



SCOPE AND IMPORTANCE OF AYURVEDA IN CURING CANCER: A REVIEW

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ABSTRACT

Cancer, one of the most deadly diseases spreading drastically in the 21st century and is related to modernization, irregular lifestyle pattern and stressed life. Scientists are doing their best to fight with this disease; therefore an integrated approach is required to manage and treat cancer. The oldest Indian medicine system, "Ayurveda" is a way of life, not just a system of medicine. Currently, the global population is widely accepting the Ayurvedic medicine as it provides relief. All the scientific evidences related to Ayurvedic medicine is increasing day by day. And the medicinal herbs have scientifically proven to possess anticancer effects. Ayurveda adds a step in the curative aspects of different types of cancer. Ayurveda is patient oriented. Hence, an attempt is made in this review to highlight the role of Ayurveda in curing and managing cancer. Ayurveda can prevent cancer through healthy and dietary lifestyle. Ayurveda removes any disease by its roots and has no adverse side effects.

KEYWORDS: Cancer, Ayurveda, Anticancer, Medicine, Herbal, Integrated.

INTRODUCTION

Traditional medicinal systems always played an indispensable role in meeting the global health care needs in past, present and shall also play a vital role in future. The practice of traditional medicines in India is justified by the ancient Vedas and other scriptures. Ayurveda, Unani and Amchi have developed from Vedic or classical texts and are categorized under classical health traditions. Ayurveda, Siddha, Unani, Yoga, Naturopathy and Homeopathy are the six well recognized Indian systems of medicines.^[1] The name Ayurveda is derived from two Sanskrit words Ayus means "life" and Veda means "knowledge". Ayurveda focuses on healthy living by maintaining the overall balance of the body. Ayurveda is made up of 8 parts and hence it is also known as Astanga Ayurveda.^[2] The traditional Indian holistic medicine, "Ayurveda" uses plant derived products for cancer care, is a way of life not just a system of medicine. The Ayurvedic science is believed to accelerate steps on to the curative aspects of cancer and thus leads a healthy life through killing the cancer cells.^[3] Cancer is a major health hazard both in developing and developed countries. The second leading cause of death worldwide is due to cancer and chemotherapy is the most common treatment method.^[4] A disease caused by an uncontrolled division of abnormal cells in a part of the body is known as cancer. There are a number of chemical, physical and biological

agents that have been shown to trigger the mutations in the cell blueprint that cause cancer. These are called carcinogens and include tobacco, ultraviolet radiation and asbestos. This disease is marked by the cells in the human body continually multiplying with the inability to be controlled or stopped. And hence consequently leads in the formation of malignant tumors of cells having the potential to be metastatic. Nowadays, it is very difficult or nearly impossible to find out the exact cause of cancer as there are, however, multiple factors that may cause cancer.^[5] About 50% of global cancer burden is carried out by the developing countries that unsoundly have access to just 5% of total available resources to combat with the disease. Cancer is the most dreaded disease of 21st century and the management of cancer includes surgery, radiation therapy, chemotherapy and biological therapy, resulting in the cure of less than 50% of people with cancer.^[6] According to the World Health Organization (WHO), the common risk factors for cancer include the excessive use of tobacco, alcohol, dietary factors, physical inactivity and obesity. About 20% of global cancer death and 70% of global lung cancer death is only due to the excessive use of tobacco. Nowadays, the numbers of cases of cancer are increasing gradually and is regarded as one of the major health problems around the globe.^[7] A chronic disease like cancer not only disturbs the body of a person, but also affects the mind. The second leading cause of death after heart

diseases is cancer. At global level, India has the highest number of oral cancer cases. In women, there is a higher rate of cervical and breast cancers, ultimately accelerates the cancer burden in women than men. Cancer prevention is an action taken to lower the risk of getting cancer by avoiding the exposure to known cancer-causing substances and leading a healthy life. There are various drugs available for the treatment of different types of cancer but, moreover no drug is found to be fully effective and safe. The various treatment of cancer is very painful and have adverse side effects on the human body system. Many Ayurvedic anticancer medicines can be used as a subordinates to enrich the quality of life Therefore, today Ayurveda emerges as the new hope in the management and treatment of cancer.^[8] Most of the cancer patients, who are incapacitate with this disease and suffering from harmful side effects from chemotherapeutic drugs are turning back to natural remedies hoping for a better cure. Ayurveda treats the disease from root of origin. Ayurveda plays an important complementary role to western medicine in treatment efficiency.^[9] Ayurveda can be advantageous in the management of cancer in several ways such as prophylactic, palliative, curative and supportive. Surgery, chemotherapy and radiotherapy are the primary modalities of cancer treatment and these can be used alone or in combination. The combined modality therapy enhances the survival rates (numbers) of different forms of cancer.^[10] In the treatment of cancer there is the use of powerful chemicals, bursts of radiation to complete removal of tumour and surrounding tissue. Pain, risk and disability to the patient occurs due to the treatment. Ayurveda provides a lot of relief to patients through natural treatments.^[11] The holistic approach is very scientific, having less or no side effects, therefore it is important to acknowledge and enhance the good potential of Ayurveda for the treatment and management of cancer world widely.

