

**Adaptive Medicine  
in  
Cancer Management**  
International Oxidative Medical Association  
2000

**Dr. Martin Dayton, D.O., M.D., C.C.N.**  
**Changing Trends  
in  
Medicine and Cancer**

- In **1971**, President Richard Nixon had the United States declare war on cancer with expectations of finding a solution in 5 years.
- The availability of published nutritionally related cancer research was sparse.
- Therapeutic use of nutrition to address cancer was considered unscientific and inappropriate by a rigid allopathically oriented medical mainstream.

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In **2000**, twenty-nine years and over 40 billion dollars later, despite numerous breakthroughs, the war has not been won.

- Availability of published non-mainstream related cancer research is overwhelming.
- The therapeutic use of alternative methods adapted to the needs of cancer patients is considered more and more scientific by a more tolerant medical mainstream.

Principles

Adaptive Clinicians are concerned with efficiently providing that which is necessary for optimal function and repair and removing barriers that interfere with function and repair.

**Strategic Principles in  
Traditional vs. Adaptive Medical Oncology are Different in Emphasis**

Cancer acts as a parasite that takes from the cellular community of the body without contributing in return.

It is like an unwelcome free loading houseguest.

To get rid of the houseguest, two strategies prevail:

1. Destruction of the guest;

2. Changing the internal environment of the house to not be hospitable to such unwanted guests.

The former strategy reflects the traditional allopathic approach **emphasized by** conventional medicine.

The later strategy reflects the **Holistic** approach **emphasized by** Adaptive medicine.

These approaches are both overlapping and **complementary**.

### **Goals of Adaptive Medicine in Cancer Therapy Include:**

- Reduction of toxicity from chemotherapeutic and radiation therapies while enhancing tumor killing capacity
- Reduction of side effects such as fatigue, hair loss, mouth sores, nausea, vomiting, appetite loss, and organ wasting and failure
- Enhancement of immunity
- Prevention from cancer spreading via growth, metastasis and local invasion
- Protection against developing cancer causing effects of radiation and chemotherapy
- Protection against development of further cancer in cancer prone individuals
- Improvement of complete or partial remission by exerting direct effects on the tumor by changing the underlying conditions that allows the cancer to exist
- Augmentation of duration and quality of life

***Beating Cancer with Nutrition, Quillin, 1998***

**Adaptive Medicine**

**involves modifying**

**how the**

**genes of an individual**

are expressed!!

### Nutrients are fundamental biological response modifiers

Nutrients have different effects in different quantities under different circumstances.

Each **individual** patient is **unique** and may respond differently to nutrients depending on genetic predisposition and circumstance.

Individual response to and requirements for nutrients are subject to dramatic change with changes in activity and state of health.

### The Quantities of Nutrients Used May Be Adapted to Influence the Clinical Effects

- In a laboratory rat experiments, vitamin E at 7.5 mg/kg produces normal growth.
- At **27 times** that amount, 292mg/kg, vitamin E optimizes T and B cell responses to mitogens.

*Bendich: Dietary vitamin E requirement for optimal immune response in the rat. J Nut., 116:675, 1986 Nutrition*

### The Qualities of Nutrients Used May Be to Selectively Influence Clinical Effects

**Tocopherol**, the form of vitamin E prevalent in soy, is less effective in limiting breast cancer growth than another form of vitamin E, **tocotrienol**, prevalent in rice. Tocotrienols inhibit both estrogen responsive and estrogen unresponsive malignant breast cells.

*Lipids 1998:33 461-469*

### Nutrients May Be Used to Modify Biological Response in Cancer Prevention

According to the Harvard School of Public Health survey involving 88,756 R.N.s, **taking multiple vitamins** over 15 years lowers cancer of the colon risk by 75%.

*Ann. Intern. Med 126:517-24,1998*

In a study involving 974 men who previously had skin cancer, supplementation with **selenium**, resulted in a 63% reduction in the incidence of prostatic cancer during a 10 year period. The subjects were treated with 200mcg /day for 4.5 years and followed for 6.5 years.

*Clark: Decreased incidence of prostatic cancer with selenium supplementation: results of a double-blind cancer prevention trial. Br J Urol 81:730-34,1998*

### **Biological Response Modifying Nutrients Can Be Used Therapeutically Individually For Greater Adaptive Benefit**

Vitamins A, D, B12, and folic acid help repair DNA, down regulate tumor expression, and induce **apoptosis** in cancer cells. (Note: Apoptosis means programmed cell death. Normal cells are programmed to die to make room for others. Cancer cells lose such programming and continue to proliferate out of control.)

*Prasad: Vitamins regulate gene expression and induce differentiation and growth inhibition of cancer cells. Arch Otolaryngo. Head and Neck Surg, 119: 1133,1993*

### **Biological Response Modifying Nutrients Can Be Used Synergistically For Greater Adaptive Benefit**

**Vitamin C and B12** administered synergistically to animals with implanted tumors cause significant **tumor regression and survival**.

*Poydock, Am. J. Clin. Nutr ,vol.54, 1261S,1991*

The chemoprotective effects of **selenium, magnesium, vitamin C and vitamin A** are increased with the number of nutrients used concurrently in carcinogen exposed animals.

