



Integrative nutritional approach to cancer

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This article is inspired by Dr Shari Lieberman, a PhD nutritionist who lectures on nutritional therapies. Her talk, recently delivered at the Fellowship in Antiaging Medicine in the USA, has been adapted to write this article, and I would like to give her credit for the research done on this topic.

Cancer patients are frequently told to discontinue their antioxidant intake during chemotherapy. Does this include them not taking any fruit and vegetables as well?

As a starting point, it is interesting to make note of the following evidence in the literature, with regards to antioxidant use in cancer patients:

1. Since the 1970's, 280 peer-reviewed in vitro and in vivo studies, including 50 human studies involving 8 521 patients, 5 081 of whom were given nutrients, have consistently shown that non-prescription antioxidants and other nutrients do not interfere with other therapies for cancer.¹
2. 50 human clinical randomised or observational trials have been conducted using nutrients such as vitamins A, C, E, D, K, selenium, cysteine, B vitamins and glutathione.²
3. Antioxidants enhance the killing of therapeutic modalities of cancer treatments, protect normal cells and decrease chemotherapies side effects. In 15 human studies, 3 738 patients who took antioxidants and other nutrients had increased survival rates.³
4. Furthermore, in a cancer treatment review 2007, March 14 2007, Block, Koch and Mead report the impact of antioxidant supplementation on chemotherapeutic efficacy. Antioxidants studied include glutathione, melatonin, vitamin A, vitamin C, n-acetylcysteine, vitamin E and ellagic acid. None of the studies showed a decrease in efficacy of chemotherapy when using antioxidant supplementation during chemotherapy. In fact many of the studies indicated that antioxidant supplementation resulted in increased tumour responses, increased survival and less toxicity than controls.
5. Mantovani, Maccio et al did a phase 2 study with antioxidants in the diet and supplemented, phar-

maco-nutritional support. They showed efficacy and safety in patients with cancer-related anorexia and oxidative stress.⁴

6. Human pharmacokinetics indicate that IV ascorbic acid (vitamin c) in pharmacologic concentrations could have an unanticipated role in cancer treatment. Extracellular, but not intracellular ascorbic acid-mediated cell death by necrosis or pyknosis.^{5,6}
IV vitamin C is safe (except G6PD deficiency) with no toxicity. Complementary and alternative practitioners worldwide are using ascorbic acid in doses of 60 to 100g twice weekly through IV, to effect tumour lysis.
7. Large, well-designed studies of antioxidant supplementation with concurrent chemotherapy are clearly warranted. Integrated practitioners around the world are increasingly making use of chemotherapies (where needed and indicated), combined with nutritional therapies, to achieve better results.

Let us take a look at some of the nutrients that can be beneficial in cancer patients:

- a) IV vitamin C already mentioned
- b) LaPd - a dietary supplement also known as Polymva, which contains a lipoic acid/palladium complex (LaPd) developed by Dr Merrill Garnett. The mva stands for minerals, vitamins, amino acids (thiamine, riboflavin and cyanocobalamine, formyl-methionine and acetylcysteine).
For more information call the suppliers in the USA: Gary Matson 866 7659682. The cost is \$200 a bottle, which lasts about a week. If Dr Lieberman follows the case the price is reduced to \$115. (see case studies later)
- c) Green tea A compound in green tea, EGCG, a polyphenol blocks matrix metalloproteinases - responsible for metastasis and tumour invasion. It is also a powerful antioxidant, induces apoptosis in cancer cells only, inhibits Tyrosine kinase receptors which activate platelet-derived growth factor, insulin-derived growth factor, epidermal growth factor, fibroblast growth factor and vascular



endothelial growth factor.

Egcg can cross the blood brain barrier and acts as an anti-tumour agent in brain cancers including medulloblastoma. Chronic lymphocytic leukaemia cells release vascular endothelial growth factor, which increases the apoptotic resistance of cancer cells. Egcg inhibits receptor tyrosine kinase and increases apoptosis in CLL resulting in cell death. Green tea inhibits HER-2 receptors in squamous cell carcinoma and is synergistic with taxol.

