

A REVIEW ON HERBAL DRUGS AS ANTICANCER AGENTS

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Abstract

Now days, cancer is one of major life-threatening disease which gives a big problem in the both developed and developing countries. The mortality rate has been increasing in the world wide day by day due to cancer. There are various types of cancer such as lungs, skin, breast, rectum, stomach, liver, prostate and oesophagus etc. The cause of this type of cancer may be both external factor such as increasing in population, diet habit and industrialization and internal factor such as hormonal issue, genetic and weak immune system. Plant derived compound have a vital role in the treatment of cancer. In this review we explain about some medicinal plants have anticancer and other therapeutic activity due to the appearance of natural antioxidants, free radical scavengers and quenchers of singlet oxygen. It will be helpful to elaborate the medicinal plants value and the new drug discover from them.

Keywords: Cancer, Medicinal Plants, anticancer drugs.

CANCER

Natural Products, especially plants, have been used for the treatment of various diseases for thousands of years. Terrestrial plants have been used as medicines in Egypt, China, India and Greece from ancient time and an impressive number of modern drugs have been developed from them. The first written records on the medicinal uses of plants appeared in about 2600 BC from the Sumerians and Akkaidians.[1] The “Ebers Papyrus”, the best known Egyptian pharmaceutical record, which documented over 700 drugs, represents the history of Egyptian medicine dated from 1500 BC. The Chinese Materia Medica, which describes more than 600 medicinal plants, has been well documented with the first record dating from about 1100 BC.[2] Documentation of the Ayurvedic system recorded in Susruta and Charaka dates from about 1000 BC.[3] The Greeks also contributed substantially to the rational development of the herbal drugs. Dioscorides, the Greek physician (100 A.D.), described in his work “De Materia Medica” more than 600 medicinal plants. Phytochemicals have been proposed to offer protection against a variety of chronic ailments including cardiovascular diseases, obesity, diabetes, and cancer. As for cancer protection, it has been estimated that diets rich in phytochemicals can reduce cancer risk by 20%.The compounds that are responsible for medicinal property of the drug are usually secondary metabolites. Plant natural product chemistry has played an active role in generating a significant number of drug candidate compounds in a drug discovery program. [4]

Recently, it has been reported in the literature that approximately 49 % of 877 small molecules that were introduced as new pharmaceuticals between 1981 and 2002 by New Chemicals Entities were either natural products or semi-synthetic analogs or synthetic products based on natural product models. Plants have a long history of use in the treatment of cancer. Hartwell, in his review of plants used against cancer, lists more than 3000 plant species that have reportedly been used in the treatment of cancer. It is significant that over 60% of currently used anticancer agents are derived in one way or another from natural sources, including plants, marine organisms and micro-organisms. Indeed, molecules derived from natural sources (so called natural products), including plants, marine organisms and micro-organisms have played and continue to play, a dominant role in the discovery of leads for the development of conventional drugs for the treatment of most human diseases. The search for anti-cancer agents from plant sources started in earnest in the 1950s with the discovery and development of the vinca alkaloids, vinblastine and vincristine, and the isolation of the cytotoxic podophyllotoxins. These discoveries prompted the United States National Cancer Institute (NCI) to initiate an extensive plant collection program in 1960. This led to the discovery of many novel chemotypes showing a range of cytotoxic activities, including the taxanes and camptothecins [5].

Cancer is a general term applied to abnormal growth of cells that starts to grow and propagate through uncontrolled cell division and gradually expand throughout body and finally lead to death by invading and destroying normal cells [6]. Cell growth and cell multiply process is known as cell division. It must be extremely controlled that all the cells in the body should grow at the right place, and for all the organs and tissues to function properly. When the cells divide too quickly, consequences can be disastrous. When a cell divides, it first makes an exact copy of its DNA via a process called DNA replication, before splitting into half, to form two 'daughter' cells, that are genetically identical. Hundreds of proteins involve in Cell division. Some proteins inform the cell when or when not to divide. Others were responsible for making sure that the DNA is copied accurately. Yet more were involved physically by pulling the duplicated chromosomes apart as the cell to split into two. Uncontrolled cell division may have many causes, to form any type of cell. But usually results from defects or damage from one or more of the genes involved in cell division. When those genes were damage (mutated) on some way, for instance on exposure to cigarette smoke or ultraviolet radiation, the cell may start dividing uncontrollably. Those defective cells might multiply to form a lump of abnormal tissue called a tumour [7]. Cancers may be caused in one of three ways, namely incorrect diet, genetic predisposition, and via the environment [8].

Present Scenario of Cancer

Cancer is responsible for one in eight deaths worldwide—more than AIDS, tuberculosis, and malaria together [9].