*Rao, Japanese J. Can. Research, Vol.81,1239, Dec.1990*

The use of nutrients adapted appropriately to individual patient needs is rewarding. However, Parenteral Nutritional support in Oncology is controversial.

**The Negatives**

Meta-analysis of 12 randomized pre 1984 cancer patient studies was used to analyze the benefits of parental nutrition on **quality and length of life**. The results ranged from **disappointing** to **contra-productive**. However, severely malnourished patients were said not to be adequately represented in patient populations studied.

The American College of Physicians declared: “**Routine** use of parenteral nutrition in cancer to improve survival or tumor response among patients receiving chemotherapy is not recommended.”

**Exceptions** include bone marrow transplants and severely malnourished patients where the risks of complications such as infection, metabolic and fluid imbalances are outweighed by the potential benefits.

*Guidelines: American College of Physicians, Parenteral Nutrition in Patients Receiving Cancer Chemotherapy. Ann. Intern. Med.1989: 110: 734-6*

Some clinicians mis-interpret the position of the American College of Physicians to mean that parenteral nutrition is useless in cancer patients, **period**. Others generalize that **enteral** and **oral nutritional supplementation** are also useless, **period**

### **Parenteral Nutritional Support in Oncology also has...**

#### **Positives**

Pure **malnutrition** is said to be responsible for **22% to 67%** of all cancer **deaths**. Up to 80% have reduced albumin, a sign of malnutrition.

*Dreizen, Postgraduate Medicine, vol.87, no.1,163, Jan.1990*

The concept of **starving the tumor** by withholding needed nutrition at the expense of patient well-being is not well founded. Dietary protein restriction **does not decrease tumor growth**.

*Lowery, Surgical Forum, vol.28, 143,1997*

**Tumors** are **resistant to starvation** and most studies find the host is harmed more than the tumor by nutritional deficiencies.

*Axelrod, Vitamins and Hormones,vol.22, 591,1979*

*Goodgame, Am. J. of Clinical Nutrition,vol.32,2277, 1979*

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Tumors grow more rapidly in starved animals.

*Norton, Cancer, vol.45, 2934,1980*

Malnourished cancer patients who were given TPN had a mortality of **11%**. Comparable patients without TPN feeding had **100%** mortality.

*Harvey, Morbidity and Mortality in Parenterally Nourished Cancer Patients, Cancer, 43, 2065-9-702,1979*

Of 49 patients with lung cancer receiving chemotherapy, those that had TPN had an 85% complete remission vs. 59% remission for those who did not.

*Valdivieso, Cancer treatment Reports, vol.65,145, 1981*

Parenteral feeding improves tolerance to most chemotherapeutic agents and immune responses.

*Eys, Cancer, vol. 43,2065,1979*

(citations from Beating Cancer with Nutrition by Patrick Quillin, 1998)

**Is it possible that adaptive nutrition stops cancer, while maladaptive nutrition proliferates cancer ?**

**What role does sugar play?**

Diets high in simple sugar are known to worsen cancer progression. The routine use of traditional dextrose sugar rich, vital nutrient deficient parenteral feedings need to be reviewed in the treatment of cancer patients.

Tumors have a relatively high rate of anaerobic glycolysis.

*Rothkopf: Fuel utilization in neoplastic disease: implications for the use of nutritional support in cancer patients. Nutrition, Supp. 6(40):14s, July, 1990*

*van Nys: Nutrition and Cancer, physiological relationships. Ann Rev Nutr,5:435, 1985*

Sugar in the refined form such as sucrose or fructose inhibits cellular immunity.

*Sanchez: Role of Sugars in human neutrophilic phagocytosis. Am J Clinical Nutr 26:1180-4,1973*

*Ringsdorff: Sucrose, neutrophil phagocytosis and resistance to disease. Dent Sur 52:46-8,1997*

*Bernstein, J: Depression of lymphocyte transformation following oral glucose ingestion, Am J Clinical Nutr 30:615,1997*

Progressive increase in sucrose in laboratory animals diet leads to a dose dependent decline in antibody production.

*Nadler, J of Nutr, Apr.1972*

A 16 country epidemiological study suggests that sugar consumption is a major cancer risk factor.

*Rothkopf, Nutrition, supp,(6):14-16S,1990*

Simple sugar intake is associated with increased risk of breast cancer while diets high in complex carbohydrates are associated with a decreased risk.

*Carroll, "Dietary factors in hormone- dependent cancers "Current Concepts in Nutrition Vol. 6:25-40, NY, Wiley & Sons,1977*

*Carroll,"Dietary Fats and Cancer", Am J Clin Nutr, 53: 1964S-7S, 1991*

Animals fed equal calories from simple sugars developed more mammary tumors than the ones fed complex carbohydrates.

*Hoehn, Nutr & Cancer, 1:27-31,1979*

*Low carbohydrate parenteral formulas may have the ability to selectively starve tumors, slowing down tumor growth.*

*Demetrakopoulos, Cancer Research,vol.42,756,1982*

*Lowery, Surgical Forum, vol.28, 143,1997*

If Reducing Sugar in Nutrition is Beneficial, What Might Be the Effects of Extreme Sugar Reduction on Cancer?

