

# Integrative approaches to treat cancer

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## ABSTRACT

Many cancer patients also employ complementary therapies or other forms of medication. For the treatment, prevention, and improvement of health, an integrative approach to cancer care integrates conventional medicine with evidence-based alternative medicines/therapies and lifestyle interventions. To treat the whole person, not just the sickness, is the core of this approach. It makes use of auxiliary technologies that could help the practitioner diagnose early carcinogenesis and track the efficacy of treatment. Cancer is

caused by a variety of causes, some of which can be greatly altered by the patient and which oncologists may be able to suggest, such as stress, poor nutrition, inactivity, restlessness, and a lack of vitamin D. Evidence-based complementary medicine approaches include the use of supplements, herbal medicine, various practices that reduce stress, and physical therapies. Individualised to the patient, these can also help address the symptoms and signs associated with cancer and its orthodox treatment.

**Key Words:** *Cancer; Integrative medicine; Nutritional medicine*

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## INTRODUCTION

Several aetiological factors, including genetic predisposition, environmental exposure, and epigenetic factors, contribute to the chronic, systemic nature of cancer. Other contributing factors include those that are mostly beyond the individual's control, such as stress, inadequate diet and/or nutrition, inactivity, restlessness, and vitamin D insufficiency. Many of the symptoms and indicators of cancer and its conventional treatment, including cancer-related pain, chemotherapy-induced peripheral neuropathy, oral mucositis, anxiety, depression, and restless sleep, make it harder for patients to complete their regimens. Many of these are difficult to treat using conventional medical methods. In order to treat and prevent disease and improve health, an integrated approach to treating illnesses like cancer integrates conventional medicine with evidence-based alternative medicines and therapies, nutritional medicine, and lifestyle interventions. To treat the whole person, not just the sickness, is the core of this approach. The use of adjunct technologies, such as circulating tumour cell assays, may help the clinician diagnose early carcinogenesis and track the efficacy of treatment. Importantly, therapies that are used in conjunction with conventional treatment can assist cancer patients in managing many of the symptoms and indicators connected to their condition and the conventional treatment for it [1-3].

There is substantial evidence that both cancer patients and cancer survivors use complementary treatments. The incorporation of complementary medicines is a topic of considerable attention in the

realm of oncology. According to Jentsch and colleagues' research, patients with pancreatic ductal adenocarcinoma benefit from an integrative treatment plan that alternately administers two subgroups of complementary medicines on a weekly cycle along with first-line gemcitabine chemotherapy.

### Addressing modifiable factors associated with cancer

Although there are many factors that can lead to poor health, some important ones that can be changed by an individual are stress, poor nutrition/diet, a lack of physical exercise, bad sleep, and inadequate levels of vitamin D, all of which have been linked to cancer.

Cancer's patho mechanism is intricate. A groundbreaking research on the "hallmarks of cancer" that laid forth an organisational framework of cellular characteristics discovered during the conversion of normal cells to benign or malignant growths was published in 2000. In 2011, two new enabling factors—tumor-promoting inflammation and genomic instability and mutation—were added, rounding up the list of hallmarks to include reprogramming of energy metabolism and avoiding immune destruction. Then, in 2022, it was revised to include disturbed differentiation and phenotypic plasticity as hallmark capabilities, as well as non-mutational epigenetic reprogramming and polymorphism microbiomes as enabling traits that can facilitate the development of hallmark capabilities. Many authors, including Kenny and colleagues as well as, emphasise the significance of the tumour microenvironment and how it might affect the growth and evolution of tumours. It is generally known that chronic low-grade inflammation plays a part in cancer. As part of

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Hanahan's theoretical framework (the enabling component of tumor-promoting inflammation), we can hypothesize that elements like stress and poor diet may lead to chronic inflammation (addressed later) [4-6].

Additionally, the neurological system has a role in the pathogenesis and aetiology of cancer. According to research, the nervous system and tumour formation are related. Baraldi and colleagues] have extensively examined the functional roles of nerves, neurons, neurites, and neuroglia in carcinogenesis. For instance, neurons can release neurotransmitters that trigger the migration of tumour cells, while tumour cells can release neurotrophins that encourage neighbouring neurites to develop into the tumour. . Additionally, studies suggest that sensory nerves may be able to control cancer growth and spread by stimulating or suppressing immunosuppression. The relationship between the nervous system, immune system, and cancer is the focus of the study of neuroimmunology. Targeting the nervous system as well as immune and/or genetic components of the tumor's micro and macro settings may be a successful cancer treatment strategy. The neurobiology of cancer theory acknowledges the significance of psychosocial variables in cancer. In a recent paper, another conceptual framework was used to describe Nasopharyngeal Cancer (NPC) as a "spatiotemporal 'unity of ecology and evolution' disease: a multidimensional evolutionary adaptive pathological ecosystem". This framework explains how cancer tissues produce a complex, spatially structured ecosystem of different cell types and crucial stromal resources. This concept could be used to various types of cancer to comprehend aetiology and create therapeutic and preventive measures. Although the idea of an ecosystem is used here to explain cancer pathogenesis at the tissue/molecular level, it might also be utilised on a meta-level. In other words, it might be used to explain how humans and the environment in which we live are interdependent, and how diseases like cancer can develop if this ecosystem becomes a pathological state. The term "environment" can have a wide range of meanings, including the interior milieu of the body (also known as the "internal environment," according to Luo.

With the help of a small sample of the evidence from epidemiological studies and preclinical studies investigating mechanisms of action (though the latter will not be covered in detail due to the complexity of this topic), we present a case for why factors like stress, poor sleep, poor diet, a lack of physical activity, and low levels of vitamin D should be addressed as part of an integrative approach to cancer management. Overall, our goal was to provoke discussion on the reasons why oncologists should take into account such characteristics, particularly those that patients may directly influence. Generally speaking, a cancer patient who is healthy will generally fare better than one who is not.

