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Ayurvedic Drug Misails for Target Disease

Murgude MM*, Salunkhe VR, Magdum CS and Thorat SA

*Rajarambapu College of Pharmacy, Kasegaon, India.

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ABSTRACT

Cancer cells in a part of the body start to grow out of control and produce many kinds of cancer, but they all start because of this out-of-control growth of cancerous cells and they divided too quickly as compare to normal cell. Cancer cell growth is different from normal cell growth hence, it is difficult to detect cancer cell than normal cell. Some plant species mentioned in the Indian systems of ayurvedic medicines which treated various types of cancer. The modern scientific approaches of the ayurvedic plant preparation showed best health care of patients. In case of cancer treatment, the Pancha Karma was the best for treat an early stage of cancer. Ayurvedic dosage form like Gutica, vati, bhasma, churna, lepa, swarasa, paka, leha, kashaya is also important for treating cancer.

Keywords: Cancer, Ayurveda, Ayurvedic plant

INTRODUCTION

Cancer [1] is one of the most dreaded diseases of the 20th century and spreading further with continuance and increasing incidence in 21st century. In the United States, 5% deaths of persons occur due to cancer. It is considered as an adversary of modernization and advanced pattern of socio-cultural life dominated by Western medicine. Multidisciplinary scientific investigations are making best efforts to combat this disease, but the sure-shot, perfect cure is yet to be brought into world medicine. Recently, a greater emphasis has been given towards the researches on complementary and alternative medicine that deals with cancer management. Several studies have been conducted on herbs under a multitude of ethno botanical grounds. For example, Hartwell has collected data on about 3000 plants, those of which possess anticancer properties and subsequently been used as potent anticancer drugs.

Ayurveda, a traditional Indian medicine of plant drugs has been successful from very early times in using these natural drugs and preventing or suppressing various tumors using various lines of treatment. The broad aim of this article is to provide a general outline on descriptions of cancers and their management from an ayurvedic practitioner's perspective underlying its scientific principles involved in treating these conditions with the use of natural products. This article reviews the available literature regarding researches on anti-cancerous ayurvedic herbs and also includes a summary of treatment strategies for various cancers. It is written with an intention to raise awareness and encourage implementation of ayurvedic therapies for combating cancer and suggesting an integrated approach in tumor management and treatment [2]. According to a report by the World Health Organization (WHO), cancer remains a major cause of death worldwide. In 2008 there were 7.6 million deaths (approximately 13% of all deaths). In addition, approximately 70% of all cancer deaths in 2008 occurred in countries of low and middle-income status [3].

Marie (1867–1934) and Pierre Curie (1859–1906) discovered radium in 1895, which became the basis for application of radiotherapy in cancer patients. In 1898, William Bradley Coley (1862–1936), the American pioneer of cancer immunotherapy suggested a treatment modality based on provoking an immune response to a sterilized bacterial extract in cases of lymphoma and sarcoma [4].

TYPES OF CANCER

1. Anal cancer
2. Bladder cancer
3. Brain cancer

Corresponding author: Murgude MM, Rajarambapu College of Pharmacy, Kasegaon, India, Tel: 7755912919; E-mail: manisham74@gmail.com

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4. Carcinoid tumor, gastrointestinal
5. Gallbladder cancer
6. Gastric (stomach) cancer
7. Liver cancer (primary)
8. Lung cancer, non-small cell
9. Lung cancer, small cell
10. Pancreatic cancer
11. Renal cell carcinoma (kidney cancer)
12. Salivary gland cancer
13. Small intestine cancer
14. Vaginal cancer

ORIGIN OF AYURVED

'Ayurveda' is generally understood as 'Science of life' translating 'Ayuh(r)'as life and 'Veda' as science. However, the word 'science' in its conventional meaning is not an appropriate equivalent for 'Veda' [5]. Ayurvedic medicine (also called Ayurveda) is one of the world's oldest medical systems. It originated in India and has evolved there over thousands of years. In the United States, Ayurvedic medicine is considered complementary and alternative medicine (CAM)-more specifically, a CAM whole medical system. Many therapies used in Ayurvedic medicine are also used on their own as CAM-for example, herbs, massage, and specialized diets. Ayurvedic medicine, as practiced in India, is one of the oldest systems of medicine in the world. Many Ayurvedic practices predate written records and were handed down by word of mouth. Two ancient books, written in Sanskrit more than 2,000 years ago, are considered the main texts on Ayurvedic medicine-Charaka Samhita and Sushruta Samhita. Ayurvedic medicine uses a variety of products and techniques to cleanse the body and restore balance. Some of these products may be harmful if used improperly or without the direction of a trained practitioner. For example, some herbs can cause side effects or interact with conventional medicines [6]. Charaka and Sushrutasamhitas, two well-known Ayurvedic classics, describe cancer as inflammatory or non-inflammatory swelling and mention them as either Granthi (minor neoplasm) or Arbuda (major neoplasm). Ayurvedic literature defines three body-control systems, viz., the nervous system (Vataor air), the venous system (Pitta or fire), and the arterial system (Kaphaor water) which mutually coordinate to perform the normal function of the body. In benign neoplasm (Vataja, Pittajaor Kaphaja) one or two of the three bodily systems are out of control and is not too harmful because the body is still trying to coordinate among these systems. Malignant tumors (Tridosaja) are very harmful because all the three major bodily systems lose mutual coordination and thus cannot prevent tissue damage, resulting in a deadly morbid condition [7].