The human T-cell lymphotropic virus is associated with T-cell leukemia and HTLV-1-associated myelopathy/tropical spastic paraparesis. Daily intake of Egcg diminishes HTLV significantly compared to controls. Other studies confirm inhibition of skin cancer topically and orally.

- d) Curcumin is anti-metastatic, antioxidant, anti-mutagenic (protects DNA), inhibits cancer cells adhesion and invasion for many types of cancer including lung, liver, skin, breast, brain, ovarian, prostate, myeloma. It also helps overcome multi-drug resistance by inhibiting MDR-1 gene expression, also activates p53 to halt neuroblastoma. Curcumin inhibits topoisomerase II (like the drug Etoposide), it also increases drug sensitivity of cancer cells (eg. vinblastine), it also may inhibit bone metastasis from hormone refractory prostate cancer. Curcumin is a normal cell protector, and protects against DNA damage, and mutagenesis resulting in cancer.
- e) Lycopene This is found in tomato juice, pizza sauce and tomato paste. It is more bio-available in cooked than raw tomatoes. It is a powerful antioxidant, anti-mutagen and anti-inflammatory. It restores gap junctional function in cancer cells and decreases proliferation. The risk for prostate, lung, stomach, pancreas, colon, rectum, oesophagus, oral cavity, breast and cervix cancers are reduced by taking lycopene. Phase I, II, III studies are currently being done on lycopene 6-60mg/d for prostate, breast and colon cancer. Prostate cancer patients receiving lycopene had smaller tumours (80% vs 45%), lower PSA, less involvement of surgical margins.
- f) Fish oil is reported to stop metastatic spread of disease.
- g) Other nutrients known to be of benefit include vitamin D, selenium, CoQ10, quercetin, and other antioxidants.

SOME DOSAGE RECOMMENDATIONS

1. Green tea. 3 cups a day; or 200mg tablet of Egcg 1-3 per day
2. Vitamin C. Maintain 200mg/dl blood level, at least 60g twice a week intravenously (not to be given in G6PD deficiency states)
3. Lycopene 10-40mg daily

4. Curcumin 500mg 1-6 times daily
5. Other plant compounds and antioxidants can be combined: eg selenium, vitamin E, CoQ10, vitamin D
6. These can be combined with conventional therapies if your oncologist is happy to work with an integrated specialist
7. Dr Lieberman uses 1-2g quercetin per day and high oral vitamin C of 3g in her cancer prevention programs.

IV Vitamin C Protocol

Only intravenous vitamin C produces high plasma and urine concentrations with potential anti-tumour activity. Efficacy of vitamin C cannot be judged from clinical trials that only use oral dosing. Peak plasma levels can be 70 fold higher with IV than oral dosing. Physiologically attainable concentrations by intravenous administration are selectively toxic to cancer cells.

Cancer patients have depressed circulatory, cellular and tissue vitamin C levels and reserves. There is synergism between conventional treatments (surgery, radiation, chemo) when used together. Response is best when maintaining continuous high vitamin C plasma levels.

Vitamin C increases production and strengthens extracellular collagen, preventing metastasis. There is an improvement in immune system functioning (immune cell activity and interferon). It is toxic to cancer cells, not normal cells. Tumour cells have leaky membranes which allow vitamin C flooding and cytotoxicity by induced peroxidation.

Dosing:

Start with lower doses like 10 to 15g intravenously to assess tolerance. It is essential to exclude G6PD deficiency (glucose-6-phosphate deficiency) before contemplating intravenous vitamin C. Up to 25g should be mixed with Ringer's Lactate Solution. Sterile water should be used for larger amounts. The dose is adjusted to achieve transient plasma concentrations of 400mg/dl, 2-3 times a week, or 200g/dl if taking 600mg lipoic acid. This protocol should be maintained for a year. A dose of 60g or more twice a week is needed for cancer patients.

