

ROLE OF DIETETICS AND NUTRACEUTICALS IN CANCER

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ABSTRACT

Cancer is one among the most dreaded diseases of this century. Having increased incidence rate, it is considered to be an adversary effect of modernization and advanced pattern of socio-cultural life dominated by western medicine. This is a disease with no single cause and each individual's experience with cancer is unique. It involves abnormal cell growth which tends to proliferate in an uncontrolled way and in some cases, to metastasize (spread). A healthy diet is vital for every person's body to work its best. Dietetics is the science or art of applying the principles of nutrition to the diet. Diet is a kind of food to which a person or a community habitually eats or it is a special course of food to which a person restricts himself. Food that possesses major anti-cancerous activity like curcumin, cumin seeds, falc seeds, Carrot, Garlic, Green Vegetable etc helps in prevention of the disease.

KEYWORDS: Nutraceuticals, Dietetics and Cancer

INTRODUCTION

Cancer is one among the most dreaded diseases of this century. Having increased incidence rate, it is considered to be an adversary effect of modernization and advanced pattern of socio-cultural life dominated by western medicine¹. This is a disease with no single cause and each individual's experience with cancer is unique. It involves abnormal cell growth which tends to proliferate in an uncontrolled way and in some cases, to metastasize (spread). Cancer, word is derived from the Greek word-"Karkinos" meaning Crab. It is not an individual disease but is a group of many diseases and a leading cause of death. Cancer in initial stages can be controlled effectively through diet and proper selection of food. The other terms used are Neoplasia and Oncogenesis. Commonest sites are Lungs, Breast, and large bowel. Metastasis

occurs in six methods, i.e., by infiltration, by lymphatics, by blood vessels, along natural passages, through serous cavities and by inoculation.

The general classification is the Benign and Malignant. The Histological classification is Carcinomas, Sarcomas, Leukaemia. The internationally accepted clinical system of tumour classification is TNM. T stands for extent of primary tumour, N stands for regional lymph node involvement and M stands for the presence or absence of metastasis².

In Ayurvedic texts, there are many words that have similar meaning as Cancer and similar diseases/symptoms which match with characteristic of Cancer. In the *Charaka samhita* and *Sushruta samhita*, cancer has been described as inflammatory or the non-

inflammatory swelling and mentioned them as either *Granthi* or *Arbuda*.

The concept of *ama* is very unique in Ayurveda. In the classical texts of *Ayurveda*, *ama* a toxic material is described as the underlying cause of many health issues. *Ama* is formed through the poor dietary habits and a low digestive fire. Over time this *ama* which is of sedentary in nature so tries to sediment wherever it gets a chance thus occlude the micronutritive channels of the body resulting in different disease. Free radicals are the highly reactive chemicals that have the potential to harm the cells and have been proven in recent years that these are the main cause of many diseases and degenerative changes produced in the human body³. The excessive production of free radicals and the imbalance between the concentration of these and the anti-oxidant defences, may be related to processes such as ageing and several diseases, among which main is the cancer.

Dietetics-

It is the science or art of applying the principles of nutrition to the diet. Diet is a kind of food to which a person or a community habitually eats or it is a special course of food to which a person restricts himself. A healthy diet is vital for every person's body to work its best. No medicine is equivalent to food. It is possible to make a person disease free with just proper diet⁴.

Ahara has been described as one of the Trayopastambha of life. Ahara, has been enumerated first, which shows its more importance. Diet is considered as vital for a human body as it provides the basic nutrients and promotes longevity. Ayurveda always emphasizes on consuming healthy and nutritious diet for maintaining good health⁵.

Eating a healthy diet and being physically active are very important for people diagnosed with cancer. Diet for cancer patient is having great importance. It can be

directly related to the cancer risk. Foods such as the processed food, red meat, salt preserved food etc have a tendency in developing the cancer. On contrary, food high in fibre, fruits, vegetables can help in reducing the risk of cancer, to prevent the body tissue from break down, rebuild tissue and maintain our defence against infection. One has to eat well so as to be able to handle higher doses of certain treatment. Cancer develops over a long period. Foods can block the chemical activation, which normally initiates cancer. Antioxidants, vitamins can irradiate and repair some of the cellular damage caused by cancer.

How the diet should be-

- Should be of organically grown foods i.e. free from carcinogenic chemicals, insecticides, preservatives.

- Food must be eaten in natural way i.e. in raw state.

- The food once prepared should not be reheated, charred food should not be eaten.

- Nuts should be part of daily diet, Eg. Almonds, walnuts

- Diet should include protein such as leafy vegetables, potatoes, sprouted seeds and grains, nuts.

- Daily $\frac{3}{4}$ of the food consumed should contain all kinds of fresh fruit, salads, fresh vegetables, whole grain cereals, milk and its products.

The diet which maintains the healthy status of the body by providing the basic nutrition and prevents the occurrence of diseases should be consumed⁶.

Food that prevents and controls cancer⁷ –

Food that possesses major anti cancerous activity are curcumin, cumin seeds, falc seeds, Carrot, Garlic, Green Vegetable, Milk, Olive oil, Beetroot, Cabbage, Citrous fruits,

Colourful fruits, vegetables and Phytochemicals		
Colour	Phytochemicals	Fruits and vegetables
White and green	Allyl sulphides	Onions, Garlic
Green	Sulforaphanes, Indoles	Broccoli, Cabbage, Cauliflower
Yellow and green	Lutein	Asparagus, Spinach
Orange and yellow	Flavonoids	Orange, Papaya, Peaches
Orange	Alpha and Beta carotenes	Carrots, Mango's, Pumpkin
Red and purple	Polyphenols, Anthocyanins	Berries, Grapes, Plums
Red	Lycopene	Tomatoes, Watermelon

Curds, Liquorice, Brown rice, Soya bean, Tomato, Watermelon...