**Two cases of metastatic cancer were reported as part of a study of psychiatric patients treated with parenteral insulin.**

**Hypoglycemic coma was induced by insulin injection.**

One patient had metastatic carcinoma of the cervix controlled with analgesics. She had lost 16 pounds prior to initiating daily insulin therapy.

The initial dose of 20 units of insulin was gradually increased up to 180 units. By the fifth week the mental illness was no longer problematic; weight had increased 6 pounds and pain had left.

By the 6<sup>th</sup> week she was put into coma for 30 minutes. Subsequently, the duration of induced coma was increased up to 2 ½ hours.

Therapy was administered 5 days per week for 6 weeks. The glucose level was never brought below 22 mg. %.

Both the mental illness and cancer disappeared and had not returned as of the last follow-up, a year and a half later. >>>

The second case was that of a woman with **malignant melanoma** treated for depression via insulin therapy.

One leg was swollen. She received insulin injections 5 days a week for 3 weeks with no apparent change in her mental status or her tumor.

The patient was then given hypoglycemic coma therapy for the next five weeks.

At the end of this time, the depression cleared, the leg swelling disappeared, weight increased by 17.5 pounds, and the melanoma was not to be found.

Follow up one year later found no return of depression nor cancer.

*Korlojow, Psychiatric Quarterly, April, 1962, pp.261-267.*

**Recently, The cause has been taken up by clinics in Mexico and Eurpoe. The response rate on the whole was said to be 60%, unofficially**

**Recognition of nuances in patient's needs is necessary to adapting therapeutic strategies to address these needs.**

### MALNUTRITION

**Is a major cause of death for cancer victims**

**Cancer Cachexia (or Wasting)**

**&**

**Starvation**

**Are two major causes of such malnutrition**

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**Cancer cachexia and starvation are:**

**two different conditions**

**with differences and similarities,  
coexisting with one another,  
requiring similar and different nutritional care.**

The Basic Difference is that cancer cachexia is associated with up-regulation of the **Cori cycle**.

The **Cori Cycle** involves cancer cells metabolizing glucose into lactate. The liver, in turn, converts lactate into glucose. The cancer cells take up the glucose and the cycle perpetuates.

The cancer cells grow at the expense of normal cells, competing for nutrients and polluting the internal environment with waste.

While metabolism slows in starvation to prevent wasting, metabolism may speed up in cachexia to wasting accelerate

.Various Adaptive Therapies are Useful to Combat Malnutrition I Cancer

### **Cachexia and Fish Oil**

Eighteen inoperable pancreatic cancer patients with progressive weight loss were given 12 one gram EPA containing fish oil capsules daily. They gained weight. Another oil given by the same doctors was ineffective in reversing weight loss.

*Wigmore, S., Ross, J., et al. Nutrition (Suppl.), 12(1): S27-S30, 1996*

Fish oil prevents cachexia, increases weight and exerts anti cancer effect in experimental animals.

*Tisdale, M and Dhesi, JK Cancer Res., 50: 5022-5026, 1990*

High fish oil diet protects laboratory animals against ill effects of chemotherapy and increases tumor responsiveness to chemotherapy.

*Shao. Y. Cancer Res., 54:6452-7,1994*

*Shao, Y. Lipids, 30: 1035-45, 1995*

In a study of 64 patients with advanced refractory solid tumors, the group receiving 18 grams of fish oil and 200mg vitamin E as a sole therapy had an increase in CD4 helper immune cells and a 39% increase in life span versus the placebo group.

*Gogos: Fish oil in advanced cancer treatment.*

## **Adaptive Nutrition Has More Uses Than Simply Overcoming Malnutrition**

### **Adaptive Nutrition improves clinical outcome while reducing toxicity of chemotherapy**

The April, 15 1998, JAMA includes an article based on 1994 data estimating more than **100,000 deaths** per year are caused by **properly** administered **drugs**. (No such deaths are estimated for properly administered vitamin and mineral supplements)

Nutrition may be used to **reduce need** for potentially hazardous drugs, make them more effective, and **increase tolerance** to them, especially in the field of oncology.

The concept has meaning for both drug oriented medical clinicians and non-drug oriented naturalists.

This does not mean that the philosophically opposed diehard chemophiles and diehard naturophiles need change their respective therapeutic orientations.

The naturophiles may rejoice in the idea that natural bodily defenses can work better and the chemophiles may rejoice in the idea that the patient can better tolerate more chemotherapy.

### **Nutrients Impact Chemotherapy Positively**

Co-administration of vitamin A with methotrexate protects small intestine from methotrexate induced damage in mice inoculated with leukemia or sarcoma cells.

*Vitamin A, a useful biochemical modulator capable of preventing intestinal damage during methotrexate treatment. Pharmacol Toxicol. 1993 Aug. 73(2).p 69-74*

D-alpha tocopherol ameliorates glomerulonephrosclerosis and improves hyperglycemia in Adriamycin treated rats.

