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# Scurvy Today

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Didn't scurvy disappear many years ago when British sailors started taking oranges and limes with vitamin C? No, we still have scurvy but the symptoms are not obvious. We now know that scurvy is low vitamin C (ascorbic acid) in the body. In high school, I learned that 10 mg/day of ascorbate prevented scurvy.<sup>1,2</sup> Wrong again. Sometimes 10 mg/day is sufficient but actually scurvy is a balance<sup>3</sup> of ascorbate input, the amount used by the body, and the amount discarded in the urine. Ascorbate in the urine? Sorry, but urine contains ascorbate when the body is healthy.<sup>4</sup>

Is scurvy a problem now? Plasma ascorbate, the measure of scurvy, is an important measure of the immune system strength.<sup>5,6</sup> With a strong immune system, the white blood cells, WBC, can kill or remove<sup>7</sup> infections, bacteria, viruses, dead or damaged cells, toxins, and cancer. Lymphocytes and macrophages can often destroy cancer cells if we have a strong immune system. Weak white blood cells can be strengthened by increased ascorbate intake.

Ascorbate not only strengthens our white blood cells, it can neutralizes free radicals that contribute to ageing. Ascorbate can enter cancer cells<sup>8</sup> to kill them. Ascorbate may prevent some heart and stroke problems by protecting cholesterol from oxidation and by making blood vessels strong and flexible.

## **Wouldn't I know if I had scurvy?**

Many symptoms of scurvy, cancer, and other diseases are similar: joint and muscle pain, stiff calves, poor healing, tiredness, weight loss, irritability, diarrhea, anemia, wounds and infections that don't heal, slow recovery from illnesses, flu, fever, and easy bruising. Sometimes symptoms just do not appear even though scurvy or near scurvy is weakening our immune system. Curing scurvy may eliminate these symptoms. Most of the time, doctors do not expect an "old fashion" disease like scurvy. With scurvy having varied or missing symptoms, doctors first look for other diseases that may be simultaneous with scurvy.

## **Who has scurvy now?**

In one college<sup>4</sup> group, 2% had scurvy, Table 1. For outpatients at several hospitals, 5 or 6% had scurvy.<sup>1,4</sup> For patients admitted to a Montreal hospital, 19% had scurvy.<sup>1</sup>

A group of cancer patients in a hospice<sup>9</sup> received an estimated 40 mg/day of ascorbate. Tests showed that 30 % had scurvy and lived an average of 29 days compared to other cancer patients at the same hospice who had normal plasma ascorbate and lived 121 days. The two groups may not have been initially similar.

## How much ascorbate should we take?

The government recommends an ascorbate intake of around 100 mg/day, a little more. for smokers, and 2,000 mg/day as a safe maximum.

Group tested	Scurvy	Near Scurvy
College, AZ <sup>4</sup>	2	16%
HMO, AZ <sup>4</sup>	6.3	30.4
Birmingham outpatient <sup>1</sup>	5	
Montreal outpatient <sup>1</sup>	6	
Montreal inpatient <sup>1</sup>	19	
Hospice cancer pt. <sup>9</sup>	30	42
Acute bronchitis <sup>10</sup>	35	
Acute cardiovascular <sup>11</sup>	50+	
Chronic drug addicts <sup>12</sup>	100-	

These amounts are very low compared to most animals that can make ascorbate, as they need it. A 150-pound goat can make 13,000 mg/day<sup>5</sup> or even 100,000 mg/day when under stress.<sup>13</sup> Thus a dose of 13,000 mg/day may be reasonable for humans with cancer or other high-stress maladies. Humans cannot make ascorbate.

Normal plasma ascorbate levels are 0.5 to 2.0 mg/dL.<sup>14</sup> and scurvy is defined as zero to 0.2 mg/dL.<sup>4</sup> Many people in the normal range may be near scurvy<sup>15</sup> if in the low part of the normal range or quite healthy if in the high normal range. A level of around 2.0 mg/dL or higher I would call therapeutic.

## Examples

Many cancer patients have been successfully treated with vitamin C<sup>5,6,8,13</sup> In one test, Dr. Abram Hoffer, MD, PhD, treated 134 patients with highly advanced cancers of many types. Those who accepted his vitamin regimen lived 45 months after seeing him. Those who refused vitamins lived only 2.6 months.