Ayurvedic Concept of Cancer and Its Management

Cancer treatment with Ayurveda goes back to 7th century BC, where Atreya and Dhanwanthari used herbal medicines for treating early stages of cancer. In Ayurveda the cancer treatment is managed by the use of plant-derived products, which ultimately reduces the adverse side effects of cancer in patients. The Indian system of medicine "Ayurveda" is nearly 5000 year old, depends on natural substances for healing and the word "cancer" may be new to it. However the Ayurveda classics (Charaka) and (Sushruta) are aware of the clinical characteristics, resembling cancer.^[12] The living cells is the basic and functional unit of human body. Cancer is caused by the mutations to the Deoxyribo nucleic acid (DNA) within the cells. These DNA mutation may be inherited from parents to the off springs. It may be a spontaneous problem that occurs during the lifetime of a person.^[13] According to the Ayurvedic concept of "Charaka"^[14] and "Sushruta samhitas"^[15], cancer was outlined as an inflammatory or non-inflammatory swelling and mention them as either

Granthi (minor neoplasm) or *Arbuda* (major neoplasm).^[16] In Ayurvedic literature, three body-control systems were described *i.e.* the nervous system (*Vata* or air), the venous system (*Pitta* or fire) and the arterial system (*Kapha* or water). These are the three biological factors that mutually coordinate to perform the normal function of the body. In benign tumors one or two of the three body systems (*Vataja*, *Pittaja* or *Kaphaja*) are disturbed and is not too detrimental because the body is still adjuring to coordinate among these three body controlled systems. However in malignant tumors, all the three body controlled systems (*Tridosaja*) lose mutual coordination and get out of control, resulting in tissue damage and causes critical condition.^[17] Different types of tumors have been described in Ayurveda based on the aggravated *Dosha* and the tissue involved are *Vataj*, *Pittaj*, *Kaphaj*, *Medoj*, *Mamsaj* and *Raktarbuda*. Among these *Mamsarbuda* and *Raktarbuda* are described as incurable. Ayurveda don't rely on any aggressive body treatments and have a broad range of therapies and herbs to redeem (purify) and substructure body tissues for natural recovery. Ayurveda activates the self-healing abilities of the body. The activation point in the traditional medicinal system is balancing the Tridoshas and Trigunas. As Tridoshas can produces excessive metabolic crisis, resulting in proliferation. Ayurveda can determine subtle disturbances in a very early stage of cancer. Cancer is marked by the unusual growth of cells and it is curable only when detected in its early stages, as on later stages it damaged all the three body controlled systems of the human body.^[18] The key concept of the Ayurvedic treatment is the elimination of the cause and avoidance of the causative factors. The traditional medicinal system does not suppresses the main symptoms and never create some side effects of the main treatment. Ayurveda confirms to remove the root cause and give permanent relief from any type of disease. The medicines related to the Ayurvedic treatment mainly consists of powders, tablets, decoctions and medicated oils, usually extracted from natural herbs, plants, and minerals.^[19] In Ayurveda, Pancha Karma is regarded the best treatment method, activating the body's self-healing ability, calm the Doshas and Gunas and eradicates the excess Kapha and toxins from the human body system. After analyzing the cause of the cancer, site of the tumor and the strength of the patient, large parts of the body channels are cleansed and the Dhatus nourished and revitalized with herbs, diet and complementary therapies. Pancha Karma proves to be profitable for the dual recovery of body and mind. Ayurvedic medicine reaches beyond "the strict treatment of symptoms" and assists the human body system in its recovery phase.^[20] In Ayurveda, many herbal decoctions consisting of several herbs along with anticancer property were used. Many of the herbs like *Andrographis paniculata*, *Annona muricata*, *Phyllanthus amarus*, *Piper longum*, *Podophyllum hexandrum linn.*, *Tinospora cordifolia* and *Semecarpus anacardium* have been scientifically justified to have anticancer properties. Many of the Ayurvedic plants posses cytotoxic potential against

various cancers *in vitro* and *in vivo*.^[21] Ayurveda is a complete integration of six important Indian philosophical systems, many physical or behavioral sciences and the medical arts. Ayurveda focuses to heal the sick, to maintain health in the healthy and to prevent disease from the human body and hence promote quality of life and a long life. There is always a correlation with the neoplasms, solid tumors and malignancies with the diseases described in Ayurvedic texts. In current practices, cancer management through Ayurveda shows outstanding results and proves to be very successful in many patients.^[22]

