

Cancer & Ayurveda as a Complementary Treatment

Aim Purpose

To get an insight in the various medicines that treat cancer and how we can improve the situation of the patient during treatments. What are the goals of Ayurvedic treatment in cancer?

The main difference between Western and Ayurvedic treatment of cancer is that Ayurveda doesn't have any aggressive body treatments. Ayurveda stimulates the self-healing abilities of the body. Ayurveda has a wide range of therapies and herbs to purify and support body tissues for natural recovery. The starting point is balancing the Tridosha's and Triguna's. Ayurveda can determine subtle disturbances in a very early stage of this disease. Even before it manifests itself, Ayurveda can already establish disturbances in the balance of mind and body. Both in this first stage and in the following stages, Ayurveda can help a patient to recover and prevent serious chronic diseases. In all the stages, even when a chronic disease like cancer has been diagnosed, Ayurveda can provide extensive knowledge of herbs and treatment strategies. During chemotherapy and / or radiotherapy, Ayurveda can help to reduce the side-effects of the treatment as well as assist the body in its recovery process.

A chronic disease like cancer does not only disturb the body, it also affects the mind. When someone is blocked in his development, he may become frustrated. This will imbalance the mind and leads to all kinds of symptoms like hyperactivity, lethargy, indifference or even depression. The last three are mental attitudes Ayurveda refers to as "Tamasic", the negative aspect of Tamas. Tamas has a strong resemblance with the Tridosha Kapha. When a chronic disease such as cancer develops, Tamas and Kapha can reinforce each other. Ayurveda considers psychotherapy as a meaningful part of the treatment. Because health can be attained only through balancing body, mind and spirit.

When radiation or chemotherapy is the only possible way, the body is severely depleted. There are a few Ayurvedic remedies to support the body in this process; preserve your strength, you need all your energy in your recovery process. Limit the amount of proteins in your diet in order to slow down tumor growth. For a large part tumors contain proteins. In case of a loss of appetite, eat a number of small meals instead of three large meals. Drink a little bit more before and after meals. Avoid cold foods as they suppress digestive fire. If solid foods cause problems, replace them with nutritious soups. Use herbs to boost the immune system. In case of nausea use ginger.

Pancha Karma is recommended to activate the body's self-healing ability, calm the Doshas and Gunas and remove excess Kapha and toxins from the body. Depending on the cause (V/P/K), the 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. After chemotherapy Pancha Karma will be beneficial for recovery of both body and mind. Ayurvedic medicine reaches beyond "the strict treatment of symptoms."

Review Article

Volume 6 Issue 5 - 2017

Anita Pilmeijer*

Ayurvedic Practitioner, EISRA European Institute for Scientific Research on Ayurveda, Netherlands

***Corresponding author:** Ayurvedic Practitioner, EISRA European Institute for Scientific Research on Ayurveda, Netherlands, Email: mixtrading.hollandafrica@gmail.com

Received: January 18, 2017 | **Published:** April 28, 2017

What can we do With Ayurveda to Improve the Disease Process of a Cancer Patient?

Ayurveda stimulates the self-healing abilities of the body. Ayurveda has a wide range of therapies and herbs to purify and support body tissues for natural recovery. The starting point is balancing the Tridosha's and Triguna's. Ayurveda can determine subtle disturbances in a very early stage of this disease. Even before it manifests itself, Ayurveda can already establish disturbances in the balance of mind and body. Both in this first stage and in the following stages, Ayurveda can help a patient to recover and prevent serious chronic diseases. In all the stages, even when a chronic disease like cancer has been diagnosed, Ayurveda can provide extensive knowledge of herbs and treatment strategies. During chemotherapy and / or radiotherapy, Ayurveda can help to reduce the side-effects of the treatment as well as assist the body in its recovery process.

In which Way can Ayurveda Contribute to Preventing and Healing Cancer

Ayurveda advises to live according our constitution, daily and seasonal rhythm and every once in a while a Pancha Karma treatment – to prevent or restore the imbalance of Doshas and Dhatus – and a number of conditions can be relieved at an early stage. Use herbs prescribed by your Ayurvedic doctor, make sure you have enough exercise or walks in nature. Practice meditation and Yoga for mental and physical relaxation, listen to harmonious music is healing and calming the mind. Try to have more Sattvic foods to balance both body and mind, respectively Doshas and Gunas. Sattvic foods consist of fresh, energizing foods as fresh fruits and (leafy) vegetables, milk, cereals, pure fruit juices, butter and fresh cheese, fresh nuts, seeds, sprouts, honey and herbal teas. No snacks or fast food and ready-to-eat meals. Avoid microwave ovens, limit meat consumption, especially red meat. Vitamin D has a protective effect on the development of tumors, fatty fish, eggs and vegetable oils are natural sources of vitamin D. Ayurveda has always turned to nature for inspiration to practice medicine and wisely uses natural resources.