According to World health organisation, global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018. One in 5 men and one in 6 women worldwide develop cancer during their lifetime, and one in 8 men and one in 11 women die from the disease. Worldwide, the total number of people who are alive within 5 years of a cancer diagnosis, called the 5-year prevalence, is estimated to be 43.8 million. Europe accounts for 23.4% of the global cancer cases and 20.3% of the cancer deaths, although it has only 9.0% of the global population. The Americas have 13.3% of the global population and account for 21.0% of incidence and 14.4% of mortality worldwide. In contrast to other world regions, the proportions of cancer deaths in Asia and in Africa (57.3% and 7.3%, respectively) are higher than the proportions of incident cases (48.4% and 5.8%, respectively), because these regions have a higher frequency of certain cancer types associated with poorer prognosis and higher mortality rates, in addition to limited access to timely diagnosis and treatment in many countries.

Cancers of the lung, female breast, and colorectal are the top three cancer types in terms of incidence, and are ranked within the top five in terms of mortality (first, fifth, and second, respectively). Together, these three cancer types are responsible for one third of the cancer incidence and mortality burden worldwide [10].

The table overleaf provides a breakdown of worldwide mortality rates for the top five cancer types [7] as shown in **Table: I**

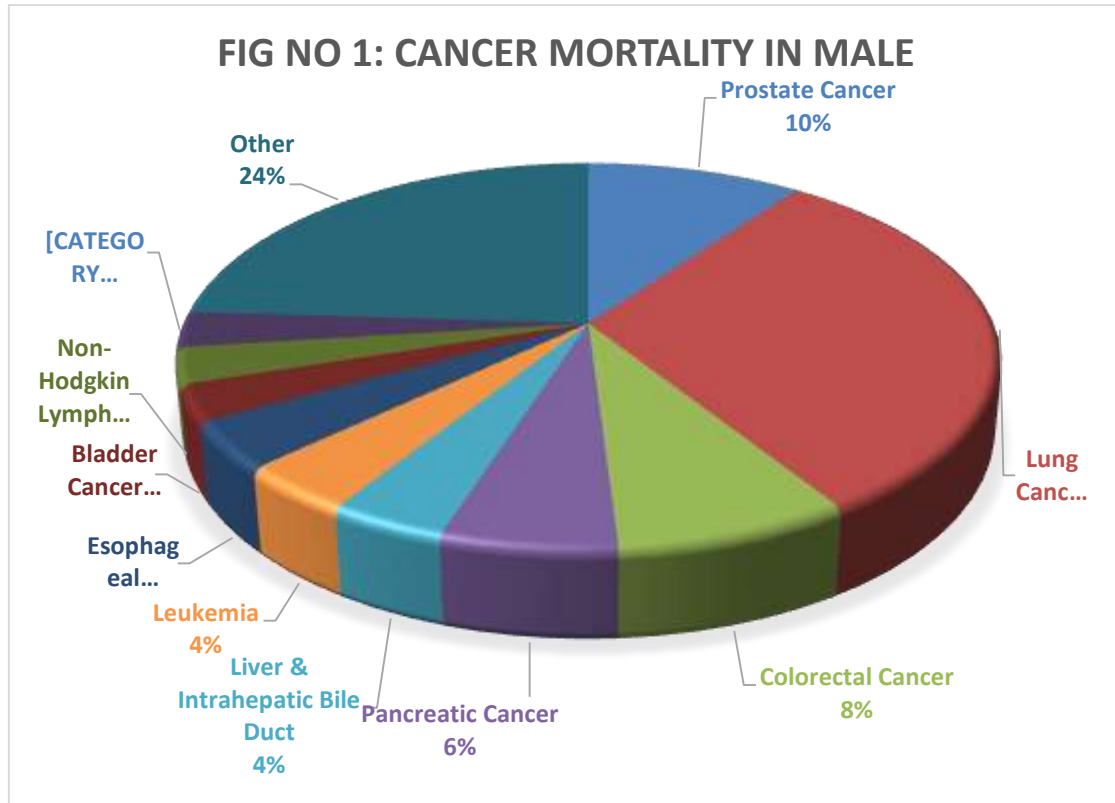
S.NO.	CANCER TYPE	ANNUAL MORTALITY
1	Lung	1.3 million
2	Colorectal	639 000
3	Breast	519 000
4	Stomach	803 000
5	Liver	610 000