Ayurvedic/Fundamental Classification

The Ayurvedic classification of neoplasm or solid tumors depends on the various clinical symptoms, associated with the *Tridoshas*. These are further categorized into three groups. Group I includes all those diseases that are clearly malignancy, which includes *arbuda* and *Granthi*, e.g. *mamsarbuda* (melanoma) and *raktarbuda* (leukaemia) *mukharbuda* (oral cancer), etc. Group II comprises all those diseases that can be considered as cancer, such as incurable ulcers e.g. *Tridosaja gulmas* (abdominal tumours like carcinomas of the stomach and liver or lymphomas). And the last Group III consists of all those diseases having the possibility of malignancy. e.g. *Visarpa* (erysipelas), *asadhya kamala* (incurable jaundice) and *nadi vrana* (sinusitis).^[23] These three groups or classification of neoplasm helps the medical science to cure cancer with a higher efficiency and makes a healthy and better life.

Mechanism of Action of Ayurvedic Drugs

"Ayurveda", the most ancient wisdom and science of life has a long history and its basic principles are valid even today. In many developing countries, the primary source of medical treatment is based on the herbal medicine. The Asian and African populations totally depends on the medicinal plants from thousands of years back. According to the World Health Organization (WHO) some nations still rely on the plant-based treatment as their main source of medicine for various diseases.^[24] Many herbal decoctions, oils and medicines were used for cancer treatment in Ayurveda. The herbal decoctions comprises of multiple herbs each possessing tremendous potential for curing cancer. These herbal decoctions worked on multiple biochemical pathways and also have the potential to influence several organ systems to coordinate simultaneously. The key benefits of herbal decoctions is it nourishes the body as a whole.^[25] The therapeutic doze of the various drugs is reduced by using cow urine as proved in some studies. The Ayurvedic preparations can fight against tumors by targeting the specific tissues.^[26] Ayurvedic drugs can act as an adjuvant or a co-therapy along with chemotherapy and radiotherapy. Ayurvedic medicines helps to reduces the side effects of other therapies and proves to be very beneficial in post-surgery care. The drugs shows cell-protective activity as prescribed in the *Rasayana* therapy, thus ultimately improves the comfort and the quality of

life of individuals suffering with cancer. The three basics of Ayurveda: the nervous system (Vata or air), the venous system (Pitta or fire) and the arterial system (Kapha or water) are very important for normal body function. Ayurvedic drugs were used as supplements with chemotherapy and radiation therapy and also meliorate the situation of cancer. To reduce the toxic effects of other therapies, "*Snehana*" meaning intake of various medicated oil preparations in a classical way (a week or 10 days prior) to the start of chemotherapy or radiotherapy is practiced. Chemotherapy involves the introduction or use of strong chemicals. These chemicals target the fast-multiplying mutant cells and also causes toxicity to the normal tissues of the body. *Rasayanas* (Natural drugs) used in Ayurveda have also been proved to have antioxidant properties. The modern cancer therapy is burdened by the drug-induced toxic side effects is now turning back to the traditional medicine system. The main aim of Ayurvedic therapy is to find the ultimate cause of an illness. Moreover, the therapeutic approach of Ayurveda is divided into four categories as *Prakritisthapani chikitsa* (health maintenance), *Rasayana chikitsa*, (restoration of normal function), *Roganashani chikitsa* (disease cure) and *Naishthiki chikitsa* (spiritual approach).^[27] In Ayurveda, disease development is described into six stages that includes aggravation, accumulation, overflow, relocation, build-up in a new location and manifestation into a recognizable disease. Ayurvedic physicians are able to diagnose an illness at even the initial stages of body imbalance. The balance of the human body is maintained through the therapeutic approach by supplying all the deficient substances or by eliminating the excessive ones.^[28] *Rasayana avaleha* is the Ayurvedic semi-solid pharmaceutical that enhances the quality of life.^[29] Many of the Classical Indian Ayurvedic drugs were found to be radio-protective in cancer treatment. Some of them are *Amritaprasham*, *Ashwagandha Rasayana*, *Brahma Rasayana*, *Chyavanprasha*, *Narasimha Rasayana*, and *Triphala Churna*.^[30] In a study the effects of *Rasayana Avaleha* on adverse effects of chemotherapy were recorded as: 46.01% relief was found in the complaints of nausea and vomiting, 42.32% relief was found in the problem of constipation, 42.02% relief was found in mucositis and 19.5% relief was found in maintaining the WBC count.^[31] Due to all these positive aspects of Ayurvedic treatment, a major portion of population is nowadays going for this treatment method. Ayurvedic supplements protect healthy cells, regulate body metabolism and treats the disease properly without any side effects.