- Beetroot- rich source of natural sugar, vit B₁, B₂ niacin, B₆, C.
- Cabbage- removes oestrogen from the body by speeding up the metabolism and burning up the hormone so that less of it is available for feeding the cancer cells.
- Carrot- rich source of Beta Carotene. Found valuable in preventing the lung cancer.
- Citrus fruit- these are a total anti cancerous package as they have carotenoids, flavonoids, terpenes, lemonades. Orange of all foods are richest source of Glucarate, another cancer inhibitor.
- Curds- preventive against colon cancer. Rich source of Vit B and D which are highly beneficial in preventing cancer.
- Garlic- Ancient remedy for cancer. Helps in preventing the stomach, lungs and liver cancer. Contains Diallyl sulphide, Quercetin and ajoene these block the cancer causing agent such as nitrosamines and aflatoxin.
- Green vegetables- contains antioxidants, beta carotene, lutein and folic acid.
- Liquorice- Popular spice and a flavouring agent. Helps in preventing and in retarding its spread.

- Milk-Rich source of Vit D and calcium and reduces the risk of Colon cancer.
- Tomato and Water melon- Content Lycopene helps in preventing the cancer.

Harmful food that cause cancer⁸-

Those which help in promoting and aggravating are,

- Alcoholic Beverages, Tobacco products, Smoking are the major causes of cancer.
- Coffee- High concentration of Caffeine may lead to Gall Stones and then to Gall cancer.
- Flesh foods- excessive meat eating and especially Pork is harmful.
- Salt- increases the Hydrochloric acid in the stomach and may lead to ulceration and then to cancer.

Vitamins that fight Cancer⁹-

- Vit C- potent anti-toxin. Helps in neutralising or minimising the damage effect.
- Vit A- Beta carotene, an orange pigment helps in preventing the cancer.
- Vit B-complex- increases the body resistance to oxygen deficiency.
- Vit E- helps in reduction of growth and spread of malignancies.

Daily Nutrient requirement¹⁰

Nutrient	Daily requirement
Calcium	1,000mg
DHA	200mg
Folic acid	600mg
Iodine	220mg
Iron	27mg
Vitamin B ₆	1.9mg
Vitamin B ₁₂	2.6mg
Vitamin C	85mg
Vitamin D	600IU
Vitamin E	15mg
Zinc	11mg

Nutraceuticals:

Nutraceutical – is a food stuff (a fortified food or a dietary supplement) that is held to provide health or medical benefits in addition to its basic nutritional value. Dr Stephen De

Felice, coined the term “Nutraceutical” and defined it as a “food, or parts of food, that provide medical or health benefits, including the prevention and treatment of disease”¹¹. Nutraceutical includes metals, minerals, vitamins and other dietary substance which are naturally available.

People with cancer need to maintain a healthy body, weight and eat nutritious food. The side effects of surgery, radiation therapy and chemotherapy causes the person to eat less. In Ayurveda, the importance of particular diet in prevention and treatment of diseases was well known even in 1000 BC.

If wholesome diet is given in a planned way, then there is no need to administer medicines and if wholesome diet is not being used then too there is no need to give medicine, as this is not going to cure the disease in the absence of wholesome diet¹².

The factors responsible for the dhatu vishamata have to be avoided and the factors

influencing the dhatu samyata have to be consumed¹³.

Acharya Charaka has considered Amalaki as one of the most rejuvenating and nourishing drug enriched with natural antioxidants and vitamin C¹⁴. The aqueous extract of Amalaki has been tested for its radio protective properties against the sub lethal gamma radiation in Swiss albino rats and is found significant¹⁵. Other Ayurvedic drugs having antioxidant property are Haridra, Rasona (Garlic), Guduchi, Haritaki, Kanchar, Musali, Hiraka bhasma, Vaikranta bhasma, Swarna bhasma, Abraka bhasma etc. Ayurvedic formulations like Haridra khanda Rasayana, Guduchi Rasayana, Shilajatu Rasayana, Chavanprash, Guggulu Rasayana, Rasona Rasayana, Triphala Rasayana, Brahmi Rasayana, Amalaki Rasayana, Vardhamana Pippali Rasayana, Gandamala khandano rasa, Kanchara Guggulu etc.

DISCUSSION

Cancer is one such disease which develops over long period. A proper diet enriched with fresh colourful fruits, vegetables, vitamins, minerals and antioxidants can help in irradiation and repair the cellular damage done by cancer cells. Regular intake of nutrients and vitamins in prescribed proportion will be beneficial in increasing the immune system of individual. In the recent years, there is increase in demands for dietary supplements and have attracted considerable interest due to their potential nutritional, safety, and therapeutic effects. These products have a role in a plethora of biological processes, including antioxidant defences, cell proliferation, gene expression, and safeguarding of mitochondrial integrity. Thus, nothing in this world can compensate

the richness of food. The food, consumed in proper quantity and having high nutritive value has an ability to prevent and cure the disease. Thus, these fruits, vegetables, minerals etc which are the natural bioactive materials that provide demonstrated physiological benefits or reduce the risk of chronic diseases, above and beyond their basic nutritional function are of much importance.

CONCLUSION

Thus nothing in this world can compensate the richness of food. The food, consumed in proper quantity and having high nutritive value has an ability to prevent and cure the disease. Thus these Nutraceuticals which are the natural bioactive materials that provide demonstrated physiological benefits or reduce the risk of chronic diseases, above and beyond their basic nutritional function are of much importance.

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Source of support: Nil
Conflict of interest: None Declared

Cite this article as

Dr Veena Nandennavar: Role of Dietetics
And Nutraceuticals in Cancer; VII(3):
2095-2100