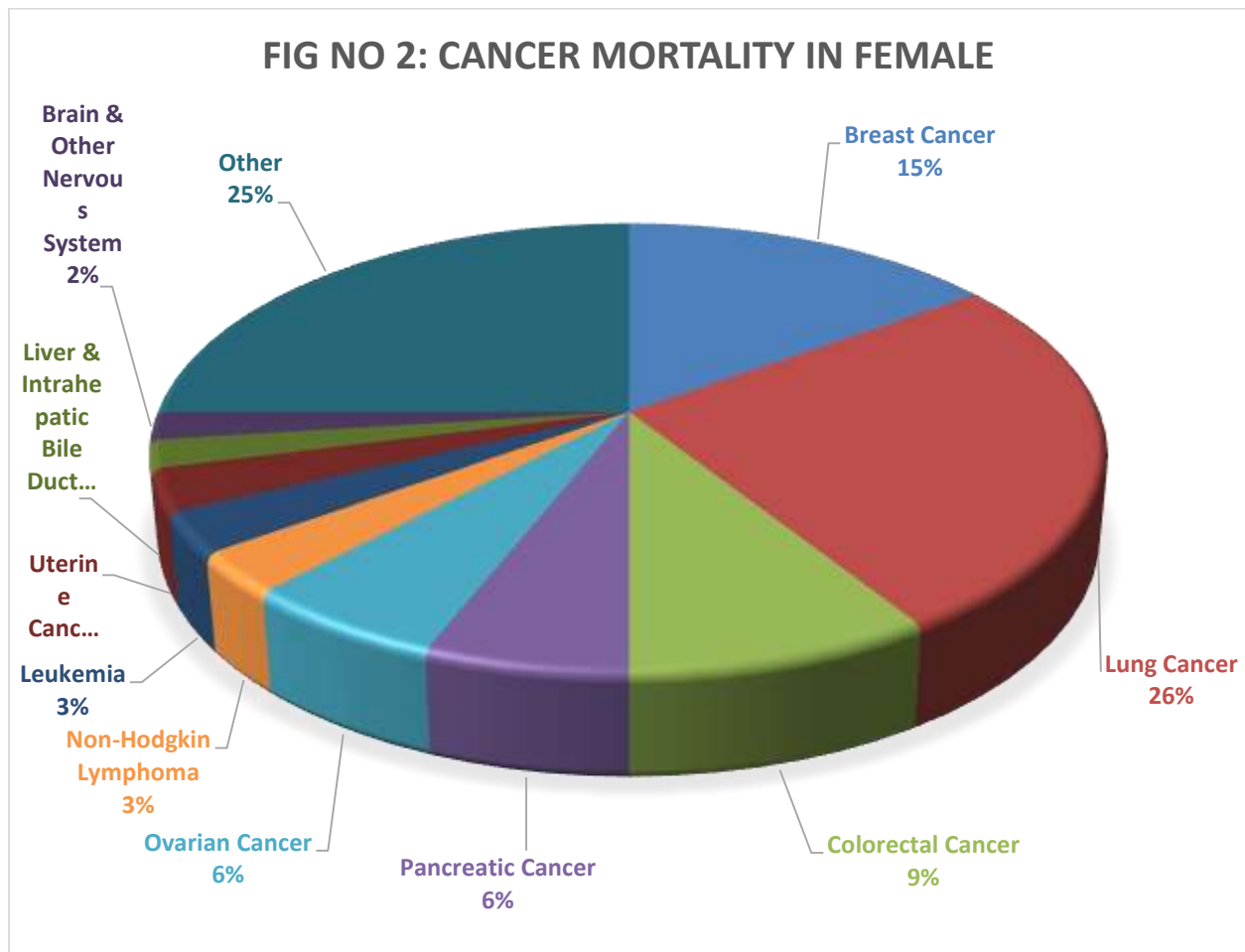
Among all the cancer, Lung cancer is the most common worldwide and accounts for major death annually.

Causes of cancer [11, 12, 13]

The primary purposes behind the reason for different kinds of malignancies as appeared in Figure 1-2 is the utilization of natural tobacco smoke, or inactive smoking, less than stellar eating routine, absence of physical action, drinking liquor, presentation to ionizing radiation, ecological contaminations, hepatitis and hereditary

imperfections acquired from an individual's folks. In created nations, nearly the same number of disease cases is owing to an unfortunate eating regimen and idle way of life as to smoking. Obesity is related with colon, breast, uterine, oesophageal and kidney tumors. A few diseases are brought about by organic cancer-causing agents, for example, contaminations by infections (hepatitis B/C and liver malignant growth and human papilloma infection [HPV] and cervical malignant growth) and microorganisms (Helicobacter pylori and gastric malignant growth) and parasites (schistosomiasis and bladder malignancy). Furthermore, inordinate liquor utilization is related with a few malignant growth types, including head and neck, oesophageal, throat live and bosom disease.





Different cancer growth medicines accessible are medical procedure, radiation treatment, chemotherapy focused on treatment, and immunotherapy and so forth has their very own separate physical reactions. Henceforth, herbal treatment remains as a successful swap for the current treatments. The principle explanations behind utilizing natural cures than engineered treatment are:

1. There will be fewer symptoms when contrasted with synthetic treatment.
2. The effect of dose variety will be less.
3. The expense of natural product will be monetarily less.
4. These will be generally accessible.
5. These are effectively biodegradable.
6. There will be no tedious steps in synthesis of herbal products.
7. The synthetic treatment may or may not cure completely.

