

**HERBAL MEDICINE FOR THE TREATMENT OF CANCER CHEMOTHERAPY - A
REVIEW****Prabha R. Dabhade*¹ and Pooja S. Koli²**¹Ashokrao Mane Institute of Diploma in Pharmacy, Peth-Vadgaon (Lecturer).²Womens College of Pharmacy Peth-Vadgaon (Assistant Professor) Dist- Kolhapur, Maharashtra, Pin-416112, India.

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Prabha R. DabhadeAshokrao Mane Institute of
Diploma in Pharmacy, Peth-
Vadgaon (Lecturer).**ABSTRACT**

Now day's cancer is the most common life threatening disease which is spreading for the reason that of the lifestyle we are living. Treatment of cancer depends on the different internal and external factors causing cancer. The different screening testing are available for cancer screened. Treatments available for cancer cure such as gene therapy, radiation therapy, chemotherapy, surgery, immunotherapy, etc. The natural plants product shows anticancer activity like *Autumn crocus*, *curcuma Longa*, *Garcinia indica*, *Aloe Vera*, *Artemisia annua*, etc. World Health Organization (WHO) supports the helpful of traditional medicines which are efficacious and non-toxic. This review article included to summarize few plants of India and out of India having anticancer activity.

KEYWORDS: Cancer, types of cancer, therapies, medicinal plants.**INTRODUCTION**

Cancer is a disorder to have abnormal cell growth which may be spread to other body parts. The many treatments are available is including surgery, radiation therapy, chemotherapy, immunotherapy, etc. The treatments of cancer affect also the normal cells, tissue, and organ. Common side effect are shows as anemia, constipation, hair loss, fatigue, etc.^[1] Many type of cancer screening earlier detection and higher cure rate, they including imaging test, laboratory test and other testing are available.^[2]

Cancer popularity in India is estimated to be around 2.5 million, with over 8,00,000 new cases and 5,50,000 deaths going on each year due to its disease in the country.^[6]

Cancer is the second leading reason of deaths all over the world. Globally 7.6 million deaths are caused by cancer which represents 13% of all global deaths.^[7]

Symptoms

- Fever
- Loss of appetite
- Malaise
- Night sweats
- Weight loss
- Changes in bladder habits
- Thickening or lump in the body
- Unexplained bleeding or discharge
- Bone pain^[1]

Pathophysiology of cancer

Cancer is a disease caused when cells divide uncontrollably and spread into surrounding tissues. Cancer is caused by changes to DNA. Most cancer-causing DNA changes occur in sections of DNA called genes. These changes are also called genetic changes. In fig. 1.1 was showed general etiology and pathogenesis of cancer.

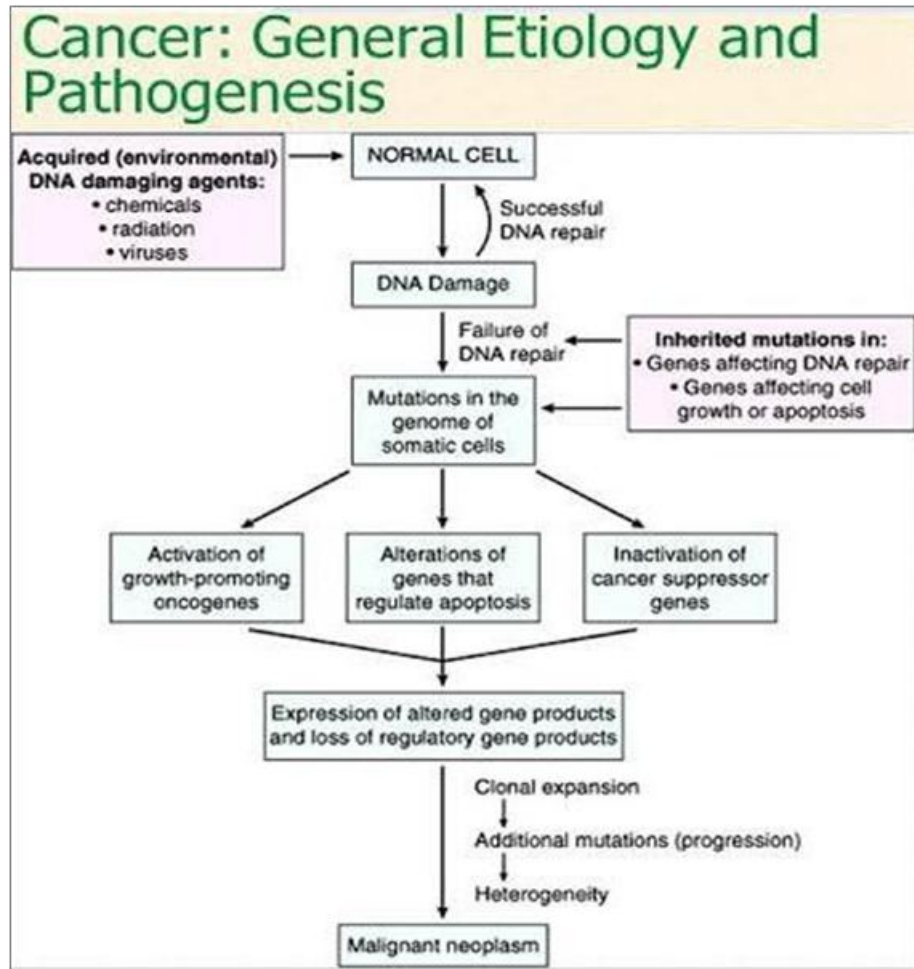


Fig. 1.1: Pathophysiology of cancer.