However, many oncologists object to ascorbate supplementation. They say ascorbate might protect the cancer cells that radiation and chemotherapy are trying to kill. But actual tests<sup>16,17</sup> showed that ascorbate greatly extended the life and comfort of patients getting ascorbate. Ascorbate helped control my aggressive prostate cancer without surgery, radiation, chemotherapy, or pain.<sup>8</sup>

Chronic drug addicts have a very poor diet and almost invariably have scurvy.<sup>12</sup> One doctor gave 30 consecutive chronic addicts sodium ascorbate at 25,000 to 85,000 mg/day dissolved in milk for 4 to 6 days along with other vitamins, minerals and protein supplements. All 30 patients were apparently cured with clear thinking, good appetite, good sleeping, no withdrawal pains, and no big desire for a hit. One patient tried a hit shortly after starting the ascorbate but got no high. This temporary cure was maintained while gradually reducing the ascorbate and supplement dosages and improving diet. Patients were followed for only a few months.

## Plasma Ascorbate Measurement

Blood tests can measure plasma ascorbate, but this is not commonly done. The test is slow and complicated. The author's blood was drawn in North Carolina and analyzed in Utah. The customary white blood cell count measures the number of cells but not their strength. Fortunately, plasma ascorbate can be indicated by a urine test.<sup>14</sup>

Healthy patients have significant ascorbate in their urine while scurvy patients have little or none. Several types of test strips allow doctors or patients to measure urine ascorbate. The strips should distinguish a.) scurvy, b.) normal or c.) high-normal (therapeutic) plasma ascorbate.

Dipstick Reading		Probable Plasma Ascorbate, mg/dL
Color	Level, mg/dL Urine, mg/dL	
Original dark blue-green	0 to 10	Scurvy 0 to 0.2
Medium blue-Green	20 to 30	Normal 0.5 - 2.0
Light yellow-green	50 to 100	Therapeutic, Over 2

One example is the "VitaCheck-C"<sup>18</sup> urine dipstick, Table 2. Urine samples maybe taken at anytime unless the patients are taking ascorbate supplements. Oral ascorbate peaks in the blood after 2 or 3 hours.<sup>5</sup> Then it tapers down almost to its initial level in about 12 to 18 hours. For those taking ascorbate supplements, the test can be run preferably 24 hours after any ascorbate supplements. The colored patch of the test strip is momentarily dipped in fresh urine, excess is drained off, and color read after 30 seconds. Scurvy is present if the color changes only a little or not at all.

## Discussion

Immunotherapy is strengthening the immune system to protect the body from disease, infections, toxins and foreign bodies. When a cancer patient is first diagnosed, he may have a normal plasma ascorbate.<sup>6</sup> Surgery can drop the plasma level in about 6 to 8 hours. Radiation and chemotherapy each drop the ascorbate level considerably, often down to scurvy. Other stresses such as a spider bite<sup>6</sup> can cause scurvy in a few hours.

The urine ascorbate test is especially useful during therapies for cancer, cardiovascular diseases, or major surgery. This test is a guide to help patients get started on the right ascorbate dose.

If a patient's plasma ascorbate is low, he will have weak white blood cells and he may wish to take oral ascorbate supplements. The amount of ascorbate needed for a patient can vary widely,<sup>19</sup> from a small amount to 200,000 mg/day. Too much ascorbate causes loose bowels and temporary diarrhea. Preferably the patient can ask his doctor to recommend a therapy to raise his plasma ascorbate to normal or above. Alternately, the patient could start with 1,000 mg/day in 4 divided doses preferably with meals. Each day the dose can be increased by 1,000 mg or more. Ascorbate can be taken as pills or powder dissolved in water, milk or juice. The ascorbate can consist of ascorbic acid, the common vitamin C, or sodium ascorbate. If intravenous ascorbate is required, medical supervision and certain tests<sup>8</sup> are required. Therapeutic amounts of ascorbate from our diet are often unreasonable—consider taking 12 gallons of orange juice to get 10,000 mg/day of vitamin C!

Knowledge of scurvy and ascorbate level could help doctors treat patients by strengthening their weak immune systems. Patients, if they know their ascorbate level, can cure their scurvy and might strengthen their immune systems. Companies selling vitamin C may wish to include a few urine test strips with each bottle.

Knowledge of plasma ascorbate level might help people improve their health by strengthening their immune system and thus have fewer sicknesses.

## **Conclusion**

Scurvy is infrequently detected but often present. Stress decreases the ascorbate present in the blood and weakens the immune system. The urine dipstick test allows easy and quick detection of scurvy and low plasma ascorbate levels. Curing scurvy helps to control many diseases.

Because ascorbate is so widely useful, patients should know if their blood ascorbate is high enough to maintain good health. If needed, they can make corrections, often with large doses of ascorbate. Scurvy can develop slowly or quickly and be hidden by other illnesses. Both the patients and their doctors should consider testing for scurvy as frequently as warranted.

Because a surprising number of people have scurvy or low plasma ascorbate, wider use of vitamin C might improve our general health. Aged or hospitalized patients are particularly at risk.

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