Herbal treatment for malignancy dodges different physical symptoms like agony, sickness, heaving, exhaustion, frailty, lymphedema, ripeness issues and ostomies brought about by various disease medicines like chemo treatment, radiation treatment and so on which are engineered medications.

EFFECTIVE NATURAL CANCER TREATMENTS [14, 15]

1. The Budwig Protocol

At the point when fatal prepared fats and oils are supplanted with nurturing saturated/unsaturated fats then the cells revamp and are restored. At the point when curds and flax are consolidated similarly then the body will most likely retain supplements faster and simpler.

2. Gerson Therapy

This treatment focuses on the most significant metabolic necessity in the body of patient. The individual utilizing this treatment ought to pursue the Gerson diet i.e., eating natural organic products, vegetables, grows and should drink newly arranged juice from crude nourishments. The impact of sustenance, juices and drug makes the safe immune system to assault and slaughter tumor tissue.

3. **Proteolytic Enzyme Therapy**

Autonomic nervous system comprises of sympathetic and para sympathetic nervous systems which are said to be one of the real reason for cancer growth. A veggie lover diet will smother the sympathetic function where as the parasympathetic function is stifled by non-vegan diet.

4. **Frankincense Essential Oil Therapy**

This treatment is principally utilized for treatment of cerebrum, breast, colon, pancreatic, prostate and stomach diseases. This oil basically works by scouring this oil on the neck of patient multiple times every day and drink this oil three drops in eight ounces of water multiple times day by day.

5. **Probiotic Food and Supplements**

Probiotics are the micro organisms that promote natural balance in intestinal flora. These probiotics can be taken in eating regimen in their natural state by taking crude milk, for example, cheese, kefir and yogurt.

6. **Vitamin C Chelation**

This treatment fundamentally utilizes the chemicals or natural compounds to expel the harmful metals from the body. After the treatment, after one hour pro-oxidant impact shows up which is primary purpose for destroying tumor cells which initiates endogenous anti-oxidant systems in ordinary tissues. Vitamin-c rich foods fights and prevent cancer.

7. **Sunshine and Vitamin D3**

These are fundamentally required to prevent breast cancer. Fat soluble vitamin D3 acts a fundamental job in cancer prevention. Nutrient D3 levels in the body must be at any rate 40-60 ng/ml and up to 80 ng/ml. This can be gotten by least 20 minutes introduction to sun.

8. **Prayer and Building Peace**

Maintaining mental peace and positive outlook are more important to cancer prevention and treatment. There should be stress free life styles filled with peace and happiness.

9. **Oxygen Therapy and Hyperbaric Chambers**

Cancer cells can survive by without oxygen. Underlying driver of disease is oxygen inadequacy which makes an acidic state in human body. Cancer cells can't make due in the abundance of oxygen. The air pressure inside a hyperbaric oxygen chamber is about 2.5 times higher than the ordinary pressure in atmosphere; it makes blood convey more oxygen to various pieces of body.

10. **Turmeric and Curcumin**

Curcumin kills the malignancy cells and keeps them from developing. This has best effects on breast, bowel, stomach and skin malignant growth cells. Turmeric attempts to stop the developing of malignant growth in its track and is viable at breast, colon and skin disease

MEDICINAL PLANTS AGAINST CANCER

1. **Bacopa Monnieri [Brahmi] [16, 17, 18]**

It has a place with the Scrophulariaceae family and found all through the fields in India. It is accounted for to contain tetracyclic triterpenoid saponins, bacosides A and B, herpestine, brahmine, flavonoids, stigmaterol. Stigmaterol is known to have anticancer activity by initiating apoptosis mediated by the enactment of protein phosphatase 2A by ceramide. Study led by Ghosh assessed the antitumor activity of stigmaterol isolated from Bacopa Monnieri on Ehrlich Ascites Carcinoma in swiss albino mice and found that stigmaterol upgraded the life expectancy of tumor bearing mice by diminishing the tumor volume and viable cell count.

2. **Withania Somnifera [Ashwagandha] [19]**

The two fundamental parts of Ashwagandha Withaferin A and Withanolide E inhibit the development of tumor showing a strong immune suppressive effect by stopping cancerous cells division. It is obvious that foods rich in anti-oxidants assume a significant job in the prevention of malignancy, cardiovascular and neurogenerative infections. There has been a flood of research in its impact in animal models of atherosclerosis, hyperlipidemia, myocardial ischemia reperfusion injury, cerebral ischemia, cardiomyopathy, cardiac hypertrophy, cardiotoxicity and congestive heart failure. Numerous pharmacological examinations have been directed to research the properties of ashwagandha and to validate its utilization as a multi-reason medicinal agent. Concentrates on Withania somnifera proposes that it diminishes tumor cell multiplication and improves the adequacy of radiation treatment while potentially mitigating undesirable side effects.