AYURVEDIC PREPARATION

1) *Azadirachta indica* (Neem)

It is a member of the *Meliaceae* family, is a fast-growing tropical evergreen tree with a highly branched and stout, solid stem. All parts of this tree, particularly the leaves, bark, seed-oil and their purified products are widely used for treatment of cancer. In those 60 different types constituents of biochemical's including terpenoids and steroids have been purified from this plant. Pre-clinical research work done on the *Azadirachta Indica* of the anticancer properties of the crude and purified products from this plant. The anticancer properties of the plant were studied largely in terms of its preventive, protective, tumor-suppressive, immunomodulatory and apoptotic effects against various types of cancer and their molecular mechanisms [8].

2) *Basellarubra* (Malabar spinach)

It is also known as in English Malabar spinach, Indian spinach and Hindi *lalbachlu* belongs to family *Basellaceae*. It contains phytochemical constituents such as Betacyanins, Carotenoids and Organic acids Triterpene oligoglycosides, Basellasaponins A, B, C, and D having a dioxolane type substituent, Alkaloids, Tannins, Phenols, Proteins and amino acids, Steroids and triterpenoids, Carbohydrates. The plant powder and leaves powder are triturated with sour buttermilk (takra) with salt for preparing a poultice and used to treatarbuda. Basellarubra extract is given in dose of 500 mg/kg. Basellarubra (B. Alba var. Cordifolia) is a traditional Indian medicine used to treat cancer [9].

3) *Andrographis paniculata* (Kalmegh)

Andrographis paniculatais commonly known as 'King of Bitters' belongs to family *Acanthacea*. It is distributed in tropical Asian countries. *Andrographis paniculata* phytoconstituents contains andrographolide and a compound named kalmeghin, diterpenes, lactones, flavonoids, alkanes, ketones, and aldehydes. The extract contains andrographiside and neoandrographolide from these plants are proved to benefit against tumorigenesis. Andrographolide reduces the adhesion of gastric cancer cells which block E-selection expression. The effect of ethanolic extract and andrographolide on cell-mediated immune responses in normal and tumor-bearing control animals was reported [10].

4) *Allium sativumlinn* (Garlic)

Allium sativum commonly known as garlic belongs to family Amaryllidaceae. In that more than two hundred Chemical Constituents present volatile oil with sulfur containing compounds like Ajoene (4,5,9-trithiadodeca-1,6,11-triene-9-oxide), Alliin and Allicin, enzymes like peroxidase, allinase, myrosinase. The water and lipid soluble allyl sulfur compounds are effective in blocking a myriad of chemically induced tumors. These plants block in nitrosamine formation and metabolism. So, nitrosamine

blockage in the initiation and promotion phases of the carcinogenicity of various compounds, including polycyclic hydrocarbons, provides evidence that garlic and its constituents can alter several phase I and II enzymes. The higher consumption of garlic to treat the stomach cancer and prostate cancer [11]

5) *Aloe barbadensis* (Aloe vera)

It also known as kumari, Chinese aloe, indian aloe, true aloe, barbados aloe belongs to family *Liliaceae*. The active chemical constituents of Aloins, barbaloins a-barbaloins fatty acids, cholesterol, campesterol and β-sitosterol. In case clinical trials of the use of aloe vera mild soap and aloe vera gel against incidence of radiation therapy induced skin reactions, after two weeks apart from five weeks was taken to show any skin changes in the aloe/soap treatment versus three weeks in the soap only treatment. Aloe soap is beneficial for treating the skin which is damaged due to radiation exposure [12]. In another clinical trial involving patients with advanced solid tumours, for whom no other standard effective therapy was available, combination of pineal indole melatonin (MLT) plus Aloe vera extracts produced some therapeutic benefits, at least in terms of stabilization of disease and survival when compared to MLT alone treatment [13].