*Alpha tocopherol improves focal glomerulosclerosis in rats with adriamycin-induced progressive renal failure Nephron. 1994. 68(30).p 347-52*

Feeding high doses of Vitamin C to tumor bearing mice receiving adriamycin prolongs life without reduction in killing capacity of adriamycin.

*Shipo, Am.J.Cli.Nut.54,1298S,1991*

Vitamin E succinate enhances growth inhibition with adriamycin via an additive and synergistic effect in a variety of cancer cells in vitro.

*Vitamin E enhances the therapeutic effect of adriamycin on human carcinoma cells in vitro, J. Urol, 1986,136/2(529-531)*

Animal tumors are made more responsive to mitomycin and doxorubicin with feeding of EPA, eicosapentaenoic acid (omega 3 fatty acid from fish oil).

*Guffy, Cancer Research,vol.49,p3961,1981*

Animals with implanted tumors had reduced toxicity to cisplatin when treated with selenium without affecting killing activity of the chemotherapeutic agent.

*Ohkawa, Br.J. Cancer, vol. 58, 38,1988*

Cardiotoxicity of adriamycin is reduced by niacin supplements in animals without interfering with tumor killing.

*Schmitt-Graff, Path.Res.Prac.,vol.181,p.168,196*

Astragalus and ginseng prevent immune suppression and weight loss in a study involving 176 patients treated with chemotherapy.

*Li,Chung Kuo Chung His I Chieh Hosa Chih,vol.12, p.588,1992*

Panax ginseng enhances uptake of mitomycin into cancer cells for increased cancer kill.

*Kubo, Planta Med,vol.58, 424, 1992\**

Vitamin E induces apoptosis in colorectal adenocarcinoma cells and enhances P 53 independent tumor growth inhibition of 5FU in vitro and in vivo.

*Antioxidants enhance the cytotoxicity of chemtherapeutic agents in colorectal cancer: a p53-independent induction of p21 WAF1/CIP1 via C/EBPbeta, Chinery, Nat Med: 3(11)1233-41 1997*

Nutrients work Synergistically with  
Surgery, Chemotherapy, and Radiation

Pre-operative TPN in patients undergoing surgery for GI cancer provides for less complications, morbidity and mortality.

*Muller, Lancet, 68, Jan 9,1982*

Nutritional supplementation in the form of a RDA multiple vitamin, 40,000 iu vitamin A, 100 mg. B6, 2000mg vitamin C, 400 iu vitamin E and 90mg Zinc were given to the treatment group in a randomized double blind study involving 65 patients who had been treated surgically and with BCG for transitional cell carcinoma of the bladder.

The 10 month recurrence rate of transitional cell carcinoma in was 40% for the nutritionally supplemented group versus 80%, twice the amount, for the control.

*Lamm, Megadose vitamins in bladder cancer: a double blind study trial, J. Urol, 151:21-26,1994*

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The use of vitamin E, C, and N acetylcysteine provides cardioprotection from chemotherapy and radiation therapy in a randomized double blind placebo controlled study.

*Cardioprotection in chemo- and radiotherapy for malignant diseases- an echocardiographic pilot study Schweiz Rundsch Med Prax. 1995 Oct 24.84(43).p 1220-3*

Patients with mouth cancer pretreated with vitamin K3 prior to radiation had a 39% 5 year survival and disease free status versus 20% for those that did not.

*Krishanamurti, Radiology, vol.99, 409,1971*

The combination of chemotherapy, radiation therapy and nutritional antioxidant supplementation produced a 44% survival of 18 lung cancer patients where ordinarily 1% survival without nutritional support would be expected at 30 months.

*Jaakkola, Treatment with antioxidant and other nutrients in combination with chemotherapy and irradiation in patients with small-cell carcinoma, Anticancer Res 12,599-606,1992>>>*

Vitamin A and beta carotene provide better outcomes in animals treated with radiation.

*Seiter, J.Nat.Can.Inst.,vol.71,409,1983*

Niacin and aspirin given to bladder cancer patients receiving radiation and surgery had a 72% 5 year survival vs. 27% for the control.

*Povov, Med.Radiol.Mosk, vol.32,42,1987*

Nutritional supplementation was given to 98 patients with a variety cancer pathology while 32 served as the control. All received standard cancer therapy. The control group lived an average of 6 months while the treatment group depending on pathology lived 10 months to over 10 years with patients still living at the end of the study.

*Hoffer; Pauling, J. Orthomolecular Med, vol.5,3, 143,1990*

In the United States the use of Herbs in treating Cancer is having a resurgence. Adaptive Herbs used in Clinical Nutrition contain biological response modifiers.

Herbal oncology is an ancient practice used by traditional physicians in other parts world of the including Europe. In China traditional physicians use herbs while Western practitioners use drugs.

The numbers of available single herbal medicines and the combination herbal medicines are mind-boggling.

The use herbs or herbal extracts has been criticized for lack of regulation, standardization and documentation in peer reviewed medical literature in the United States.

In the United States, herb suppliers have disincentives to conduct studies. The studies are expensive. Since herbs cannot be patented, there is no way to recoup monies. Drug companies push their patented herbs. If an herb is sold with claims attached the FDA declares it to be a drug preventing the sale of the natural product. Medical schools do not easily receive grants to study herbs.