3. *Allium Sativum* L. [Garlic] [20, 21, 22, 23, 24, 25, 26]

The impacts of garlic on wellbeing, with its conceivable preventive consequences for the advancement of cancer in people have been referenced in past reviews. What's more *Allium sativum* have free radical scavenging activity, immune system modulation and direct cytotoxic effect on cancer cells. Presently multi day's various epidemiological, clinical and research center examinations have shown the role of garlic in cancer prevention particularly in connection to digestive tract cancers, including esophageal and stomach cancer. There is likewise encouraging examination assessing the utilization of garlic in leukemic, melanoma and neuroblastoma cell lines.

4. *Berberis aristata* [Berberine] [27, 28, 29, 30, 31, 32, 33, 34, 35]

Berberine is an isoquinoline alkaloid generally disseminated in natural herbs, including *Rhizoma Coptidis*, a broadly endorsed Chinese herb. It has a wide scope of bioactivities, for example, antiinflammatory, antibacterial, antidiabetes, antiulcer, sedation, protection of myocardial ischemia-reperfusion damage, extension of veins, restraint of platelet accumulation, hepatoprotective, and neuroprotective impacts. Berberine has been utilized in the treatment of loose bowels, neurasthenia, arrhythmia, diabetes, etc. A few investigations have demonstrated that berberine has anticancer possibilities by meddling with the different parts of tumorigenesis and tumor progression in both in vitro and in vivo analyses. Berberine represses the multiplication of various cancer cell lines by inducing cell cycle arrest at the G1 or G2/M phases and by apoptosis.

5. *Curcuma longa* [Turmeric] [36, 37, 38, 39, 40]

Curcumin is additionally a powerful inhibitor of angiogenesis inhibiting both VEGF and β -FGF expression in MDA-MB-231 cells at 50 μ M. Low dose of curcumin (15 μ M) repressed the invasive potential of MDA-MB-231 cells by down regulation of MMP-2, MMP-3 and MMP-9 and up regulation of tissue inhibitor metalloproteinase (TIMP-1, 2). Curcumin (from 10 μ M) inhibit integrin α (6) β (4), a laminin attachment receptor in MDA-MB-231 cells and consequently inhibited cell motility and invasion. Likewise, in an in vivo xenograft model, the administration of curcumin (2% w/w in the eating routine) fundamentally diminished the occurrence of breast malignant growth metastasisto the lung at five weeks. This was related with suppression of the statement of NF κ B, COX2 and MMP-9. This finding was substantiated by a comparative report where a lower dose (1% w/w in the eating routine) suppressed lung metastasis of breast malignant growth tumors following 21 days. Results demonstrated that treatment with curcumin was related with a diminishing in NF κ B, AP-1 and MMP-9 expression levels.

6. *Aerva javanica* [Desert cotton] [41, 42, 43, 44]

Aerva javanica is a type of prostrate shrub having a place with the Amaranthaceae family. It is generally dispersed in quite a bit of tropical Africa, and in the south and south-west of Asia. The plant is profound established and utilized as a soil cover in desert recovery. In Ethiopia, people groups of various religious and moral gathering utilize *A. javanica* as conventional medication to treat different maladies including malignant growth. The root powder blended with bat's blood is taken orally early morning before breakfast to treat breast cancer. Experimentally supported examination has been accounted for that the leaf extract of *A. javanica* demonstrated antiproliferative impact on human breast cancer cell lines (MCF-7). Also, more purified leaf extract of another types of *A. lanata* variety likewise demonstrated anticancer, just as apoptotic activity against various cancer cell lines.

7. *Piper longum* [Long pepper] [45, 46]

It has a place with the Peparaceae family and utilized as a spice. It contains longumine and utilized for the treatment of cough and chronic bronchitis. *Piper longum* extract indicated inhibitory consequences for the development of Human lung malignant growth (HCC-827 cell line) and recorded in term of viable cell count diminishing contrasted with the control value and inhibition is dose dependent. It is additionally utilized as an antitoxin in scorpion sting and snake biting.

