

**ANTICANCER AGENT FROM MEDICINAL PLANTS****Shailaja Gurme\***

PG Student, Adarsh Colony, Jalkot Road, Udgir, Maharashtra, India.

Article Received on  
31 July 2021,Revised on 21 Aug. 2021,  
Accepted on 10 Sept. 2021

DOI: 10.20959/wjpr202112-21772

**\*Corresponding Author****Shailaja Gurme**PG Student, Adarsh Colony,  
Jalkot Road, Udgir,  
Maharashtra, India.**ABSTRACT**

Cancer is a disease caused by uninhibited cell division. The disease destroys healthy tissues in body and poses a threat to life. Cancer can occur in any part of the body and can spread to other parts of the body about a hundred types of cancer are known. This is more common in middle- age and older people. The risk of developing diseases increases with age. The incidence of cancer in men and women is almost the same. Cancer is caused due to different factors like tobacco consumption, exposure of body to chemicals, dietary factors and ecological factors. Conventional medication of treatment of cancer has several impacts on healthy cells. There is also a difficult issue of

increase in tumor resistance to the current therapeutic agents. Due to this, there is a huge need to fight this disease with more effective prescription. Natural product plays an essential role in fight against cancer and provides a valuable gateway for the use and investigation of new therapeutic agents. Medicinal plants represent a superior source of detection and development of anticancer agents. Medicinal plants contains various secondary metabolites which include alkaloids, flavanoids, phenolics, carotenoids, etc. several medicinal plants are known to hold anticancer activity.

**KEYWORDS:** Medicinal plants; cancer; phytochemicals; Anticancer activity.**INTRODUCTION**

Cancer is a disease caused by the uninhibited expansion of cells in the body. In fact cancer is not a disease. More than two hundred types of cancer are known today. Cancer can age in any tissue in any cells. The common link in all cancers is the growth of uncontrolled cells. Cell division usually takes place in a systematic and controlled manner. New cells replace old cells as the body needs them. This is the usual method of cell division. The most frequent hazard factor for cancer include aging, tobacco, sun exposure, radiation exposure, chemicals, and

other substance, some viruses and bacteria, certain hormones, family history of cancer, alcohol, poor diet, lack of physical activity, or being overweight, smoking causes 90% of lung cancer. It also causes kidney, appetite, pancreas, larynx, and bladder cancer. Tobacco is accountable for about one in five cancer death cases worldwide.

Exposure to UV radiation causes early on aging of the skin and break that can lead to skin cancer. People of all ages and skin tones should edge the quantity of time they expend in the sun, especially between mid-morning & sunset and avoid other sources of UV radiation, as tanning beds.

When radiation combines with other cancer causing agents then it is other potent like radon with the tobacco smoke.

Sometimes certain types of cancer appear to run in some families. In some cases, this potency be because family members split certain activities or exposures that boost cancer threat. Such as smoking cancer risk might also be artificial by other factors like heaviness that tend to run in some families. But in some cases, the cancer is source by an irregular chromosome that is being agreed along from invention to invention. Although this is frequently referred to as inherited cancer. What is inherited is the irregular gene that can direct to cancer, not the cancer itself. Only about 5% to 10% of all cancers effect directly from gene defects (called mutation) hereditary from a parent.

‘Staging ‘is a main parameter in determining the cruelty of cancer. Depending on the stage of cancer, patients can be suggested drugs accordingly. There are four stages of cancer, each showing dissimilar properties and symptoms. These are tabulated as under.

Stage 1: this stage is generally a small cancer or tumor that has not developed severely into nearby tissues. It also has not reach to the lymph nodes or other parts of the body.

Stage 2: cancer has spread to regional area or into nearby tissues or lymph nodes.

Stage 3: more advanced regional spread than stage2.

Stage 4: cancer has reach to distant parts of the body. This step is frequently referred to as metastatic cancer, or a cancer that has spread to other areas of the body.

There is an another approach to classify cancer based on its severity and expansion as.

‘T’ describes the original (primary) tumor.

‘N’ tells whether the cancer has extend to the nearby lymph nodes ‘M’ tells whether the cancer

has spread to distant parts of body.