Until recently, the governments' heavy-handed "public protection policy" against those who use natural products in the treatment of cancer has prevented much valuable information from being made public.

Problems with commercial herbal products range from using the wrong plant, plant parts, and preparation process to contamination with poisons and drugs. Often products do not contain potent contents depicted on the label.

The proper use of whole natural herbs and herbal combinations offers natural cocktails containing potent synergistic biological response modifiers.

### **Fox glove (digitalis leaf)**

Fox glove was noted in Welch medical literature in 1250.

Digitoxin, the glycoside in found in foxglove, was popularly used for cardiac conditions up until the 1960's when the pharmaceutical industry switched to

digoxin a glycoside found in *Digitalis lanata*. Digoxin has a shorter half-life and is easier to control.

One non-published study of the Indiana School of Medicine cardiac unit records, 1900 to 1932, found no cancer deaths among patients maintained for life on digitalis.

Drs. A. Goldin and A. Safa commented in a letter in Lancet, 1984 that decreased cancer deaths were noted on retrospective analysis in cardiac patients taking digitalis.

In 1982, at the end of a 5 year study involving 175 breast cancer patients in the University Hospital, Uppsala, Sweden only one reoccurrence of breast cancer was found in the 32 patients receiving digitalis.

**The patient group not receiving digitalis had 9.6 times as many reoccurrences.**

**The amount to digitalis used was that which cardiologists find safe to maintain non-toxic therapeutic blood levels (approximately 20 ng digitoxin /ml.)**

***B. Stenkvist: NEJM 1982 Feb.25, p484***

On follow up in 1998, Dr. Stenkvist found over a period of 23.3 years:

Of the 143 patients who did not receive digitalis, 48 (33.8%) died of breast cancer.

Of the 32 patients maintained on digitalis, only 2 (6.5%) died of breast cancer, a 7-8 fold drop.

Many had been converted to digoxin.

***According to Dr. J. Haux, Oncology Hospital, U. of Trondheim, Norway:***

Digitoxin inhibits both estrogen positive and estrogen negative breast cell cultures in concentrations used by cardiologists. Digitalis has a chemical structural similarity to sex hormones and may be associated with gynecomastia in men.

Digitoxin is substantially more antineoplastic than digoxin.

Digitoxin is also effective against other cancers as evidenced by inhibition of a glioma and two hematological cell lines. Digitalis passes through the blood brain barrier.

Dr. Haux anectdoally found one woman with metastatic breast Ca to the liver, placed on digitoxin in 1995, to be alive 3.7 years later with a reduction in size of the metastatic lesions.

FDA Indications:

Heart Failure  
Atrial Fibrillation

**Elimination: primarily renal excretion**

Half life 7-8 days for digitoxin and 1-2 days digoxin

Contraindications: ventricular fibrillation, hypersensitivity to the medicine

**Mechanism of action:**

increases of myocardial contraction strength through alteration of intracellular mineral concentrations and effects autonomic cardiovascular regulation

**Precautions:**

Monitor with blood levels, EKG,

Symptoms and signs

Assure renal function and mineral balance is appropriate for dosage of digitoxin given

Beware of concomitant medications which may alter status quo particularly diuretics.

**Signs and Symptoms of digitalis toxicity/poisoning:**

Neurological: headache fatigue, drowsiness, weakness, paraesthesias, convulsions, syncope, death

Mental: disorientation, blurred vision, color disturbances, delerium, confusion, hallucinations,  
Gynecomastia

Cardiac: bradycardia (various conduction defects and arrhythmias)

Gastrointestinal: nausea, vomiting, diarrhea

**PDR 1999**

**Goodman and Gillman 1985**

**Herbs from other parts of the world are also useful:**

## Ashwaganda

Ancient ayurvedic herb, Ashwaganda (*Withania somnifera*):

Adaptogen: favorably modulates emotional, hormonal, autonomic and immune related conditions during stress.

Helps general host balance and resistance and works directly on the cancerous tissue

Inhibits growth of induced tumors in animals including sarcoma 180 and mammary adenocarcinoma E0771.

Induces sensitization to radiation

Stimulates stem cell proliferation.

Contains the alkaloids which inhibit translation (protein production) and transcription (RNA production) respectively.

Increases phagocytosis and intracellular killing

*Sharada: Antitumor and radiosensitization effects of withaferin A on mouse Ehrlich ascities carcinoma in vivo. Acta Oncologica (Stockholm),1996;35(1):95-100*

We do not have to rely only on exotic herbs

*Common Herbs with anti cancer biological response modifying activity are readily available*

## Garlic

Garlic has been recommended for multiple purposes including tumors since ancient times.

*Codex Ebers, Eygpt, circa 1550 B.C.*

Garlic contains many active ingredients including allicin, a thiosulfinate, which inhibits lactic dehydrogenase a main enzyme in cancer cellular metabolism

*Jacobs, M., Vitamins and minerals in the Prevention and Treatment of Cancer, CRC press1991 p69-75*

Garlic inhibits cancer growth in human breast cell lines.