8. *Inonotus obliquus* [Chaga Mushroom] [47, 48]

The Chaga mushroom (*Inonotus obliquus*) has been used in folk medicine to treat cancers. However, limited information exists on the underlying anticancer effects of the major component of *I. obliquus* in vivo studies. It is hypothesized that the pure compounds (3 β -hydroxylanosta- 8, 24-dien-21-al, inotodiol and lanosterol, respectively) isolated from *I. obliquus* would inhibit tumor growth in Balbc mice bearing Sarcoma-180 cells (S-180) in vivo and growth of human carcinoma cells in vitro. To test this hypothesis, the growth inhibition of each subfraction isolated from *I. obliquus* on human carcinoma cell lines (lung carcinoma A-549 cells, stomach adenocarcinoma AGS cells, breast adenocarcinoma MCF-7

cells, and cervical adenocarcinoma HeLa cells) was tested in vitro. Then, after S-180 implantation, the mice were fed a normal chow supplemented with 0, 0.1 or 0.2 mg of subfraction 1, 2 or 3 per mouse per day. All of the subfractions isolated from *I. obliquus* showed significant cytotoxic activity against the selected cancer cell lines in vitro. Subfraction 1 was more active than subfraction 2 and subfraction 3 against the A549, AGS and MCF-7 cancer cell lines in vitro. In in vivo results, subfraction 1 isolated from *I. obliquus* at concentrations of 0.1 and 0.2 mg/mouse per day significantly decreased tumor volume by 23.96% and 33.71%, respectively, as compared with the control. Subfractions 2 and 3 also significantly inhibited tumor growth in mice bearing S-180 as compared with the control mouse tumor. Subfraction 1 isolated from *I. obliquus* showed greater inhibition of tumor growth than subfractions 2 and 3, which agrees well with the in vitro results. The results suggest that *I. obliquus* and its compounds in these subfractions isolated from *I. obliquus* could be used as natural anticancer ingredients in the food and/or pharmaceutical industry.

9. *Panax ginseng* [Ginseng] [49]

It is a traditionally used in some parts of the world as a popular remedy for many diseases such as cancer. It was hypothesized that the ginsenoside Rp1, a constituent of ginseng, decrease cancer cell proliferation through inhibition of the insulin-like growth factor 1 receptor (IGF-1R)/Akt pathway. Firstly, the efficacy of Rp1 was tested against human breast cancer cell lines. Treatment with Rp1 inhibited breast cancer cell proliferation and inhibited both anchorage dependent and -independent breast cancer cell colony formation. In addition, to the treatment with 20 μ M Rp1 induced cycle arrest and apoptosis mediated cell growth suppression. Findings further indicated that Rp1 decreased the stability of the IGF-1R protein in breast cancer cells. Therefore, it is suggest that Rp1 has potential as an anticancer drug and that IGF-1R is an important target for treatment and prevention of breast cancer.

10. *Tinospora cordifolia* (Wild) Miers [Giloye] [17]

It is mostly found in Sri Lanka, India, Myanmar and China. Stem and roots contain important alkaloids. It is also known as 'giloya' in Hindi, 'guduchi' in Sanskrit and heartleaf moonseed plant in English. Root of this plant has many alkaloids which includes tinosporin, choline, isocolumbin, columbin, tetrahydroplamatin, magnoflorimine and palmatin. *Tinospora cordifolia* stem is mostly used in the treatment of fever, dyspepsia, jaundice, skin and urinary disease. In vitro study shows *Tinospora cordifolia* able to kill HeLa cells; this shows the potential of this plant as an anticancer drug. *Tinospora cordifolia* extract shows dose dependent cell death as compared to the controls. Dichloromethane extract of *T. cordifolia* showed anticancer activity in mice transplanted with Ehrlich ascites carcinoma.

11. *Verbascum sinaiticum* [Qetetina] [41, 50]

As a traditional medicinal plant, the community of Ethiopia uses the root part of *V. sinaiticum* for many types of diseases including tumor. In consistent with the reported use of *V. sinaiticum* as antitumor, the bioactive compound sinaiticin has been isolated with proven anticancer activity against breast and prostate cancer cells.

12. *Solanum nigrum* [Blackberry] [51]

Solanum nigrum is a species of perennial shrub. The different parts (leaves, roots and stem) of *S. nigrum* are reported to be used as both food and medicinal plants in different rural communities of Ethiopia. It has been used as medicinal plant for the treatment of cancerous sores. In support with its anticancer effects, experimentally the leaves of the plant have shown significant inhibition against growth of cervical carcinoma in mice. *S. nigrum* and other species in the genus have been shown to contain the compound solasodine which has potent antineoplastic activity and supporting at least the claimed anticancer activity of the plants used in Ethiopia. Acetic acid, solanine, solanidine are some of the isolated compounds from leave part of *S. nigrum* showed significant antioxidant, hepatoprotective, anti-tumor cytostatic and anticonvulsant.

13. *Camellia sinensis* [Green Tea] [13]

Green tea contains caffeine, polyphenols like flavonoids, catechins. It is used in treating cancer, cardiovascular diseases, inflammation, weight loss, toxicity etc.

