Cancer Treatment and the role of Nutrition

Nutrients can improve cancer outcome by:

Inducing ‘suicide’ (apoptosis) in cancer cells reverting cancer cells back to healthy cells improving immune functions to recognize and destroy cancer cells helping the body to wall off, or encapsulate, the tumor.

Nutrition is a low-cost, non-toxic, and scientifically-proven helpful component in the comprehensive treatment of cancer. Adjuvant (helpful) nutrition and traditional oncology are synergistic, not antagonistic. The advantages in using an aggressive nutrition program in comprehensive cancer treatment are, in this critical order of importance:

- Avoiding malnutrition
- Reducing the toxicity of medical therapy while making chemotherapy and radiation more selectively toxic to the tumor cells
- Stimulating immune function
- Selectively starving the tumor

Nutrients acting as biological response modifiers assist host defense mechanisms and improve outcome in cancer therapy.

Nutrients as biological response modifier

In the early phase of nutrition research, nutrient functions were linked to classical nutrient deficiency syndromes: e.g., vitamin C and scurvy, vitamin D and rickets, niacin and pellagra. Today nutrition researchers find various levels of functions for nutrients. For example, let us look at the ‘dose-dependent response’ from niacin:

- 20 milligrams daily will prevent pellagra
- 100 mg becomes a useful vasodilator
- 2,000 mg is a cholesterol lowering agent
While 10 milligrams of vitamin E is considered the RDA, 800 IU was shown to improve immune functions in healthy older adults. While 10 mg of vitamin C will prevent scurvy in most adults, the RDA is 60 mg, and 300 mg was shown to extend lifespan in males by an average of 6 years.

All of the above is endorsed by the National Institutes of Health.

The dietary requirement of a nutrient may well depend on the health state of the individual and what you are trying to achieve. In animal studies, 7.5 mg of vitamin E per kilogram of body weight was found to satisfactorily support normal growth and spleen to body weight ratio. Yet, consumption at twice that level of vitamin E was essential to prevent deficiency symptoms of myopathy and testis degeneration. Intake at seven times base level of vitamin E was required to prevent red blood cell hemolysis. Intake of 27 times base level provided optimal T- and B-lymphocyte responses to mitogens.

You can accelerate the rate of a reaction by increasing temperature, surface area, or concentration of substrates or enzymes. Clearly, above-RDA levels of nutrients can offer safe and cost-effective enhancement of metabolic processes, including immune functions. Therapeutic dosages of nutrients may be able to reduce tumor recurrence, selectively slow cancer cells, stimulate the immune system to more actively destroy tumor cells, alter the genetic expression of cancer, and more.

Nutrients alone can reverse early cancer

Cancer is not an ‘on or off’ switch. No one goes to bed on Sunday night perfectly healthy and then wakes up Monday morning with stage 4 colon cancer metastasis to the liver. Cancer takes months and probably years to develop. Research has shown that, in the early stages of cancer cell development, nutrients alone can reverse ‘pre-malignant’ cancers, which under the microscope are identical to cancer cells, yet have not invaded beyond their own ‘turf’. As cancer begins its hazardous deterioration
downhill, the body has built-in mechanisms to stop this process, including DNA repair, cell-to-cell communication, macrophage engulfment, tumor necrosis factor, collagen encapsulation, and anti-angiogenesis agents to shut down the making of new blood vessels from the tumor.

This concept is very pivotal to the notion that nutrition can improve outcome in cancer treatment. For decades, researchers have held the notion that once the cell turns cancerous, only ‘forceful eradication’ can help the patient.

Maybe this is not true. Cancer, in its early stages, can be reversed by nutrients alone. Once cancer has deteriorated to stage 4 malignancy with extensive metastasis, the patient probably needs more than nutrients alone to reverse the disease.

Our 60 trillion cells in the human body are constantly dividing. The DNA, which contains the body’s blueprints to make a completely new you, must "unzip" the spiral staircase of chromosomes, and then duplicate itself exactly, then ‘re-zip’ the spiral staircase of DNA.