*Li, Anti-proliferative effects of garlic constituents in cultured human breast cell. Oncology Reports 1995,2:787-791*

*Tiwari, Biochemical effects of garlic components on/ in human breast epithelial cells. Breast Cancer Res. Treat 27(1-2):80*

A chemical formed in aged garlic, s-allylmercaptocysteine, causes prostatic cancer cells in the laboratory to break down testosterone 2-4 X faster without forming DHT. Concentrations achievable in humans via aged garlic supplementation decrease cancer cell growth rate 70%.

**Pinto J., Rubin R., Garlic Constituents modify expression for human biomarkers for prostatic Carcinoma Cells. FASE B Journal 11 (Feb.28): A 439**

### *Green Tea*

Researchers at Purdue U. have found that green tea contains an antioxidant, epigallocatechin gallate, which *selectively shuts down an enzyme needed in cancer cells for cell division*, quinol-oxidase. Growth and division of normal cells are not affected. When the epigallocatechin gallate treated cancer cells reach critical size for division and can not divide, they succumb to programmed cell death.

Black tea contains only a small fraction of this antioxidant compared to green tea.

*Science News, January 2,1999, vol.155, No.1, pg.15*

*Plant substances that mimic hormones are called...*

**“Phyto-hormones”**

Those that mimic estrogen are called phytoestrogens

Tumor activity under endocrine control may be modified by phyto-hormones.

Herbal extracts can compete with estrogen and progesterone at cellular receptor binding sites.

Theoretically, phyto-estrogens may displace more estrogenic estradiol or xenobiotics which may adversely influence breast cancer.

Of 150 herbs tested, the 6 highest in estrogen site binding affinity in breast cancer cell lines are:

Soy Licorice Red clover Thyme Turmeric Hops

The 6 with highest progesterone activity are:

Oregano Verbena Thyme Red clover Damiana Licorice

In general estrogen receptor binding herbs are agonists and the progesterone receptor binding herbs are neutral or antagonists.

Soy produces estrogen binding without raising estradiol.

*Zava: Estrogen and progestin bioactivity of foods, herbs and spices. PSEBM 217:369-78, 1998*

Some non toxic foods have known medicinal properties. The anti-cancer effects of soy have been extensively studied.

### SOY

Epidemiologically, high soy diets, rich in genistein, have profoundly lower breast cancer rates.

Japanese women, who consume 9 times the amount of soy consumed by American women, have only 25% the breast cancer rate.

In the laboratory soy reduces proliferation of breast cell lines by about 30%, the same as tamoxifen.

*Childs, Family Practice News, Nov. 1,1998*

**Soy has been demonstrated to have several impressive qualities:**

- Exhibits anti cancer effects on various tumor cells  
breast, prostate, sarcoma, lung, liver, esophagus, colon and melanoma
- Reduces nausea and vomiting of chemotherapy
- Supports immunity and helps maintain WBC counts

- Directly suppresses cancerous tissue.
- Demonstrates no significant side effects
- Removes carcinogens and stimulates detoxification

Biochemically soy inhibits enzymes such as tyrosine kinases, DNA topoisomerase and ribosomal kinase, while inducing others like P450's.

Anti cancer activity is of soy attributed to various constituents including: protease inhibitors, phytic acid, saponins and isoflavones

Genistein is the most studied soy isoflavone:

- Reduces tumor growth influence of sex hormones in both male and female
- Induces apoptosis
- Inhibits metastasis
- Inhibits angiogenesis (new and old vessels)
- Induces differentiation and pro-differentiation

*Therapeutics of Soybean Phytochemicals, US Research Reports, Inc.  
Research report No.103,106*

*Beating Cancer with Nutriton, Quillin, 1998*

Soy works together with other plants against cancer

Genistein and Curcumin from Turmeric (*Curcuma longa*) work synergistically. Growth of human estrogen positive breast MCF-7 cells is increased by beta-estradiol or a mixture of estrogenic pesticides (endosulfane, chlodane /DDT). Genistein or curcumin inhibit spontaneous and induced growth. When used together inhibition is total! At least in vitro.

*Curcumin and Genistein, plant natural produbreast cancer MCF-7 cells induced by estrogenic pesticides  
Biochemical and Biophysical Research Communications, 1997, 233/3(692-6)*

### **As phytotherapy progresses, innovative creations emerge such as Designer Herbs**

A hemicellulose/ B 1-3 glucan /mycelial extract from hybrid mushrooms was administered orally, 3 grams per day to 11 patients with advanced malignancies who were treated with conventional therapies. **Two of 3** patients with prostatic cancer, **2 of 3** patients with ovarian cancer, **1 of 2** patients with multiple myeloma, and **1 of 3** with breast cancer had **full remission**. **Two** out of **3** breast cancer patients had partial remission. The NKC function increased 2.5 fold by 2 weeks and maintained. Notable side effects were absent.

*Ghoneum M., Immunomodulatory and Anti-Cancer effects of Active Hemicellulose Compound (AHCC) Int. J. Immunotherapy, K1 (1) 23-28 (1995)*

Taking 3 grams of orally of MGN-3 ( hemicellulose /B 1-3 glucan /mycelial extract) increased NKC activity 100% to 537% in a study involving 27 cancer patients ( breast, multiple myeloma, prostate, leukemia, cervical) who received conventional care.