Ayurveda is an ancient system of life (ayuh) knowledge (veda) practiced in India for more than 5000 years. The great Rishis or seers of ancient India came to understand creation through deep meditation and other spiritual practices. They observed the fundamentals of life, organized them into an elaborate system and compiled India's philosophical and spiritual texts, called Veda of knowledge. Ayurveda finds its roots deeply embedded in the Vedas. Vedas are ancient Hindu scriptures very near and dear to Hindu hearts. There are four Vedas: Rig, Yajur, Sama and Atharva Veda. The references of Ayurveda found in Vedas are related to various topics such as human anatomy and physiology, theory of Tridoshas (three biological forces) and Panchamahabhuta (five proto-elements), aetiology of disease, classification of diseases, medicinal use of herbs, various types of treatments, dietary regimen, medical ethics, health by following moral code of conduct etc.

Ayurveda is a careful integration of six important Indian philosophical systems, many physical / behavioral sciences and the medical arts.

The History of Ayurveda

Ayurveda works to heal the sick, to maintain health in the healthy and to prevent disease in order to promote quality of life and a long life.

Body, senses, mind and soul are termed as Life. Also known as Nityaga (the one passing by constantly). A Tripod of mind, soul and body holds Life. A combination of these three is called Purusha (human being), the prime subject in Ayurveda. Life as per Ayurveda can also be studied from another angle, called Prana. By Prana, Ayurveda means a wholesome combination of following Satva, Raja, Tamas, Vayu, Agni, Soma, Five sense organs and Atma. Here Satva, Rajas and Tamas are the mental Gunas (qualities) and Vayu, Agni and Soma represent Vata, Pitta and Kapha (the three humors). A deficit in any of them causes diseases or death.

Tripod Satva, Atma, Shareera, three Pillars to support life.

Satva

Mind is concerned with the thinking process and the intellectual understanding that derives from knowledge and with the ability to retain knowledge and make use of it. The true balance of the mind is very important for the well-being of an individual. Practicing the right use of the mind not only solves the psychological problems but also directs us to our higher potential of self-realization.

Atma: Soul

Jeevatma is the individual soul, known as the living entity. Paramatma is the Super-soul, known as the supreme Lord who resides in the hearts of all living entities as the witness. He is never affected by sorrows or joy, he is the observer. When the Jeevatma departs the body, one dies.

Shareer: body

At the time of conception Atma enters both the sperm cell and

ovum. Atma converts some of the Panchamahabhoota from both cells into newer entities, capable of sustaining life.

Health is not mere absence of diseases but is defined as an experience of happiness in the soul, mind and senses. Health is a good balance of the body's three governing forces, seven tissues, three wastes, digestion and other processes such as immune functioning. Ayurveda lays greater emphasis on prevention of diseases than their cure. Sushruta, an eminent ancient scholar and author of Sushruta Samhita, the surgical text, has defined the state of health. According to his teachings, a person whose Dosha, Agni (digestive fire), Dhatus (tissues) and Malas (excretory functions) are in balance and his soul and body – indriyas (higher functions) and Mana (mind) are happy; then the objective of Ayurveda is achieved. Health is termed as 'Swasthya' in Ayurveda – one who stays in his 'Swa' (self). 'Swa' also denotes 'Prakriti' or constitution, which makes the concept of 'Swa' different from person to person.

Ayurveda classifies people in three groups based on the dominance of three basic biological forces or energies or humors of life called Kapha, Pitta and Vata. The structure of the human body, as per Ayurveda is formed by five great elements, the Panchamahabhoota and the Tridosha (three working entities). Tridosha is formed by Panchamahabhoota.

Cancer and Ayurvedic Medicinal Plants

Cancer has been a constant battle globally with a lot of development in cures and preventative therapies. The disease is characterized by cells in the human body continually multiplying with the inability to be controlled or stopped. Consequently, forming tumors of malignant cells with the potential to be metastatic. (I.Ochwang)

Current treatments include chemotherapy, radiotherapy and chemically derived drugs. Treatments such as chemotherapy can put patients under a lot of strain and further damage their health. Therefore, there is a focus on using alternative treatments and therapies against cancer.

