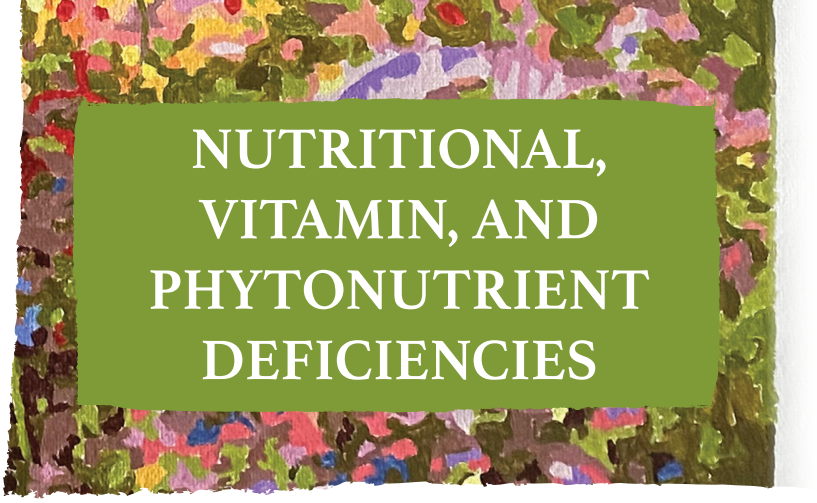
Cleveland's Center for Healing
HYPERION™
Functional Medicine



NUTRITIONAL, VITAMIN, AND PHYTONUTRIENT DEFICIENCIES

Diet and nutrition are important for all cancer patients to impact treatment and cancer prevention or re-occurrence. An unbalanced diet leading to nutrient deficiencies often arises from food choices that include toxic foods that are nutrient deficient, most of these foods are known to be inflammation inducers. These foods increase not only your risk of cancer onset but limit your ability to heal as inflammation drives cancer. In addition, malnutrition negatively impacts the effectiveness of many cancer treatments. Food choices should be designed to help support your immune system's fight against cancer. Especially while you're under treatment. The nutrition plans need to include all the colors of the rainbow, be nutrient dense, and anti-inflammatory.

Effects of cancer treatment on the G.I. tract are common. When chemotherapy kills cancer cells, it may also damage healthy cells, leading to various factors that can complicate eating. Chemotherapy and other targeted therapies can cause diarrhea, constipation, nausea, vomiting, dry mouth, mouth sores, and taste changes. These drugs can also change how nutrients are absorbed in the small intestine. If more than one drug is used the side effects can be compounded. Radiation can cause inflammation of the bowel and damage the G.I. Tract. Nutrition in cancer patients must be optimized to support healing and optimize treatment.

Phytochemicals are the colorful substances found in plants that contribute significantly to their flavor and color. Studies are accumulating showing evidence that phytochemicals have significant anticarcinogenic and antimutagenic properties. Phytochemicals are being found to be effective in both the treatment and the prevention of cancer. It has been demonstrated that phytochemicals extracted from medicinal plants can reduce cell proliferation, cause cell death, delay cancer metastasis, and inhibit blood vessel growth in cancer cells[1]. The phytochemicals that you are eating in your colorful food choices, have a significant effect on patients with cancer. These colorful foods contain the phytonutrients that are actively working against your cancer. Supplements can also be prescribed and taken to optimize phytonutrient intake.

Fasting is becoming more common, and cancer patients are learning about starting a fast before chemotherapy because fasting has been shown to improve effectiveness of chemotherapy and reduce side effects from most of those agents. Fasting starves cancer cells: Without nourishment, cancer cells are more vulnerable to chemotherapy regimens, and fasting can place normal cells into dormancy so they are better protected from chemotherapy treatment toxicities.

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Fasting may reduce side effects like organ damage, immunosuppression, and chemotherapy-induced death. Fasting has been shown to suppress tumor growth, progression, metastasis, and metabolic activity. Follicular lymphoma, the second most common non-Hodgkin's lymphoma, typically has a slow course of development. Treatment ranges from close observation to immunotherapy, chemotherapy and/or radiotherapies. One of the first studies on fasting in patients with cancer in 2015 was a 42-year-old woman diagnosed with stage IIIa, grade 1 lymphoma who underwent a medically supervised, 21-day water-only fast after which enlarged lymph nodes were substantially reduced in size[2]. Intermittent fasting is also an option for cancer patients. Intermittent fasting means only eating between certain hours of the day and fasting for the rest. It includes time-restricted eating. Patients can see benefits. These benefits include blood sugar control, and lower insulin levels resulting in a lower amount of sugar in your blood that is known to drive cancer growth.