*Ghoenum M., NK Immunomodulatory function in 27 cancer patients by MGN-3 a modified Abrinoxylane From Rice Bran, 87<sup>th</sup> Annual Meeting of the American Association for Cancer Research*

**MGN-3 has been shown to increase interferon, tumor necrosis factor, NKC activity, T cell and B cell counts.**

**An invaluable aspect of Adaptive Medicine is the reduction of toxicity.  
Toxicity and Detoxification**

Diets rich in (organic?) whole grains, fresh fruits, legumes and vegetables have lower concentrations of toxic chemicals.

*Food Additives and Contaminants 1998; 15: 19-29*

Researchers at Tufts medical school report Estrogenic pesticide induced tumor growth is reduced up to 50% in the presence of soy derived isoflavones.

*Nutrition and Cancer 1998; 30:232-239*

In a Swiss study involving 231 subjects, the treated group of 59 patients received approximately 10 EDTA chelation infusions to remove toxic metals. A matched control group of 172 were not treated. After 18 years , the EDTA treated group had a **ten fold** Decrease in cancer death rate vs. the control.

*If toxic substances, which impair immunity and repair, are avoided or removed early, degenerative diseases such as cancer are less likely to occur prematurely.*

*Blummer, Ninety Percent Reduction in Cancer Mortality after Chelation Therapy with EDTA. J of Advan in Med 1989;2: 183-188*

*Food substances, which bind and remove toxic metals include garlic, chlorella, and soy. Nutrients, such as vitamin C and methionine are also helpful.*

**Singular nutrients are adaptable in oncology**

## Coenzyme Q10 (Ubiquinone)

*(CoEnzyme Q10 as described by William V. Judy PhD, 1998 conference in Ft. Lauderdale and selected papers.)*

### General Information

- ❖ Antioxidant
- ❖ Derived from diet and is also manufactured in the body.
- ❖ Creates ATP which provides energy for life.
- ❖ Recycles vitamin E
  - Prevents the oxidation of LDL cholesterol and formation of foam cells.
- ❖ Used for prevention and treatment of cancer.
- ❖ Reduces side effects and improves killing of chemotherapy and radiation
- ❖ Improves the general clinical status of patients.
- ❖ Depleted by radiation, chemotherapy, and cigarette smoke

### The use of the chemotherapeutic drug Doxorubicin (Adriamycin) and Co Q10 Together has advantages

Doxorubicin generally causes cardiotoxicity at approximately 500mg /m squared, while Coenzyme Q10 reduces such toxicity.

This threshold is raised to 700 mg/m squared with 100mg CoQ 10 per day, allowing for reduced side effects and increased therapeutic doses of doxorubicin.

In Italy CoQ10 is approved for doxorubicin toxicity.

CoQ10 appears to improve tumor suppression with less cardiotoxicity, that is, to maintain ejection fraction.

Side effects of chemotherapy such as nausea and loss of hair are reduced.

IgG and T cells levels are increased or maintained.

The use of T cell depression as an indicator for how much doxorubicin is administered may be affected.

Cancer reoccurrence and patient survival time benefits in part appear dose dependent.

### **The use of CoQ10 is impressive in Lung Cancer**

#### **Lung**

In a double blind placebo controlled study of 22 lung cancer patients with initially similar Co Q10 levels, 11 patients received doxorubicin plus placebo and 11 received doxorubicin plus 100mg of CoEnzyme Q10.

Blood Co Q10 levels during the course of the study increased in the Co Q10 treatment group while they decreased in the placebo group.

The placebo group manifested side effects, low energy and reduced ejection fraction.

The CoQ10 group was able to take over 700 mg per meter squared of doxorubicin versus the placebo group which only tolerated up to 460 mg per meter squared.

The treatment group achieved an impressive 90% tumor suppression versus 68% for the placebo.

Unpublished data finds that at 4 years after the onset of the study the placebo group had 100% reoccurrence and death.

At the end of three years, when the Co Q10 was stopped, the CoQ10 treated group had one death out of 11 patients.

After 2 more deaths occurred, CoQ10 was resumed.

At 10 years, 4 out of 10 were alive.

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### **CoEnzyme Q10 is also impressive in treatment of Breast Cancer**

#### **Breast**

Lockwood, a Danish surgeon started a study 1992 involving 32 high risk breast cancer patients with no controls.

In addition to chemotherapy and radiation, a nutritional cocktail with antioxidants, fatty acids, minerals and CoQ10 (90 mg./day) was given to 32 high risk Breast Cancer Patients.

At 18 months no deaths were found where 4 would ordinarily be predicted.

The patients were stable without metastasis and weight loss.

They had better quality of life and reduced side effects.

Natural killer cell and lymphocyte counts were increased.

Partial remissions were found in 6 patients.

At 24 months no weight loss, cancer progression nor deaths were noted.

Six deaths would have ordinarily been expected.

Two breast cancer patients who were increased from 90 mg. CoQ10 to 390 mg. per day demonstrated regression at one and six months.

