Get High on Glutathione

Sean Strub comes up short when tested for glutathione, the antioxidant that's key to his immune function and liver healthby Judy Shabert, MD, as told to Lark Lands

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This month, Judy Shabert, MD, MPH, RD, a researcher and clinical instructor of obstetrics and gynecology at Harvard University Medical School who specializes in the nutritional aspects of HIV disease, analyzes the glutathione blood levels of POZ founder Sean O. Strub.

Although Sean's overall test results continue to look good—with CD4s at TK and an undetectable viral load—a newly marketed blood test shows that his shortage of a vital antioxidant may spell trouble. A major 1997 study by Stanford University researchers showed a significant correlation between low levels of glutathione (glue-ta-THIGH-own) and shorter lives for PWAs. The measure of glutathione in Sean's lymphocytes (white blood cells that include CD4s) registered on the low end (shown as **GSH LEVEL** 476) of normal (shown as **REFERENCE RANGE**).

This low-normal reading doesn't cut it, especially since the test also indicates (not pictured) that his cells are highly activated—mounting a vigorous immune response to HIV and other viral or bacterial assaults. When lymphocytes activate, they produce oxidative stress—free radicals and other cell-damaging molecules that must be removed by glutathione for the cell to continue functioning normally. Without sufficient glutathione, the CD4 cell is crippled. Oxidative stress, an ever-present problem in HIVers, can also be created by a long list of stressors, including all kinds of drugs.

The more stressors you have, the more glutathione and other antioxidants you need. Yet in most HIVers, these nutrients are deficient because the body burns through them to power its immune response, repair and replace damaged and destroyed cells, and break down medications. Too few antioxidants means oxidative stress runs unchecked, causing reduced immune function and damage to other body cells and tissues. In particular, research shows that low levels of glutathione promote CD4-cell suicide (apoptosis). So Sean may be experiencing needless destruction of CD4 cells, compromising his ability to fight HIV.

In addition, glutathione is the main detoxifier used by the liver to break down anti-HIV meds, including the Crixivan (indinavir), d4T (Zerit) and delavirdine (Rescriptor) that Sean is taking. Inadequate glutathione can compromise that liver capacity. A deficiency may also worsen the damage to the mitochondria (energy factories inside cells) likely caused by nucleoside analogs

(drugs like AZT). Mitochondria require large amounts of glutathione for proper function, so insufficient production combined with high demand could also increase nuke toxicity. The result of all this for Sean? A bigger risk of complications from his meds and a lesser chance for long-term use.

If Sean were HIV negative, I might accept his low-normal reading as adequate. But given his body's high demand for glutathione, I would advise that he increase his nutrient supplementation. Since glutathione should be created inside cells at the moment that it's needed, it's best to give the body the building blocks (rather than glutathione itself) and let it do the rest. The approach I often recommend includes: N-acetyl-cysteine (NAC,1,500–3,000 milligrams per day), vitamin B-6 (25 mg, three times per day), alpha-lipoic acid (600 mg per day), vitamin C (1,000 mg per day), and the amino acid glutamine (5 to 10 grams per day; for those with wasting—which can deplete glutamine stored in muscles—up to 30 to 40 grams per day may be required to reverse wasting and replenish glutathione). Altogether, the lower dosages of these nutrients cost in the range of $50 to $80 per month.

By optimizing Sean's glutathione level, he'll increase his odds for keeping his CD4 cells alive and well, boosting his liver's drug-metabolizing and toxin-eliminating capacities, and limiting the free-radical damage to his body. Last but not least, since glutathione is key to the ability to exercise—during a workout, almost a third of the muscle tissue's glutathione is rapidly depleted—maintaining a surplus allows the body to replenish itself. Unfortunately this doesn't relate to Sean at the moment—he's been slouching off on his exercise regimen. Let's hope this fitness issue of *POZ* turns that around.

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