14. *Acronychia Bauer* [Hard aspen] [52]

Using a differential extraction procedure for the assessment of the bark of the Australian plant *Acronychia Baueri* Schott (*Bauerella australiana* Borzi), has brought about the isolation of the triterpene lupeol and the alkaloids melicopine, acronycine, and normelicopidine. The exploratory anti tumor action related with the crude alkaloidal blend got from the ether concentrate has been demonstrated to be attributable to acronycine. Trial proof is thus given, indicating acronycine to have the broadest antitumor range of any alkaloid separated to date in these research centers. By goodness of its being

chemically inconsequential to any of the by and by used antitumor agent it speaks to another lead in the search for agents effective in the chemotherapeutic management of human neoplasms.

15. *Catharanthus roseus* [Rose Periwinkle] [53]

It is give low degrees of two dimeric terpenoid indole alkaloids, vinblastine and vincristine, which are comprehensively utilized in cancer treatment. The dimerization reaction prompting α -3', 4' anhydrovinblastine is a significant key administrative advance for the creation of the anticancer alkaloids in plant has a potential application in the industry of two semi synthetic derivatives additionally utilized as anticancer agent. The cloning, portrayal, and subcellular localization of an enzyme with anhydrovinblastine synthase activity distinguished as the significant class III peroxidase present in *C. Roseus* leaves and were named a CrPrx1. The concluded amino acid grouping compares to a polypeptide of 363 amino acids including an N-terminal signal peptide demonstrating the secretory idea of CrPrx1. CrPrx1 has a two-intron structure and is available as a single gene copy. Phylogenetic investigation shows that CrPrx1 has a place with a transformative part of vacuolar class III peroxidases whose individuals appear to have been selected for various capacities during evolution. Expression of a green fluorescent protein-CrPrx1 combination affirmed the vacuolar localization of this peroxidase, the accurate subcellular localization of the alkaloid monomeric precursor and dimeric product. Articulation information further backings the job of CrPrx1 in α -3', 4'- anhydrovinblastine biosynthesis, demonstrating the capability of CrPrx1 as an objective to expand alkaloid levels in the plant.

16. *Eucalyptus globules* [54, 55]

Eucalyptus globulus is a species of Fabaceae family. The Sidama communities of Ethiopia are traditionally use *E. globules* leave to rub on skin to reduce fever and use the boiled leave of a mixture of *Eucalyptus* and "Damakasse" in water to treat common cold. But the scientific study shows that borneol and euglobal-III are compounds isolated from hexane extracts were reported as antitumor, anthelmintic and antihistaminic activity.

17. *Colchicum autumnale* [Colchicine] [56, 57, 58, 59]

Colchicine is a natural bioactive compound isolated from *Colchicum autumnale* (Colchicaceae) and has been research to treat several diseases like crystal arthritis, cirrhosis, gout etc. It binds permanently to tubulin, stabilizes microtubule formation, arrest cell cycle at different phases and induces apoptosis. Unluckily, colchicine's action is not very specific and targets rapidly dividing normal cells and arrests their cell cycle.

Therefore, semisynthetic derivatives (colchicinamide, deacetylcolchicine) of colchicine have been developed which are less toxic and are used for the treatment of variety of cancers including colorectal (HCT-116), chronic granulocytic leukemia, melanoma, and central nervous system and breast cancers. Colchicine shows toxicities and therefore is not recommended for the treatment of cancer disease. In recent years, *Gloriosa superba* in tropical regions reported to be vital source of colchicine.

18. Red Clover [60]

An American Indian remedy, Flor Essence, is still a popular herbal tonic consumed by cancer patients. Its main ingredient is red clover (*trifolium pretense*). The University of Maryland Medical Center found that red clover help to prevent certain types of cancer. These same scientists mention in their article that they believe red clover should not be consumed by women with breast cancer or women with a history of breast cancer in their family. Red clover supplements are available in most health food stores as tables, capsules or in a tincture. Dried red clover leaves are often brewed into a tea with a typical daily dose being about 4 grams of dried red clover to 30 milliliters of water. Red clover is another ingredient in Hoxsey Herbal Treatment, sold around the turn of the century as a cancer treatment.

19. Onion [60]

Onion has a high antioxidant activity and is associated with a variety of pharmacological items including being anti-inflammatory, antibiotic, and anti-carcinogenic. One study showed greater antioxidant activity of older rats that were fed onion. There is a definite relationship between the consumption of onions and the risk of common cancers. Researchers from the Italian Mario Negri Institute for Pharmacological Research compiled data from both Italian and Swiss controlled studies and multivariate logistic regression models for onion consumption and cancer rates. The risk rates vary, but onions lowered the risk of colorectal cancer, ovarian cancer, renal cell cancer, prostate cancer, esophageal cancer, mouth cancer, and breast cancer. Onions are high in polyphenols, which prevent diseases, including cancer. Onions are also high in antioxidants, which are also known cancer fighters. These popular veggies also contain a compound called quercetin, which has been shown to decrease cancer tumor cells.