The important preventive methods for most of the cancers include dietary changes, stopping the use of tobacco products, treating inflammatory diseases effectively, and taking nutritional supplements those old immune functions. The major universal treatments for cancer are surgery, Chemotherapy and radiation. Surgery is used to remove the cancer. For example, blood cancer such as leukemia can be cured with medicines. Chemotherapy is used to kill cancer cells. Some chemo is given through a needle and some chemo is given in pill form to be taken out. Because chemo drugs reach the entire body, they help prevent the spread of cancer. Radiation is also used to kill cancer cells, and stop them from growing. It can be used separately or with operation lawyers. Radiation is similar to X-Ray. Thus detection of new anticancer agents from environment, especially plants is currently under investigation. Therapeutic probable of plants is based on the conclusion of thousands of years of use. First written records on hundred of medicinal plants including opium and myrrh are listed on the clay tablets. The major use of herbal medicines is for health support and therapy for chronic as divergent to life- threatening, situation. Herbal medicines are sold as tablets, capsules, powders, teas, extracts, and clean or dry plants. People use herbal medicines to try sustain or expand their physical situation. Many plants have been already used to treat the various form of cancer. Medicinal plants are considered as a repository of various bioactive compounds and the show wide range of biological activity which includes anti-tumor, anti-viral, anti-inflammatory and anti-malarial activity. Secondary metabolites present in the medicinal plants are predominantly responsible for treating various ailments. The most significant secondary metabolites consist of terpenoids, phenolics, flavonoids, alkaloids, and glycosides that have dissimilar pharmacological properties. Medicinal flora such as *Allium sativum*, *Annona muricata*, *Berberies aristata*, *Catharanthus roseus*, *Linum usitatissimum*, *Podophyllum hexeandrum*, *Rubia cordifolia*, *Withania somnifera* etc. show potential role in the inhibition of cancer cell proliferation.

### **Anticancer activity of medicinal plants**

#### **1) Allium Sativum**

*Allium sativum* belongs to the Alliaceae *Allium sativum* belongs family. The active ingredients of *Allium sativum* include enzyme (e.g. alliinase), sulfur containing complex such as alliin and compounds produced enzymatically from alliin (e.g. allicin). Allicin shows antitumor activity.

## 2) *Annona Muricata*

*Annona muricata* belongs to the Annonaceae family. It is local to the tropical regions of the Americas and the Caribbean and it is widely propagated. A phytochemical composition analysis of *A. muricata* by Gavamukulya indicated that extracts from the plant contain a high concentration of secondary class metabolite compounds, such as alkaloids, saponins, terpenoids, flavanoids, coumarins and other lactones, anthroquinones, tannins, cardiac glucosides, phenols, and phytosterols. These compounds are called Annonaceous acetogenins.

## 3) *Astragalus Membranaceus*

*Astragalus membranaceus* belongs to the Fabaceae family, commonly known as Mongolian milkvetch. *Astragalus* is an herb. The root is used to make medicine. *Astragalus* is used for hay fever, diabetes, kidney disease. There are several different species of *Astragalus*. Some species include a nerve toxin and have been linked to livestock poisonings. Some of these species include *Astragalus lentiginosus*, *Astragalus mollissimus*, and others. However, these species of *Astragalus* are usually not found in dietary supplements used by humans, although *Astragalus* may have some antiviral activity. *Astragalus* seems to encourage and increase the immune system. This plant is typically found in parts of China.

## 4) *Azadirachta Indica*

*Azadirachta indica* belongs to the Meliaceae family and is found in India, Pakistan, Bangladesh, and Nepal. It has therapeutic propositions in disease cure and formulation based on the fact that neem is also used to take care of various diseases. *Azadirachta indica* has a compound mixture of constituents including nimbin, nimbidin, nimbolide, and limonoids. Numerous biological and pharmacological behaviors have been reported, including antibacterial, antifungal, and anti-inflammatory.

## 5) *Berberis Aristata*

*Berberis aristata* belongs to the Berberidaceae family. It is an Ayurvedic medicinal plant grown in soils with cool air in the Himalayan region of India. This herb is found in soft sandy soils with cool air in the Himalayan Mountains, in the Nilgiri Hills in Assam, and in the Chota Nagpur region. This drug is more effective. The plant is used traditionally in the Indian system of medicine as an antibacterial, antiperiodic, antidiarrheal, and anticancer, and it is also used in the treatment of ophthalmic infection. It is commonly known as 'Daruhaldi'.