At 390 mg/day, disappearances of liver metastasis, pleural effusion and residual tumor were noted in one patient.

A case was reported of a 78 year old patient with cancer of breast metastasized to the pleura who was told she had approximately 30 days to live. She was alive 9 months after starting CoQ10 with tumors regressing.

### **Cancer of the Prostate is also addressed with CoQ10.**

#### **Prostate**

In a 1 year unpublished study, 15 patients with reoccurrence of prostate cancer following conventional therapy received 600mg /day of CoQ10. They refused further conventional care.

Ten of 15 responded.

Responses were noted after 3-6 months, not immediately.

#### **At one year:**

##### Responders

78% decrease in PSA  
68% reduction in mass  
68% inc.lymphocyte count

##### Non-responders

4% increase in PSA  
4% increase in mass  
20% inc. lymphocytes

413 % inc.blood CoQ10

125% inc.blood CoQ10

The non-responders may have had an absorption or compliance problem. Giving CoQ10 in oil causes the absorption to improve dramatically.

### **CoEnzyme Q10 may be useful in Cancer Prevention**

A retrospective analysis of approximately 1000 heart failure patients taking 100 mg of CoQ or placebo daily for over 15 years found cancer developed in 3% of CoQ10 treated group versus 11% of placebo group, a 3-4 fold difference. The patients ranged in age 47-72 years at the start of the study

*Dr. Judy and Dr. Folkers*

#### **Published references:**

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**Another popular singular nutrient adaptable in Oncology is**

## Vitamin C

Vitamin C is correlated with lowering cancer incidence in a study encompassing 7 countries and 25 years.

*Ocke, Int. J Cancer, vol.61, 480,1995132*

Most of 139 lung cancer patients tested vitamin C deficient.

*Anthony, British J.of Cancer, vol. 46,354,1982*

End stage untreatable cancer patients administered 10,000 mg vitamin C per day produced a 22% survival at one year vs. 0.4% survival in those without vitamin C.

*Cameron, Pauling, Proc.Nat.Acad.Sci.,vol.75,4358, Sept.1978*

Vitamin C augments medical therapy. Animals given adriamycin demonstrated prolongation of life and reduced cardiac damage.

*Fujita, Cancer Research, vol.42,309, Jan.1982*

Of 50 cancer patients treated with radiation, one randomly chosen group received 5,000 mg of vitamin C daily while the other served as a control. The group that received vitamin C had an 87% complete response vs. 55% for the control.

*Hanck, Prog. Clin.Biol.Res.,vol.259,307,1988*

**In scientific circles the significance of single case studies are often minimized. However, collectively they add up. In one such case study:**

A 70 year old man with metastatic reoccurrence of renal carcinoma opted to have 30gm of vitamin C administered daily. Six weeks later he was clinically free of tumor.

*Riodan, J. Orthromoleclar Med., vol. 5,5,1990*

A 42 year old man with reticulum cell carcinoma was treated twice with high dose vitamin C with complete remission, the latter lasting over 15 years duration.

*Campbell, Oncology, vol.48,495, 1991*

**We need to pay attention to macro-nutrition as well as micronutrients**  
Miscellaneous Studies

Of 1470 Pancreatic cancer patients who made no dietary change over 99% were dead after one year, while 52% of a matched group of 23 patients consuming macrobiotic foods remained alive.

**Carter, Macrobiotic diet and cancer survival, J Am. Coll of Nutrition 12:3:209-215,1993**

Bovine tracheal cartilage administered, 9 grams daily, to 31 advanced cancer patients brought a 90% positive response. Eleven patients including those with rectal carcinoma, ulcerated breast carcinoma, and renal cell carcinoma became tumor free, while 17 others showed improvement.

**Prudden: Bovine cartilage in advanced human malignancies. J Biol Resp Mod 4:551,1995**

CLA (Conjugated linoleic Acid) abrogates spread of transplanted human breast cancer cells to lungs, blood, and bone in immune deficient mice fed 1% CLA, suggesting that CLA may block local and metastatic spread of human breast cancer by mechanisms independent of the host immune system.

**Conjugated linoleic acid suppresses the growth of human breast adenocarcinoma in SCID mice, Anticancer Research(Greece),1997,17/2A (969-73)**

### **Significant Nutritional Tips**

Nutritional tips helpful in management of patients with cancer include the use of:

ginger for nausea

vitamin E for prevention of hair loss from doxorubicin

zinc for the metallic taste caused by cisplatin

chrysin to prevent the conversion of testosterone into estrogen

vitex to reduce prolactin

digestive enzymes “on an empty stomach” to reduce swelling

### **The Most Significant Nutritional Tip:**

Each patient needs to be treated as **special**.

The ideal nutritional treatment of the cancer patient is not generically the same as that of the next with a similar condition.

Many needs are similar, while others are not. Each individual has needs not quite the same as the next.

### Current trends in Medicine

#### Integrative Medicine

- incorporates different forms of wisdom and technology
- uses various alternative and traditional methods
- is designed for safer and more effective care
- emphasizes natural holistic approaches

#### Best Evidence Based Clinical Decision Making

- the most applicable information available
- flexible standards allowing inclusion of more information  
traditional and alternative sources