6) *Barleriaprionitis* (Vajradanti)

Barleriaprionitis also known as the porcupine flower is a species of plants in the family *Acanthaceae*. The chemical constituent of plant contains flavonoid type phenolic compounds, apigenin, quercetin, naringenin, luteolin and apigenin glucoronide. The Barleriaprionitis oil prepared with whole plant is indicated for external application during acute stages of cyst in blood vessels [14].

7) *Commiphoramukul* (guggul)

Commiphoramukul also known as Indian bdellium-tree is a flowering plant in the family *Burseraceae*. The chemical constituents of plant contain myrecene, dimyrecene polymyrecene, gugulsterone, E-Guggulsterone, Guggulsterol-I, II, III cholesterol. Guggulsterone [4, 17(20)-pregnadiene-3, 16-dione] is a plant sterol derived from the gum resin (guggulu) of the tree Commiphoramukul. The active constituent guggulsterones inhibited the growth of wide variety of human tumor cells such as leukemia, head and neck carcinoma, multiple myeloma, lung carcinoma, melanoma, breast carcinoma, and ovarian carcinoma. The cancer cell resistance produces particular drug in this case they show activity against the drug-resistant cancer cells. This correlated with the enhanced apoptosis induced by TNF and chemotherapeutic agents [15].

8) *Amorphopallus campanulatus* (Elephant foot)

It also known as is a "Suran" or "Jimmikand". Amorphophallus belongs to family *Araceae*. Amorphophallus campanulatus contains phytoconstituents like alkaloids, steroids, fats, fixed oil, flavonoids, tannins, proteins and carbohydrates. Amorphophallus species can be investigated further to achieve lead molecules in the search of novel herbal drugs. Amorphophallus campanulatus traditionally used for the treatment of abdominal tumors; Epidemiological evidence suggests that dietary factors play an important role in human health as per availability and consumption rate use in the treatment of certain chronic diseases including cancer. The old plant parts burned and then mixed with butter and produce paste applied for tumor destruction [10].

9) *Agrimoniapilosa*

Agrimoniapilosa belongs to family *Rosaceae*, is commonly known as Agrimony. It is perennial herbaceous flowering plant native to temperate regions of the northern hemisphere. The methanolic extract of Agrimoniapilosa it gives anti tumour activity may be due to host-mediated actions so that the extract stimulates macrophages and induces cytotoxic macrophages [15].

10) *Acoruscalamus* (Araceae)

Acoruscalamus (Araceae) belongs to family *Acoraceae* and it is found in eastern countries and indigenous to the marshes of the mountains of India. The chemical components present in Acoruscalamus areα and β-asarone, calamenene, asaronaldehyde, acorenone, calamenone, n-heptanic acid, calanendiol and sesquiterpenes. In that α-asarone showed anti-cancer activity against human carcinoma cells and β-asarone is also responsible for anti-carcinogenic activity [16].

11) *Boswelliaserrata* (Kundur)

Boswelliaserratais also known as Shallkiguggul belongs to family *Burceraceae* it contains active component is Boswellic acid. It showed antitumour effects in addition to its anti-inflammatory effects. Boswelliaserratais beneficial for treating brain tumours, leukemic cells, colon cancer cells, metastatic melanoma and fibrosarcoma cells, and hepatoma [17-19].

12) *Baliospermummontanum* (Jamalgota)

Baliospermummontanum is also known as Danti belongs to family *Euphorbiaceae*. The Baliospermummontanum, Plumbagozeylanica, Euphorbia neriifolia, Calotropisprocera, jaggery, Semecarpusanacardium all the plants make powder produce a paste applied over the tumours [9].

13) *Crocus sativus* (Saffron)

Crocus sativus also known as Kumkuma. Saffron is a small perennial plant of oriental origin. It grows from a bulb and flowers in the fall with white, lilac or violet flowers. Saffron contains chemical constituents is carotenoid pigments it showed antioxidant properties and flower contains vitamins like Riboflavin and Thiamine. The biomedical properties of saffron and its potential use in cancer therapy and prevent

the dividing of cancer cells. In case of in vitro and in vivo investigations focused on the anticancer activity of saffron (*Crocus sativus L.*) and its principal ingredients [20-21].