Table II- Some Anticancer Drugs

Name of Drug	Biological Name	Family	Part of Plant	Chemical Constituent	Uses
Brahmi	Bacopa Monnieri	Plantaginaceae	Fresh and dried leaves and stems	Tetracyclic triterpenoid Saponins, Bacosides A and B, Herpestine, Brahmine, Flavonoids & Stigmasterol	Antitumor activity, Antioxidant & Anti-inflammatory activity
Ashwagandha	Withania somnifera	Solanaceae	Leaves, Bark, Root	Alkaloids (Cuscohygrine, topine), Steroids (Withaferin A, Withanone)	Slows down growth of cancer cells, Anti-inflammatory, Stimulates immune system, Anti-oxidant, Anti-ulcer & Anti-septic
Garlic	Allium Sativum L.	Amaryllidaceae	Bulb of the plant	Carbohydrate, Protein (albumin), Fat & Mucilage	Brain and colon Cancers, Carminative, Aphrodisiac, Expectorant, Stimulant & Disinfectant
Berberry	Berberis aristata	Berberidaceae	Stem, root, fruit, flower & leaves	Alkaloids (Berberine, Berbamine etc)	Ovarian cancer, prostate cancer, purgative
Turmeric	Curcuma longa	Zingiberaceae	Dried Rhizomes	Curcumin, Demethoxycurcumin etc	Colon cancer, Anti-oxidant, anti-microbial, anti-inflammatory

Desert cotton	Aerva javanica	Amaranthaceae	Stem and Leaves	Nonacosane, Heptacosane & Hentriacontane etc	breast cancer, Purgative, Antidiarrheal & anthelmintic
Long pepper	Piper longum	Peparaaceae	Entire spike, Seed & root	Piperine, Rutin, Piperlyline & Piperoleines etc	lung cancer, treatment of cough and chronic bronchitis
Chaga Mushroom	Inonotus obliquus	Hymenochaetaceae	Spore bearing fruiting body	3 β -hydroxylanosta-8, 24-dien-21-al, inotodiol and lanosterol	Breast cancer Anti-inflammatory & Immunomodulatory Drugs
Ginseng	Panax ginseng	Araliaceae	Dried root	Chikusetsusaponin, Ginsenosides & Panaxosides	Breast cancer, Immunomodulatory Drugs
Giloye	Tinospora cordifolia (Wild) Miers	Menispermaceae	Root	Tinosporin, Choline, Isocolumbin & Columbin etc	Anticancer activity, Fever, Dyspepsia, Jaundice, Skin & Urinary disease
Qetetina	Verbascum sinaiticum	Scrophulariaceae	Root	Verbascoside, Ajugol & aucubin etc	Breast and prostate cancer, Treatment of asthma, Tuberculosis & other inflammations
Blackberry	Solanum nigrum	Solanaceae	leaves, roots and stem	Solanine & Solanidine	Antioxidant, Hepatoprotective, anti-tumor cytostatic & Anticonvulsant
Green Tea	Camellia sinensis	Theaceae	Leaves and leaf buds	Caffeine, theobromine, theophylline, gallatonic acid	Colon, breast, prostate and colorectal cancers, CNS stimulant,

					diuretic
Hard aspen	Acronychi a Bauer	Rutaceae	Bark, Leaves & Fruit	Melicopine, Acronycine & Normelicopidine	Human neoplasms, Rheumatism, Prostate discomforts & Neuralgia
Rose Periwinkle	Catharanth us roseus	Apocunaceae	Dried whole plant	Ajmalicine, Vincristine, Vinblastine	Antineoplastic, acute Leukemia & hodgkin's disease
Eucalyptus	Eucalyptu s globules	Fabaceae	Leaves	Borneol, Euglobal III	Antipyretic, Expectorant & Antitumor activity
Colchicine	Colchicum autumnale				Arthritis, Cirrhosis, Gout & Breast cancer
Red Clover	L. Trifolium pratense	Fabaceae	Flowers & Herbs	Daidzein, Genstein & Biochanin A	Breast cancer
Onion	Alliun cepa	Alliaceae	Leaves & roots	Quercetin, Quercetin-3- glycoside & Thiosulfinate	Anti- inflammatory, Antibiotics, Breast cancer, Mouth cancer, Ovarian cancer & Colorectal cancer

Conclusion-

Herbal products have been a major source for the treatment of various type of cancer, many of which are included in daily life with the diet. Many herbal anticancer drugs listed above gives an idea to change in life style and food habits such that symptoms can be prevent. The antioxidants herbal plant and their constituents protect from the cancer and other disorders by preventing cell damage. Only some of herbal anticancer drugs mentioned in this review and there are hundreds of drugs unexplored needs much detailed survey. More research on herbal plants and plants-derived chemicals may result in discover of more potent anticancer drugs.

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