Types of cancer

A. On the basis of tissues effected-

1. Carcinomas-

It is characterize through cells that cover internal and external parts of the body like lung, breast and colon cancer.

2. Sarcomas-

It is characterized with cells that are located in bone, cartilage, fat connective tissue, muscle and new supportive tissues.

3. Lymphomas

It is cancer that begins in the lymph nodes and immune system tissues.

4. Leukemia's

It is cancer that begins in the bone marrow and often accumulates in the blood stream.

5. Adenomas

Adenomas are cancer that arises in the thyroid, the pituitary gland, the adrenal gland and other glandular tissues.

B. On the basis of organ effected

1. Colorectal cancer

2. Lung cancer
3. Liver cancer
4. Stomach cancer
5. Bladder cancer
6. Esophageal cancer
7. Non-Hodgkin lymphoma
8. Cancer of the lip and oral cavity
9. Nanopharyngeal cancer
10. Kapasi sarcoma^[2]

Treatments

1. Gene therapy

Gene therapy is currently used to create recombinant cancer vaccines.

The term gene therapy encompasses a broad range of treatment type that all use genetic material to transform cells help effect a cure.

Preclinical gene therapy tests have also been performed on gliomas, pancreatic cancer, liver cancer, and other many cancer.^[3]

2. Surgery treatments

Surgeries are used for the solid tumor, which is the local treatment because it restricted in one area. Surgery not for metastatic cancer or leukemia i.e. blood cancer.

Patients require good nutrition before and after the surgery because patients suffer to underweight and weak.¹

The function of surgery has expanded from that of simply therapeutic to consist of both palliation and prophylaxis.

Local control is radically improved after surgical resection of breast, rectal sarcoma, head, neck and pancreatic primary cancer.^[4]

3. Chemotherapy

Chemotherapy main strategies used decrease the growth of tumor and produce cure.

In 1960 arrived the idea of combination therapy. The first cures result unbelievable improvements in patient outcome especially in leukemia's in which combination chemotherapy provided. Roberts and co-workers observe signaling processes that relate to angiogenesis.^[5]

4. Radiation therapy

The radiation useful to the emission and propagation of energy during space or material medium. Radiation therapy classify into electromagnetic radiation and particular radiation.

X- ray and Gamma rays are the two most important type of electromagnetic radiation to use in radiation therapy. Radiation therapy is the most frequently used in external beam radiotherapy or teletherapy. X-ray is created when high speed electrons collide through a material of high atomic number. The process of the cycle necessary for cell growth, cell senescence and apoptosis all this parameters radiation can be affected.^[6]

5. Targeted cancer therapy

The main aim of targeted therapy is delivery drugs to particular genes that are specific to cancer cells. Targeted therapy involves the use of monoclonal antibodies.

A number of strategies contain been proposed which consist of alternative formulation e.g. -liposome, resistance modulation e.g.-PSC833 and antidotes e.g. - ICRF-187.^[7]

6. Immunotherapy

The role of immune-oncology has been transformational in the care of cancer patients. The father of immunotherapy is the William B. coley.

In 19th century the first attempted to harness the power of the immune system for targeting cancer. Immune checkpoint inhibitor therapies are at the present condition generally indicated in various cancer types.^[8]

7. Hyperthermia

Therapy capable to increase the temperature in the tumor mass involving 41°C and 45°C by external mean is called

as hyperthermia. Hyperthermia is the relief of heat to tumor mass. The energy to be deposit into the tumor mass is obtained with external devices.^[9]

The main effect of hyperthermia may be direct thermal destruction of the tumor to development of the immune response.^[10]

8. Stem cell transplant

The term 'stem cell' appeared in the scientific literature as early as In 1868 the word 'stem cell' appears in the scientific journalism as early in the works of the eminent German biologist Ernst Haeckel. Stem cell transplant used to treatment of several important disease like cancer, leukemia, and auto-immune disease.

At present 5 different type of stem cells- ESCs, ECCs, induced pluripotent stem cells (SCs), germinal SCs, and adult stem cells (ASCs). Current studies contain also associated dysregulated SCs with certain types of cancer. Morphologically, stem cells typically contain a circular shape with a low cytoplasm to nucleus ratio.^[11]

9. Photodynamic therapy

Photodynamic therapy is three important components is photosensitize, light and oxygen. It is used either before or after chemotherapy, radiotherapy or surgery without compromising these therapeutic modalities.