14) *Curcuma domestica* (Turmeric)

It also known as turmeric belongs to family *Zingiberaceae*. The active constituents of turmeric are Zingiberene, curcumin, curcuim, alpha- & betaturmerone, zedoarondiol, alpha- & delta- atlantones, bisaboladienones, bisabolenes, bisacumol, bisacurone, curlone, curdinone, curcumins and derivatives, curcumenone, curcumenol, caryophyllenes, curzerenones, germacron derivatives, beta-sesquiphellandrene, alpha-turmerine, turmeronols, beta-turmeroone, borneol, isoborneol, camphene, camphor. The produce powder in combination of turmeric, Symplocosracemosa, Soymidafebrifuga and grinding well is mixed with honey produce a paste this is used as an external remedy. Curcumin (diferuloylmethane) is an active component of turmeric (Curcuma longa) used as a spice and as an Ayurvedic medicine for centuries to treat various diseases. Curcumin showed carcinogenesis activity of the skin, liver, lung, colon, stomach and breast. It also inhibits the growth of a wide variety of tumour cells in culture and to promote apoptosis through Bid cleavage, cytochrome c release, caspase-9 activation and then caspase-3 activation [22-44]. In vitro anticancer efficacy of CurcuEmulsomes when combined with PiperineEmulsomes highlight the potential of the system for future in vivo and clinical studies. It is essential to emphasize that the present study is the first report disclosing emulsomes as the nanocarrier system achieving combinational cancer therapy with piperine and curcumin on HCT116 CRC cell line [45].

15) Flavopiridol (Dysoxylumbinectariferum)

Flavopiridol is a semisynthetic flavonoid closely related to a compound originally isolated from the stem bark of Dysoxylumbinectariferum (also called rohitukine from Amoorarohituka), a plant indigenous to India and described in Ayurveda. The tyrosine phosphorylation of CDK 2 is also inhibited by this flavone. Through inhibition of CDKs, flavopiridol induces arrest of cell growth at the G1 and G2 phases of the cell cycle. Because of its ability to suppress the growth of breast carcinoma, lung carcinoma, chronic B cell leukaemia and lymphoma, multiple myeloma and head and neck squamous cell carcinoma, flavopiridol is currently in clinical trials for the treatment of several cancers [45-58].

16) *Ficusbengalensis* (Phagweri)

Ficusbengalens is commonly known as phagwari belongs to family *Urticacea*. Ficusbengalensis and Saussurealappa make powder produce a mixture and applied on infected bone area where is tumour growth [22].

17) *Flacourtiaromantchi* (Bhanber)

Flacourtiaromantchi commonly known as baichi or Katai belongs to family *Flacourtiaceae*. It is an indigenous plant widely distributed in Bangladesh and India. The *Flacourtiaromantchi*, Cassia fistula, Capparissepiaria all drug make powder produce a paste and applied it used to treatment for kaphaja tumours [8,46].

18) *Moringaoleifera* (Mungna)

Moringaoleifera commonly known asmungna belongs to family *Moringaceae*. The plant of Moringaoleifera seeds, Solanumxanthocarpum, Sinapisdichotoma, Holarrhena antidysenterica and Neriumodorum roots produce a powder mix with buttermilk make a paste. It is used for arbuda tumors [22].

19) *Madhucaindica*

Madhucaindica belongs to family *Sapotaceae*. Madhucaindica, Syzygiumcumini, arjuna Terminaliaarjuna and Salix caprea barks of all the plant parts make powder and produce a paste prescribed for local application [9].

20) *Oxoxylumindicum* (podaval)

Oxoxylumindicum also called tetu it belongs to family *Bignoniaceae*. The drug Oxoxylumindicum used for treatment of granthi cancer [9].

21) *Pandanusodoratissimum* (kewada)

Pandanusodoratissimum its common name kewada belongs to family *Pandanaceae*. The plant *Pandanusodoratissimum* make paste with sugar was applied externally [9].

22) *Phyllanthusniruri/amarus* (Leafflower)

Phyllanthusniruri/amarus its common name is Buinowala belongs to family *Euphorbiaceae*. An aqueous extract of Phyllanthusamarus was applied locally to treat the tumor. It plays a major role in disruption of HBsAg mRNA transcription and post-transcription which could be beneficial against viral carcinogenesis [59-60].

23) *Prosopis cineraria* (chikura)

Prosopis cineraria its common name is chikura belongs to family *Mimoaceae*. This paste made up of Prosopis cineraria seeds, Raphanus sativa, Moringaoleifera, barley and mustard with sour buttermilk was applied locally for disintegrating cysts [61].

24) *Pterospermumacerifolium*

Pterospermumacerifolium its common name is kanakcha maka belongs to family *Sterculaciae*. The flowers of *Pterospermumacerifolium* make paste with sugar was applied locally [62]

25) *Raphanussativus*

Raphanussativus belongs to family *Brassicaceae* its common name is black raddish. The plant Raphanussativus produce powder then makes paste with the radish ash and locally applied against kaphaja arbuda [62].