Dose effect examples:

- a) 15g intravenously twice a week improves patient's wellbeing, reduces pain and increases survival time
- b) 30g intravenously twice a week - metastatic lesions in lung and liver of a man with primary renal cell carcinoma disappeared in a matter of weeks
- c) Resolution of bone metastasis in a patient with primary breast cancer was reported using 100g intravenously twice per week.

Tests to consider doing include: SMAC, G6PD test (essential), serum tumour markers, clinical and radiological assessment. Patients with rapidly growing tumours



or heavy tumour load should be carefully monitored for tumour lysis. (Tumour lysis: sudden pain in area of tumour, swelling, tumour haemorrhage (internal and external), hyperpyrexia, severe hypertension, tachycardia and azotemia.

Patients should take 5g oral vitamin C on non-intravenous days. Vitamin C is similar to glucose, which facilitates its entrance into cancer cells. There is no research thus far on insulin-potentiated vitamin C therapies. Researchers suggest not using dextrose to administer the vitamin C, since dextrose can cause tumour growth.

IV vitamin C dosing: Infusion rate suggested is 0.5-1g per minute.

Vitamin C in grams	sterile water	Ringer's
1- 15 g	250	250
30g	500	500
60g	750	750
75 g	750	1000
100g	1000	1000

Equal volumes of intravenous solution is removed from the bag or bottle prior to adding concentrated sodium ascorbate (vitamin C 500mg/ml)

CASE STUDIES

The following case studies are compelling reasons to consider an integrated approach to cancer management. Ovarian cancer accounts for more deaths than cervical and uterine cancer combined and is the most lethal gynaecological cancer. Due to poor survival rates many women turn to alternative therapies. Two patients were studied with advanced ovarian cancer.

Patient 1:

Diagnosed with stage IIIc papillary serous adenocarcinoma, and after surgery received carboplatinum / paclitaxel therapy (6 cycles). After the first cycle her Ca125 went below 35 and her CT scan was negative. Consolidation paclitaxel therapy was given for 6 month cycles. Prior to starting initial chemo she received: 1 200 IU vitamin E, 300mg CoQ10 , 9 000mg vitamin C, 25 000 beta carotene, and 10 000 vitamin A daily.

Prior to the IV paclitaxel she received 60g IV vitamin C. The dose was tailored for a pre and post infusion level of 200mg/dl. She received IV twice weekly during consolidation therapy, after which she received it once weekly.

After one year, IV was continued every 10-14 days. Ca 125 remains normal, no evidence of disease 3.5 years after diagnosis.

Patient 2:

Diagnosed with stage IIIc mixed papillary serous sero-

mucinous adenocarcinoma. There was a delay in initiation of chemotherapy, due to co-morbid conditions and evidence of progression of disease after surgery. Three months after surgery the patient received 6 cycles of carboplatinum / paclitaxel therapy. She started oral antioxidants prior to receiving chemotherapy. Her Ca 125 normalised, but she still had disease in the pelvis.

She refused consolidation therapy with paclitaxel, preferring to receive IV vitamin C therapy. 60g IV was given to maintain plasma levels above 200mg/dl twice per week.

After 3 years her Ca 125 is 5 and her physical exam is normal.

Other examples of IV vitamin C uses:

- Fibromyalgia
- Infections: viral and bacterial
- Antiaging therapy

SOME OTHER CASE STUDIES THAT DR LIEBERMAN IS FOLLOWING

1. Multiple myeloma

Summary: This patient was diagnosed with stage 4 malignant melanoma in May 2006 at age 65. He had lesions in his ribs and compression fractures in several vertebrae (T11-L2). He opted for lighter chemotherapy: velcade, doxil and decadron, refused radiation, and was being prepared for bone marrow transplant.

In the same month he was also started on LaPd (polymva mentioned earlier). His dosage went up to 12 spoons a day, and by June 16, spoons a day.

By January 2007 all his lab tests were normal, his quality of life 100%, and his bones had healed. The polymva dose was diminished to 2 teaspoons a day and laboratory tests in May 2007 showed a mildly elevated B2 microglobulin, and an elevated IgG. The polymva dose was again increased to 16 scoops a day.