Methods of Treatment Applied In Ayurveda

The primary method used for the medical management of cancer is *Sodhana chikitsa* means purification process that eliminates vitiated *doshas* from the body. *Panchakarma chikitsa* is the process in which medications were given both externally and internally. The treatment prescribed for the weaker patients is *somana chikitsa* that removes doshas and provides relief from the disease. Another one is *Rasayana prayoga* also

called as immunotherapy in which certain poisonous plants, mercury like metals and animal products separate out the impurities or non-toxic substances harmlessly and are used as rejuvenating drugs. *Dhatwagni chikitsa* or correction of metabolic defects, *Vyadhipratyanika chikitsa* or specific anti-cancerous drugs and *Lakshanika chikitsa* or symptomatic treatment are some of the other treatment modalities of Ayurveda used to cure cancer.^[32] In Ayurveda Surgical cancer management includes the principles of fomentation by means of external application, cleansing by internal medication, treatment to liquefy the contents of the swelling, opening the tumour surgically for evacuation of its contents, cauterization to avoid recurrence and post-operative care for healing the wound.^[33] Cauterization with alkalis and acids and other surgical procedures were performed with herbal and mineral medicines. And cauterization is done to destroy any of the remaining cell particles from the body. These all are the successful methods or procedures used in Ayurveda that are scientifically proven and has recorded excellent outcomes in saving the life of the people suffering from cancer.

Various Ayurvedic Medicinal Plants Used In Curing Of Cancer

Recent research indicates a definite positive impact of application of medicinal herbs in curing cancer with excellent outcomes. There are many herbs that are used in Ayurveda to cure cancer. All medicinal herbs helps in total healing of the body, reduces the side effects and cancer-associated complications from the body.^[34] To understand the anticancer potential of herbs, they are being investigated phytochemically and are nowadays under clinical studies. More than 25% of drugs used during the last 20 years are directly derived from plants, while the other 25% are chemically altered natural products.^[35] The herbs usually contain multiple active principles that work synergistically and hence produces the therapeutic benefits. It also avoid the requirement of supplemental therapy to manage cancer and reduces the risks of adverse effects.^[36] A lot of studies from all over the world revealed that some herbs have anti-cancer characteristics. In Ayurveda, cow urine has a unique place that efficiently repairs the damaged DNA and thus it is very effective for the cancer therapy. Among all sorts of urines, the urine of the Indian cows is the most effective one.^[37] The medicinal plants are easily available, cheaper and possess no toxicity as compared to any other treatment. Many other compounds like polyphenols, brassinosteroids and taxols have been identified and extracted from the terrestrial plants because of their anticancer properties. Some of the very common anticancer herbs are Ashwagandha (*Withania somnifera*), Garlic (*Allium sativum*), Ginger (*Zingiber officinale*), Basil (*Ocimum basilicum*), Turmeric (*Curcuma longa*), Green tea (*Camellia sinensis*), Saffron, Tomatoes (*Solanum lycopersicum*) and Aloe vera. Multiple herbs possess great potential for the management and curing of cancer.^[38] In Rasayana or

Rejuvenatory therapy some very important herbs such as Ashwagandha, Shatavari, Amalaki, Guduchi, Bala are used (Fig.1). This therapy improves the general well being and can act as an immunity boosters to promote Health and Wellness. Many of the Ayurvedic herbs were used in its raw form while some of them were converted into paste, oil, lubricants and in the powdered form. Some of the medicinal herbs were very common and is very easily found in the lawns and gardens of the people. The preparation process of every individual herbal plant is different and is also applicable in varied form, depending on the type and stage of tumour. Many of the medicinal herbs comprises of very important compounds having anti-cancer properties. These compounds were extracted from the barks, roots, leaves, flowers and sometimes from the fruits as well. Nowadays, due to the excessive use of medicinal herbs, some of them are being less in population. So it is very important to use them in a sustainable manner and also there is a need to explore some other procedures to cure cancer. Many studies provided the complete list of herbal medicine used for the management and treatment of cancer. An attempt in this review is also done to summarize the name, benefits of the herbs that are most common and efficient to treat cancer.