#### **Complementary medicines and approaches in the integrative management of cancer**

In addition to potentially addressing the pathomechanisms connected to cancer, complementary medicine/therapy techniques may have positive impacts in addressing many of the symptoms and indicators connected to cancer and its conventional treatment.

This section outlines some of the research that suggests complementary medications or treatment modalities could be valuable additions to an integrative approach to the management of cancer.

#### **Dietary supplements**

A person's diet might become lacking in vitamins and trace elements if there is not a sufficient variety of foods, especially greens. Immunity is suppressed by deficiencies of micronutrients, which are necessary for the immune system to operate properly. . Where dietary sources of vitamins and minerals may be inadequate, dietary supplements can help to ensure a person is as healthy as possible. For instance, selenium has primarily been thought to have antioxidant, anti-inflammatory, and anti-viral properties, but new research indicates that it may also play a role in a number of cancer-related pathways, such as cell proliferation, migration, invasion, and angiogenesis [7-9].

#### **Intravenous supplements**

Vitamin C, glutathione, and A-Lipoic Acids can all be administered intravenously at significantly higher doses than orally. Early phase clinical studies have shown the efficacy of high dosage IV vitamin C in the elimination of several types of cancer cells as well as its safety, adding to the mounting evidence that it has the potential to be an effective anti-cancer agent.

High doses of ascorbic acid (ascorbate) have been shown to have anti-cancer properties that include pro-oxidant cytotoxic activity, inhibition of cell proliferation by blocking prostaglandins (2 series), inhibition of angiogenesis, anti-cancer epigenetic regulation, immune regulation, reversal of epithelial-to-mesenchymal transition, inhibition of hypoxia and oncogenic kinase signalling, and enhancement of the immune response.

Many common chemotherapy medicines can work in concert with high dose IV vitamin C to lessen their hazardous side effects. In comparison to women who did not receive this adjunct treatment, breast cancer survivors in stages IIa to IIIb who were receiving chemotherapy or radiation therapy reported significantly fewer side effects from the disease or the treatment, such as nausea, loss of appetite, fatigue, depression, sleep issues, dizziness, and hemorrhagic diathesis.

#### **Herbal medicine**

Preclinical research have revealed the anti-cancer potential of certain herbs and spices. Here are a few illustrations.

The well-known Asian spice turmeric (*Curcuma longa*) contains a substance called curcumin, which has anti-inflammatory, antibacterial, analgesic, antioxidant, and anti-proliferative properties. Through its impact on pathways involved in cell cycle regulation, apoptosis, mutagenesis, oncogene expression, carcinogenesis, and metastasis, curcumin has various anti-cancer effects. Curcumin has been shown to inhibit bone metastasis from prostate cancer, lung cell proliferation, prostate cancer bone metastasis, and epithelial mesenchymal transition and invasion in prostate cells induced by cancer-associated fibroblasts.

Certain herbs and spices have the ability to fight cancer, according to preclinical study. Here are a few examples.

Curcumin, a compound found in the popular Asian spice turmeric (*Curcuma longa*), possesses anti-inflammatory, antimicrobial, analgesic, antioxidant, and anti-proliferative activities. Curcumin has a number of anti-cancer properties through its influence on pathways related to cell cycle regulation, apoptosis, mutagenesis, oncogene expression, carcinogenesis, and metastasis. Prostate cancer bone metastasis, lung cell proliferation, prostate cancer bone metastasis, and epithelial

mesenchymal transition and invasion in prostate cells produced by cancer-associated fibroblasts have all been demonstrated to be inhibited by curcumin[10].

#### Acupuncture

Numerous symptoms and signs associated with cancer and its treatment, including chemotherapy-related nausea and vomiting, cancer fatigue, neutropenia, cancer-related pain, and xerostomia, may benefit from acupuncture treatment, according to evidence from randomised controlled trials. For instance, acupuncture was linked to favourable benefits on xerostomia as early as 3 weeks in a randomised controlled trial of 86 patients with nasopharyngeal cancer, with significantly increased saliva flow at week 7 and at the 6 months follow-up ( $p < 0.003$ ). In comparison to 63% of controls, 24% of the acupuncture group experienced xerostomia at the 6-month follow-up.

#### Other therapies for cancer treatment

There are additional treatments that could be beneficial in the fight against cancer. With encouraging first results, the National Institute of Integrative Medicine in Australia has been looking at the use of photodynamic therapy for the treatment of prostate cancer. According to Meade et al., the laser is administered trans-rectally and trans-urethrally to the prostate. Details about the use of hyperthermia and hyperbaric therapy in the treatment of cancer are omitted due to space constraints in this paper.

#### Mitigating risk in an integrative approach to cancer treatment

Naturally, many are concerned about whether dietary supplements and herbal remedies can negatively affect or interfere with conventional cancer treatment. In the literature, the potential for harmful interactions between specific medications and particular complementary medical treatments is extensively recognised. On the other hand, several alternative treatments for cancer. For instance, Tamoxifam combined with a popular Chinese herbal remedy called Jia Wei Xiao Yao San decreased the incidence of endometrial cancer in female breast cancer patients.

#### CONCLUSIONS

An evidence-based combination of conventional and alternative medicine treatments is used in an integrated approach to cancer treatment. It gives the patient the ability to take charge of their total health and actively address various risk factors, symptoms, and signs of cancer and its conventional therapy. A higher quality of life and better outcomes may be obtained by assisting the cancer patient in addressing variables that are mainly under their control, such as stress, poor nutrition, insufficient sleep, vitamin D insufficiency, and a lack of physical activity.

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