzymes such as superoxide dismutase, catalase and glutathione peroxidase. These enzymes neutralize the "reactive"

part of ROSs to turn them back into uncharged, harmless O₂. Other anti-oxidants such as vitamin C, vitamin E, **uric acid**, polyphenols and **glutathione** also neutralize ROS. The body is not stupid. When faced with a flood of new ROS, it makes more of the neutralizing enzymes, at least until the ROSs disappear.

ROS's damage is not selective. Oxidation and damage of DNA (our genetic material) leads to mutations in babies and cancers in any age group. Oxidized polyunsaturated fatty acids in fat (lipid peroxidation) triggers damage to blood vessel walls which leads to clogged arteries. When amino acids in proteins and enzymes are oxidized, it eradicates their ability to function normally. Damaged protein leads to damaged cells, which then die.

Back to ASEA: ASEA's website, pretending to make the science comprehensible, instead snows us with chemical structures and generalities. The mind blurs and the brain moves on, perhaps missing the fact that they haven't told you which specific ROSs are present in what quantities, or given any proof of safety or efficacy in humans.

The most likely ROS generated from water are hydrogen peroxide and superoxide, and I only surmise that they are present in ASEA. Would you buy it if those were listed as ingredients?

The company's website sites studies that prove that ASEA contains ROS. They show that ASEA provokes test-tube cell cultures to boost anti-ROS enzymes 8-fold. They don't prove that ASEA's ROS do no cell damage. They don't show what would happen inside a real body. They have no way of proving that the anti-oxidant enzymes persist for any significant length of time.

Cells are usually efficient – They make what they need for the moment (like to fight ROS), then stop making it. So is a transient influx of anti-oxidants enzymes worth even a small amount of potential ROS damage? If your goal is to dial up your cellular anti-oxidant mechanisms, you could do it by standing in hot, smoggy traffic, without spending money on funny salt water.

Zapping water to generate ROS is a *bad* thing. Our bodies have complex mechanisms to eliminate ROS as quickly as possible, because they destroy tissue, mutate genes and cause cancer. They cause much of the damage from pollution. These are not questionable dangers – tons of scientific studies verify the damage and disease that ROS cause. That’s why, for years, we take anti-oxidants, not oxidative stressors like ASEA.

Yes, ROS are natural by-products of metabolism, by-products that the body works hard to inactivate to prevent inflammation, oxidation and damage. Why would you knowingly ingest more of them?

Ingredients: Water. Sodium chloride, 123 mg per 4 oz.

Sales: The company recruits people like you and me to sell for tiered commissions, like a pyramid scheme.

Cost: \$150 for four 32 ounce bottles (a month’s supply).