This process occurs billions of times daily. The chance for a mistake is quite high, which is why our bodies have many mechanisms in place to correct mistakes in the beginning. Yet, if the mistake cell continues to deteriorate through its many different shades of cancer; including anaplasia, dysplasia, and metaplasia, then the final stage of neoplasia might occur.

*Can Nutrients Reverse the Cancer Process?*
As this process is deteriorating, nutrients have been shown to not only arrest the slippery slide toward cancer, but also to reverse the damage and help the body to generate healthy cells from pre-malignant cancers.

**In high doses:**

- folate and B-12 can reverse bronchial metaplasia or cervical dysplasia
- beta-carotene and vitamin A can reverse oral leukoplakia; so can vitamin E
- selenium can reverse pre-cancerous mouth lesions
- vitamin C and calcium can reverse colon polyps
- vitamins A, C, and E reversed colorectal adenomas
- vitamin E can reverse benign breast disease, such as fibrocystic breast disease, which increases risk for breast cancer by 50-80%
- vitamin E and beta-carotene injected into the tumor reversed mouth cancer in animals

Pre-malignant and malignant cells look almost identical under the microscope. Since nutrients can reverse, or re-regulate, pre-malignant
cells, it becomes entirely probably that nutrients can help to re-regulate malignant and metastatic cells. Maybe we do not have to kill all the cancer cells in order to cure the cancer patient.

40% of cancer patients die from malnutrition

A position paper from the American College of Physicians published in 1989 basically stated that total parenteral nutrition (TPN) had no benefit on the outcome of cancer patients. Unfortunately, this article excluded malnourished patients, which is bizarre, since TPN only treats malnutrition, not cancer. Most of the scientific literature shows that weight loss drastically increases the mortality rate for most types of cancer, while also lowering the response to chemotherapy. Chemo and radiation therapy are sufficient biological stressors alone to induce malnutrition.

In the early years of oncology, it was thought that one could starve the tumor out of the host. Pure malnutrition (cachexia) is responsible for somewhere between 22% and 67% of all cancer deaths. Up to 80% of all cancer patients have reduced levels of serum albumin, which is a leading indicator of protein and calorie malnutrition. Dietary protein restriction in the cancer patient does not affect the composition or growth rate of the tumor, but does restrict the patient’s well being.

Parenteral feeding improves tolerance to chemotherapeutic agents and immune responses. Malnourished cancer patients who were provided TPN had a mortality rate of 11%, while a comparable group without TPN feeding had a 100% mortality rate. Pre-operative TPN in patients undergoing surgery for gastrointestinal cancer provided general reduction in the incidence of wound infection, pneumonia, major complications, and mortality. Patients who were the most malnourished experienced 33% mortality and 46% morbidity rate, while those patients who were properly nourished had a 3% mortality rate with an 8% morbidity rate.

In 20 adult hospitalized patients on TPN, the mean daily vitamin C needs were 975 mg, which is over 16 times the RDA, with the range being 350-
2,250 mg. Of the 139 lung cancer patients studied, most tested deficient or scorbutic (clinical vitamin C deficiency). Another study of cancer patients found that 46% tested scorbutic, while 76% were below acceptable levels for serum ascorbate. Experts now recommend the value of nutritional supplements, especially in patients who require prolonged TPN support.

**Why use nutrition in cancer treatment**

1) *Avoiding malnutrition*

40% or more of cancer patients actually die from malnutrition, not from the cancer. Nutrition therapy is essential to arrest malnutrition. Among the more effective non-nutritional approaches to reverse cancer cachexia is hydrazine sulfate.

Hydrazine sulfate is a relatively non-toxic drug that shuts down energy metabolism in cancer cells. [Hydrazine is available through BioTech Labs (800-345-1199) or Great Lakes Metabolics (507-288-2348) or Life Support (209-529-4697) or Life Energy (Vancouver 604-856-0171).]