26) *Vitisvinifera*

Vitisvinifera belongs to family *vitaceae* is also known as vine. The powder of Terminalia chebula, grape juice and sugar cane juice all this mix well and it used to treat cancer. Resveratrol it is a natural product derivative from grape juice. The resveratrol act as cancer chemo preventive activity and anticancer properties, as suggested by its ability to it decreases growth variety of tumor cells, including lymphoid and myeloid cancers, multiple myeloma, cancers of the breast, prostate, stomach, colon, pancreas and thyroid, melanoma, head and neck squamous cell carcinomas, ovarian carcinoma, and cervical carcinoma [63-64].

27) *Withaniasomnifera* (Ashwagandha)

Withaniasomnifera belongs to family *Solanaceae*. It is used as traditional medicine for centuries for the treatment of various disease. The various parts of *Withaniasomnifera* and its constituents are effective in prevention and treatment of different kinds of cancer like colon cancer, lung cancer, blood cancer, skin cancer, breast cancer, renal cancer, fibrosarcoma, prostate cancer, pancreatic cancer. Withaniasomnifera act as prevention and treatment of different forms of cancer like prostate and lung cancers, it prevents cancer in last stage also and this wonder medicinal herb is found to be beneficial in many cancer patients [65].

28) *Zingiberofficinale Rosc.* (Ginger)

Zingiberofficinale Rosc it also known assunth belongs to family *Zingiberaceae*. Zingiber officinale Rosc, which is widespread in Southeast Asia. The active constituent of plant is Zerumbone (2,6,9,9-tetramethyl-[2E,6E,10E]-cycloundeca-2,6,10-trien-1-one) was first isolated in 1956 from the essential oil of the rhizomes of a wild ginger. Zerumbone decreases the proliferation of colon cancer and breast cancer, with minimal effects on normal cells. The pungent principle of rhizome produces anticancer activity and its powder is given to treat cancer [66].

29) *Bacopamonniera*

Bacopa is a medicinal herb used in Ayurveda, where it is also known as "Brahmi" belongs to family Plantaginaceae. The constituent most studied has been bacoside A, bacoside A3, bacopacide II, bacopasaponin C, and a jujubogenin isomer of bacosaponin C. The whole plant of bacopamonnira used to produce extract, and bacoside concentrations may vary depending upon which part of the plant extracted. The traditional use of bacopamonera Ayurvedic treatment for brain cancer [67].

30) *Piper longum* (pippali)

Piper longum also called as Indian long pepper belongs to the family *Piperaceae*. The active chemical constituent is aromatic oil, piperine, alkaloids, sesamin and pipalestrol. The roots of this plant contain pipperin, pippalartin, pipperleguminin, sterols and glycosides, piperlongumine or piplartine and dihydrostigmasterol. The active constituents piperine it showed the antitumour activity in the cancer therapy [68].

AYURVEDIC TREATMENT

When we live according to our constitution, daily and seasonal rhythm and every once in a while, receive a Pancha Karma treatment - to prevent or restore the imbalance of doshas and dhatus - a number of conditions can be relieved at an early stage. The following suggestions can be used to maintain a healthy body and mind and to prevent the development of a tumor in the best possible way. A large part of the suggestions is aimed at prevention.

AYURVEDIC DOSAGE FORM

1. Cap. Phyllanthus Niruri - 2 twice daily
2. Cap. Pitta Balance - 1 twice daily
3. Syp. Amlycure DS - 20 ml twice daily
4. Syp. Nirocil - 10 ml twice daily
5. Maharishi Amrit - Kalash - 1 teaspoonful twice daily, tablets 2 twice daily
6. Swamla compound -1 teaspoonful twice daily
7. Cap. Cruel - 2 twice daily
8. Tab. Kachnaar Guggul - 2 twice daily
9. Cap. Curcumin - 2 twice daily

CONCLUSION

Cancer is a serious health problem due to this increased death rate. GIT cancer is one of the common cancers in most people. Ayurveda the science of life is a traditional medicine system used to treat cancer. All the above plant products have been studied well and described for their medicinal properties. With these plants other supportive medicines were used according to ayurvedic principles patient achieved complete disease treating without any side effects, Medicinal property of ayurvedic plant preparation inducing cell proliferation and self-renewal of damaged proliferating tissues, and replenishing them by eliminating damaged or mutated cells with fresh cells. Medicinal plants have contributed a rich health to human beings.

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