MD Anderson Center emphasizes one risk of fasting during cancer treatment is that it leads to a lack of nutrients and potentially malnutrition. This can lead to weight loss, contribute to fatigue and slow the healing process. Fasting can also make it challenging to get the nutrients you need if you're dealing with nausea, vomiting and loss of appetite[3]. Be sure and consult with a member of your oncology team before you undertake a fasting regimen. Fasting for days at a time can induce detoxification. This can make you feel worse and you need to be aware of these effects by consulting with a medical team familiar with fasting regimens in cancer.
The diet plan presented to cancer patients in Hyperion functional medicine phase 1 oncology is central to healing and heavily focuses on consumption of phytonutrients. The number of plant compounds and supplements that affect mitochondrial function is remarkable promoting better energy levels in cancer patients. Phytochemicals from widespread chemical families can generate new mitochondria important for energy[4].

The diet must be optimized for patients who want to participate in a fasting plan to optimize phytonutrient intake. Fasting could cause a reduction in the intake of phytochemicals from foods which have epigenetic effects: phytochemicals turn off oncogenes and tumor promoter genes[5]. An oncogene is a mutated gene that has the potential to cause cancer. Tumor promoters alter the expression of genetic information of the cell and in many cases inhibit programmed cell death that should occur but doesn't in cancer cells.

Our nutritional program in Hyperion functional medicine focuses on foods that impact the cancer hallmarks defined by Dr's Hannahan and Weinburg beginning in 2000[6]. Because of cancer, the normally well-regulated activities of the body's cells and organs are disrupted. Pharmaceuticals and other therapies have been developed to target a specific cancer hallmark and its molecular signaling. Pharmaceuticals can yield dramatic results. But cancer cells are very adaptable, and cancer cells can adapt ways to resist the therapy. There are no pharmaceuticals, cancer treatments, supplements, or functional medicine-based treatment plans that will attack all the hallmarks simultaneously. Such an approach would likely be too toxic for patients. However, we can further impact cancers and their associated hallmarks with functional nutrition plans.

VIEW CANCER HALLMARK NUTRITION PLAN HERE

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Nutrients that should be avoided in patients with cancer

Contrary to nutrient deficiencies, there are nutrients that are known for stimulating cancer growth and should be avoided, one of them is iron. Most patients are never advised about how iron plays a role in growth of cancer. Patients need to be very cautious about taking any vitamins or supplements with iron in them. It stimulates tumor growth[7]. Of course, follow your oncologist's plan if you need iron in the event of iron deficiency secondary to your treatment(s). Unless recommended by your treatment team, read the labels of any vitamins or supplements you are taking to ensure they do not contain iron.

Another nutrient, L glutamine, which is an amino acid that many patients use for gut healing and is in many supplements to aid in healing of "leaky gut" and associated G.I. symptoms also stimulates tumor growth[8]. You can't completely avoid glutamine because it's an amino acid that is in foods. Avoid supplements containing glutamine.

Copper is another nutrient that is known to stimulate cancer cell growth. Copper has been shown to accumulate in tumor cells and is associated with tumor growth, blood vessel growth and then cancer metastasis. Copper tends to be higher in many tumor tissues than in your normal tissue. Serum copper concentrations are also higher in many cancer patient's tumors[9]. Vitamins and supplements with copper should be avoided.

Chemotherapy can deplete the body of nutrients, making vitamin deficiencies common in cancer patients. Some common vitamins and minerals deficiencies after chemotherapy include:

Vitamins B1, B2, and K, Niacin (B3), Folate (B9), Vitamin D, Magnesium, Iron, and Zinc.

Hyperion Functional Medicine tests all patients in the phase 1 functional oncology program for levels of copper and iron and provides treatment if indicated. Patients are offered nutrition testing utilizing the Genova Nutra Eval after treatment with chemotherapy and immunotherapy is complete to optimize their intake of vitamins, minerals, amino acids, and other essential nutrients.

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