### 6) **Camellia Sinensis**

It is a tea plant, *Camellia sinensis*, is a member of the Theaceae family. *Camellia sinensis* contains caffeine and antioxidant polyphenols. *Camellia sinensis*, a plant native to China and Southeast Asia is a globally a very important plant for humans. *Camellia sinensis* leaf extracts is the oil obtained from the foliage of tea plants. It's wealthy in bioactive compounds, such as catechins, L-theanine, caffeine. It may also improve your immune system decrease stress and anxiety and help weight loss.

### 7) **Catharanthus Roseus**

*Catharanthus roseus* usually known as bright eyes, cape periwinkle, graveyard plant, Madagascar periwinkle, old maid, rose periwinkle, is a species of flowering plant in the family Apocynaceae. It is restricted and prevalent to Madagascar, but grown elsewhere as an ornamental and medicinal plant. In normal medicine, the periwinkle has been used for relieving muscle hurt, depression of the central nervous system, also worn for applying to heal wounds.

### 8) **Glycine max**

*Glycine max* or universally known as Soybean is a variety of legume originated from East Asia. Soybean is a member of Leguminosae family. Seeds of soybean are a major source of plant-derived oils. Seeds give in fit to be eaten, semi-drying oil, used as salad oil and for produce of margarine and shortening. Oil used involuntarily in produce of paints, linoleum, cover, printing links, soap, insecticides, and disinfectants.

### 9) **Podophyllum Hexandrum**

*Podophyllum* is an herbaceous constant Plant in the family circle Berberidaceae, explain as a type in 1979. It includes only one known genus, *sinopodophyllum hexandrum*, and local to Afghanistan, Bhutan, northern India, Kashmir, Nepal, Pakistan, and Western China. Common names consist of Himalayan May apple and Indian May apple. Podophyllotoxin majorly establish in the roots of this plant and used for the action of cancers, ulcers, wounds, constipation and tuberculosis.

### 10) **Withania Somnifera**

*Withania somnifera*, known commonly as ashwagandha, Indian ginseng, poison gooseberry or winter cherry. It belongs to family and contains withanolides, withaferins, anferin, isopellertierine and attributed to its high concentration of withanolides, which have been

shown to fight inflammation and tumor growth.

## CONCLUSION

Cancer is one of main problem in both developing and developed countries. Chemotherapy and radiation therapy causes different special effects therefore there is requirement of an alternative medicine to treat cancer. Medicinal plant contains various secondary metabolites which show their potential activity in opposition to various diseases. Anti-cancer agents derivative from the plant source have basically contributed to the development of new drugs. This review provides the information about medicinal plants with their secondary metabolites that illustrate anti-cancer activity. So it can be accomplished that herbal medicinal plants and its derivatives are active against different type of cancers. Herbal drug treatment may be recommended to the rural and poor people to take care of effectively the cancers as it is cheaper. Screening of medicinal plants for anticancer activity provides a vast space for development of strong anticancer agents.

## REFERENCES

1. Summer J. The natural history of medicinal plants. Timber Press, 2000.
2. Guzman M. Cannabinoids potential anticancer agents. Nature Rev Cancer, 2003.
3. Ben Amar M. Cannabinoids in Medicine: a review of their therapeutic potential. J Ethnopharmacology, 2006.
4. Winters M. Ancient medicine, modern use: Withania somnifera and its potential role in integrative oncology. Altern Med Re, 2006.
5. Govind P. Some important anticancer herbs: a review, International Research Journal of Pharmacy, 2011.
6. Chang M. Anticancer medicinal herbs. Human Science and Technology, Publishing House, Changsha, 1992.
7. Prajapati ND, Purohit S, Sharma Ak, Kumar T. Handbook of medicinal plants. Agro bios (India) 1<sup>st</sup> edn, 2003.
8. Greenwell M, Rahman PKSM Medicinal plants: Their use in Anticancer Treatment, international journal of pharmaceutical Sciences and research, 2015.
9. Desai AG, Qazi Gn, Ganju RK, El-Tamer M, Singh J, et.al. Medicinal plants and Cancer Chemoprevention. Curr Drug METAB, 2008.
10. Nobel RL. The discovery of the vinca alkaloids- Chemotherapeutic agents against cancer. Biochem Cell Biol, 1990.

11. Kayande N, Patel R, review on: Indian Medicinal plants having anticancer property. PharmaTutor, 2016.
12. Roy A, Attre T, Bharadvaja N. Anticancer agents from medicinal plants: A Review. New aspects in medicinal plants and pharmacology. JB Books Publisher, Poland, 2017.