Protocol is to take 60 mg capsules: first 3 days 1 cap at brk, day 4-6 take 1 cap at brk and supper, day 7-45 take 3 caps TID (3x/day), off for 1 wk; contraindications are like those of an MAO inhibitor: no aged cheese, yogurt, brewer’s yeast, raisins, sausage (tyramine content), excessive B-6, or overripe bananas.

2) *Reducing the toxic effects of chemo and radiation*

It has been observed that properly nourished patients experience less nausea, malaise, immune suppression, hair loss, and organ toxicity than patients on routine oncology programs. Antioxidants like beta carotene, vitamin C, vitamin E, and selenium appear to enhance the effectiveness of chemo, radiation, and hyperthermia, while minimizing damage to the patient’s normal cells, thus making
therapy more of a ‘selective toxin.’ An optimally-nourished cancer patient can better tolerate the rigors of cytotoxic therapy.

3) **Bolster immune functions**

When doctors say “We think we got it all”, what they are really mean is we have destroyed “all” the DETECTABLE cancer cells. But it is now up to your immune system to find and destroy the cancer cells that inevitably remain in your body. A billion cancer cells are about the size of the page number at the top of this page. We must rely on the capabilities of the 20 trillion cells that compose an intact immune system to destroy the undetectable cancer cells that remain after medical therapy. There is an abundance of data linking nutrient intake to the quality and quantity of immune factors that fight cancer.

4) **Sugar feeds cancer**

Tumors are primarily obligate glucose metabolizers, meaning ‘sugar feeders’. Humans today not only consume about 20% of their calories from refined sucrose, but often manifest poor glucose tolerance curves, due to stress, obesity, low chromium and fiber intake, and sedentary lifestyles.

5) **Anti-proliferative factors**

Certain nutrients, like selenium, vitamin K, vitamin E succinate, and the fatty acid EPA, appear to have the ability to slow down the unregulated growth of cancer. Various nutrition factors, including vitamin A, D, folacin, bioflavonoids, and soyabeans, have been shown to alter the genetic expression of tumors.

*Putting it all together*

Finnish oncologists used high doses of nutrients along with chemo and radiation for lung cancer patients. Normally, lung cancer is a ‘poor
prognostic’ malignancy, with a 1% expected survival at 30 months under normal treatment. In this study, however, 8 of 18 patients (44%) were still alive 6 years after therapy. Essentially, high dose nutrients cut tumor recurrence in half. In the course of 6 years study, researchers found that the more vegetables consumed, the longer the lung cancer patient lived. By adding an aggressive nutrition component to your comprehensive cancer treatment program, you improve the odds for a complete remission/regression and probably add significantly to quality and quantity of life.

**Nutritional oncology program should include:**

1) **Food.**

If the digestive system works and the patient can consume enough food through the mouth, then this should be the primary route for nourishing the patient. The diet for the cancer patient should be high in plant food (grains, legumes, colorful vegetables, and some fruit), unprocessed low in salt, fat, and sugar, with adequate protein (1-2 grams/kilogram body weight).

2) **Supplements.**

Additional vitamins, minerals, amino acids, food extracts (i.e. bovine cartilage), conditionally essential nutrients (i.e. fish, flax, and borage oil; coenzyme Q-10), and botanicals (i.e. spirulina) can enhance the patient’s recuperative powers.

3) **Total parenteral nutrition (TPN).**

There are many cancer patients who are so malnourished (weight loss of 10% below usual body weight within a 1 month period and/or serum albumin below 2.5 mg/dl) that we must interrupt this deterioration with TPN. When the patient cannot or will not eat adequately, TPN can be an invaluable life raft during crucial phases of cancer treatment.
4) **Assessment.**

Means of assessment include: health history form to detect lifestyle risk factors; physician’s examination; anthropometric measurements of height, weight, and percent body fat; calorimeter measurement of basal metabolic needs; and various other laboratory tests.

5) **Education.**

A pro-active patient can help reverse the underlying causative factors of cancer.