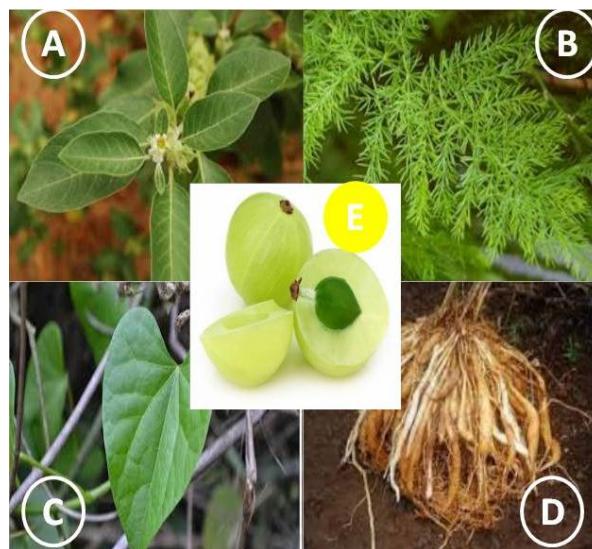


Figure 1: Species uses in curing of cancer; (A) Ashwagandha; (B) Guduchi; (C & D) Shatavari; (E) Amla.

Several herbs commonly used in ayurvedic anticancer treatment were listed in Table 1. The main objective of table is to encourage the physicians and researchers to utilize these herbal drugs for an effective management and treatment of cancer.

Table 2: List of herbs commonly used in Ayurvedic anticancer treatment.

S. No.	Name of the Herb	Benefits
1.	<i>Madhuca indica</i>	Its paste is used in local application.
2.	<i>Withania somnifera</i>	It slows down the growth of cancer cells.
3.	<i>Vitis vinifera</i>	Its juice possess cancer chemo preventive activity.
4.	<i>Basella rubra</i>	It is used in <i>arbuda</i> tumour.
5.	<i>Ficus bengalensis</i>	Its application pacify tumour growth on the bone.
6.	<i>Tinospora cordifolia</i>	Used in cancer treatment as a Immuno modulator.
7.	<i>Oxoxylum indicum</i>	Used in treatment of <i>granthi</i> .
8.	<i>Curcuma domestica</i>	Used in external remedy.
9.	<i>Prosopis cineraria</i>	Used for disintegrating cysts.
10.	<i>Stephenia tetrandra</i>	Tetrandrine is extracted from its roots and used in cancer therapy.

Some of the most beneficial and commonly used herbal medicines for cancer treatment along with their application were elaborated in table 1. However, there are a lot of herbs that can be efficiently applied to cancer patients. And this ancient traditional system of medicine proves to be more effective. Because of the vital principles of Ayurveda, most of the people are nowadays going for the treatment by Ayurveda.

CONCLUSION

This review summarized the important role of natural herbs in the treatment of cancer. More than 80% of the world's population cannot afford modern medicines. Although many modern medicine only provides symptomatic treatment and largely ignores the underlying conditions. But Ayurveda focuses to treats the disease from its root of origin. Ayurveda also provides cost- effective treatments. Ayurveda is critically patient oriented. Ayurveda offers excellent medicines and treatments which can be easily incorporated with the mainstream cancer medicines. It is very important to incorporate ayurvedic therapy along with other therapies like chemo and radio, as researchers reported that there is a positive impact of this collaboration on the patients of cancer. The principles of the ancient knowledge of holistic Ayurvedic medicine are valid even today. Therefore, collaborations between these two medicinal systems would be mutually beneficial and can cure this dangerous disease. Many studies reported that ayurvedic treatment enhances the lifestyle of a person and also makes mind better. Ayurveda aims to treat cancer by the following ways a) Curative way includes all those medicines who have shown encouraging results for cancer. b) Supportive way include Ayurveda in allopathic treatment to combat their side effects and improves the quality of life. c) Prophylactic way includes Swasthavritta (Hygiene), Ahara (Diet), Vihara (Life styles) which are especially required to prevent cancer. d) Palliative way comprises of various groups of drugs to increase immunity. So, it is very important to aware people about the positive aspects of Ayurvedic treatments over any other treatments.

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