Follow-up is continuing, the patient currently feels great, has no pain and is doing well. His US oncologist has described this case as phenomenal and stated that he had never before witnessed such a fast recovery.

2. Non-small lung cancer

Summary: This woman was diagnosed with stage 4 NSCLC in July 2004 at age 61. She was given Taxol and Carboplatin from July - Sept 04. Her C scan in September showed tumours shrunk to ½. She had 2 myocardial infarcts in October 2004 and the chemo and MI's weakened her heart muscle. She started LaPd in October 2004, at 8 teaspoons a day. Five months later her CT scans showed no tumours - the lung cancer had cleared completely. Last checked May 2007: still completely clear.

3. Prostate cancer

Summary: A 45-year-old male was diagnosed in



December 2006 with early stage prostate cancer. He was told a 9-month watching and waiting period was required to decide about the treatment. After reading about the side effects of prostatectomy he refused the treatment, deciding instead on an integrative, non-invasive approach.

Lab analysis showed Omega 3, methionine, and glutamic acid deficiencies and he was given supplementation. His heavy metal screening showed nickel, lead and aluminium in his urine. IV chelation was done to remove the heavy metals.

In January 2007 LAPD was started and he took 16 teaspoons a day until June 2007, then decreased to 8 teaspoons a day. He was also given vitamin, mineral supplements including Omega 3, CoQ10, Angiostop (a Chinese herbal formula), and Immune 26 as part of his comprehensive plan. A weekly dose of Myer's cocktail and glutathione IV was also given. Hyperbaric oxygen was also given intermittently.

By June his PSA had dropped to 1.5 (was 5.8). He had a high resolution ultrasound, confirming no trace whatsoever of the prostate cancer.

4. NSCLC (another case)

Summary: Diagnosed at age 74 in June 2005, this patient had a compression fracture. 10 radiation treatments were given to her vertebrae and Tarceva was started. This was for palliative care only. She started LaPd at the same time. In August, PET and CT scans showed a stable, not growing tumour. In October 2005 her CT scan revealed complete resolution of the tumour. Her oncologist had given her 8 months to live post-diagnosis and was shocked by her rapid recovery. He said that he had never seen this cancer clearance before. Tarceva and radiation do not cure stage 4 NSCLC.

She is currently still completely clear and is being monitored by PET scans and on a maintenance diet of 2 spoons a day of polymva.

5. Breast cancer

Summary: Diagnosed as an infiltrating ductal carcinoma right breast. Had a radical mastectomy in December 2000 and reconstructive surgery. She was stage 0-1 and her breast cancer was oestrogen and progesterone positive. She took tamoxifen but discontinued it after 10

days due to side effects. She had a lump reappear in her right breast in February 2005, near the mastectomy scar. This was removed surgically.

She refused chemo and radiation, opting to take 8 teaspoons a day of Lapd from October 2005 to June 2006. Her follow-up scans, including PET, are clear.

6. Glioblastoma

Summary: This man was diagnosed at age 48 with stage 4 glioblastoma in December 2003. He was told it was extremely aggressive and would double every 7 to 14 days. He had surgery later that month, removing visible tumours, and also had 33 radiation therapies. He was told by his oncologist that it would be his last Christmas.

He did take dilantin (an antiepileptic). He refused chemotherapy.

He started polymva in January 2004. By September 2004 his PET scan was completely clear, but in October 2004 he had a seizure. The surgeon thought it was recurrence, the oncologist thought it was radiation damage.

Exploratory surgery was done in October 2004. The pathology report revealed 98% of the tissue was necrotic (due to radiation damage), and 2% was unknown. Follow-up MRIs every few months have shown no cancer recurrence. He remains in remission and currently is taking 2 teaspoons of polymva a day

Note:

- High dose vitamin C (IV or oral) should be taken 6 hours away from LaPd
- Alpha lipoic acid shouldn't be taken whilst taking Lapd
- CoQ10 works synergistically with Lapd
- Lapd is available as a dietary supplement called polymva

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