Excellent cosmetic outcomes create PDT suitable for patients through skin cancers. PDT is promoting new antitumor strategy.^[12]

10. Laser ablation for cancer

The different types of laser ablation like radio ablation, radio-frequency ablation, microwave ablation, high intensity focused ultrasound treatments.

Laser ablation is performed by using a laser and a medium which transports the laser light inside the tissue. Laser ablation is used in a safe and effective manner of cancer treatment.^[13]

Natural treatments

Today various most useful and curative anticancer drugs are derived from natural products. Medicinal plants take it easy play as an essential role in the healthcare system of large proportion of the world's population.

Herbal product used to maintain or improve health has been called herbal supplements, botanicals, or phytomedicines.^[14] India is sitting on a gold mine of well recorded and traditionally well practices knowledge of herbal medicine. At present days Himalayan plants are a major provider to the herbal pharmaceutical industry both of India and other countries.

Plants used in traditional medicine have stand up to the test of time and contributed many novel compounds for protective and therapeutic medicine to current science.^[15]

- **Autumn crocus**

Species name- *Colchicum Autumnale*.
Common names- Naked ladies, Colchicum, and Meadow saffron. Family- Liliaceae.



Fig. 1.2: Autumn crocus.

Autumn crocus mainly cultivated in Europe, Northern African, and Asian.

Alkaloid colchicines is medicinal use is the treating gout a painful disease that is the result of the joints being inflamed. Cochicine is common reaction using in diarrhea and reversible malabsorption syndrome.

The major use of colchicine is effect on the mitosis of animal and plant cells. It is used to treat inflammatory disorders. It is also appreciated for its chemotherapeutic properties.^[15]

- **Curcumin longa**

It belongs to family Zingiberaceae. The Indian herb of Curcumin is a polyphenol compound.



Fig. 1.3: Curcumin longa.

Curcuma Longa L, is used for wound healing, skin, and gut disease. Curcumin is reasonably non-toxic and exhibits limited bioavailability.

It is valuable properties including anti-inflammatory, anti-oxidant, chemo preventive and chemotherapeutic activity.^[16] *Curcuma* the main constituent of *C. curcuma* affected COX-2 by inhibiting its mRNA and protein expression.^[17]

- **Garcinia indica**

Garcinia indica generally identified as kokum. It is important medicinal plant. *Garcinia indica* fruit extract was used for isolation of garcinol.

The garcinolat IC50 standards for 72h treatments shows the physically powerful inhibitory properties in all intestinal cells. It is also useful anticancer properties.^[17]



Fig. 1.4: Garcinia indica.

- **Tinospora Cordifolia (wild) Miers**

The most generally used part of the shrub is stem, but also root contain important alkaloids. It is mainly cultivated in India, Myanmar, Sri-Lanka, and China.

Tinospora cordifolia stem is used for common debility, dyspepsia, fever, urinary disease and jaundice. It is important in anti-inflammatory, anti-arthritis, anti-allergic properties.^[18]



Fig. 1.5: Tinospora cordifolia (wild) miers.

- **Centella asiatica linn**

Centella asiatica is cultivated in India, Australia, New Guinea, Malaysia and Iran. Its main constituents asiaticoside, thakunosides and ascorbic acid. *Centella asiatica* is potential as an anticancer agent. It is traditional used for their therapeutic properties.



Fig. 1.6: *Centella asiatica linn.*

These extract a number of bioactive components is useful in anti-cancer activity. *Centella asiatica* used for treatment of psoriasis and originate to be effective in destroying cultured cancer cells.^[18]

- ***Aloe Vera-***

Aloe Vera used anticancer activity through stimulating the scavenging white blood cells.



Fig. 1.7: *Aloe vera.*

The extract of Aloe Vera proves to activate macrophages causing the free of anticancer substances such as interferon's, interleukins and tumor necrosis factor. From the Aloe Vera derivative of lectin activated the immune system to attack the cancer when injected directly into tumors.^[19]

- ***Artemisia annua***



Fig. 1.8: *Artemisia annua.*

Artemisia is a genus of a about 400 species that is found

in Europe, asia, north America, and south Africa. Plants from the genus have been utilized in traditional medicine for millennia.

Artemisia annua is a short day annual plants of the asteraceae family. Efferth looked researched how artesunate affected 55 different cancer cell lines, including leukemia, melanoma, lung cancer, colon cancer, ovarian cancer, and CNS tumours. They laimed that artesunate was most effective in the treatment of leukemia and colon cancer.^[17]

CONCLUSION

Cancer is an abnormal malignant growth of body cell. A cancerous increase the malignant tumor or malignancy. This review include different treatments available for shows anticancer activity. This article highlight the anti-cancer action of some important plants. The selected and careful use of this plants in cancer managements. Ayurvedic and Chinese traditional medicines used in many special areas of world.

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