For many years herbal medicines have been used and are still used in developing countries as the primary source of medical treatment. Plants have been used in medicine for their natural antiseptic properties. Thus, research has developed into investigating the potential properties and uses of terrestrial plants extracts for the preparation of potential nanomaterial based drugs for diseases including cancer.

Medicinal plants have been used for thousands of years in folk medicines in Asian and African populations and many plants are consumed for their health benefits in developed nations. According to the World Health Organization (WHO) some nations still rely on plant-based treatment as their main source of medicine and developing nations are utilizing the benefits of naturally sourced compounds for therapeutic purposes. (Rajaeswara Rao, B.R.Singh). Compounds which have been identified and extracted from terrestrial plants for their anticancer properties include polyphenols, brassinosteroids and taxols.

Ashwagandha (*Withania Somnifera* – Indian Ginseng)

Reduces Vata/Kapha (with excess Pitta), immune boosting herb, supports the recovery process of overall fatigue, nervous conditions, generally rejuvenates tissues. Ashwagandha is sweet, astringent and bitter in taste (Rasa), has a sweet post digestive effect (vipaka) and hot potency (virya). It nourishes all dhatus (tissues) and has a rejuvenating property (rasayana). It increases the sexual vigor and vitality (vajikara) in both sexes. It possesses laghu (light) and snigdha (unctuous) attributes. It is beneficial for a wide range of problems. It is a mild diuretic which reduces the excessive body fluids. It is also beneficial in blood diseases as it is a blood purifier. In oedema due to anaemia, the medicated milk of Ashwagandha is very useful.

Numerous studies demonstrate that Ashwagandha works in multiple ways to help prevent or stop the growth of the often deadly disease of cancer. (Marie Winters – Ancient Medicine, Modern Use)

- i. Antioxidant protection of normal cells against cancer (G.H Schmelzer).
- ii. Pro-oxidant attacks against cancer cells.
- iii. Enhances the effects of chemotherapy and radiation against cancer cells.
- iv. Protects normal cells against damage from conventional cancer therapy.
- v. Stops angiogenesis – the creation of new blood vessels that feed cancer and help it grow and spread (Shiel jr, William C.).
- vi. Binds to and blocks proteins that cancers need to grow (Yu, Yanke et Al).

One of the ways that Ashwagandha prevents cancer from proliferating and spreading is by interrupting cell division and inhibiting the development of new blood vessels that feed the voracious cancer cells. An animal study modeling lung cancer demonstrated that supported the chemotherapeutic activity of Paclitaxel (Taxol) while its antioxidant properties reduced the oxidative stress caused by the tumors. (Schmelzer, Gabriëlla Harriët and Gurib-Fakim, Ameenah)

- a. Shatavari (*Asparagus Racemosus*) Reduces Vata / Pitta, aggravates Kapha. Immune boosting herb, supports digestion, helpful with stomach ulcers, inflammation and chronic fevers. Helps Menopausal conditions, production of tissue. Shatavari is sweet and bitter in taste (rasa), sweet in the post digestive effect (vipaka) and has cold potency (virya). It possesses heavy (guru), unctuous (snigdha) and soft (mrdu) attributes. The main properties are cold, rejuvenative, tonic, galactagogue, aphrodisiac, anabolic and beneficial for eyesight. Shatavari augments the appetite and stimulates the liver. It is effective for the treatment of gastric and duodenal ulcers.
- b. Guduchi (*Tinospora cordifolia*) Balances Tridosha (Vata, Pitta, Kapha), helps increase the effectiveness of protective white blood cells and builds up the body's own defense mechanism

(immune system), very effective herb for the live rand helps to prevent liver infections, beneficial for digestive disorders, especially recommended before and after chemotherapy, to recover and build up strength. Guduchi is bitter, pungent and astringent in taste (rasa), sweet in the post digestive effect (vipaka) and hot in potency (virya). It possesses light (laghu) and oily (snigdha) attributes. Internally, Guduchi is one of the most effective Rasayanas-Rejuvenatives. It works well on the seven Dhatus – Tissues and keeps the systems in balance. It is immensely helpful in the digestive ailments like hyperacidity, colitis, worm infestations, loss of appetite, abdominal pain, excessive thirst, vomiting and liver disorders like hepatitis.

- c. Triphala (Amalaki = *Emblica officinalis* Bibhitaki = *Terminalia Bellirica*, Haritaki = *Terminalia chebula*) Balances Tridosha (Vata, Pitta, and excess Kapha) Promotes normal appetite, good digestion. Increases red blood cells and hemoglobin. Removes excess Kapha and aids to remove undesirable fat, helpful in Diabetes. Promotes natural internal cleaning, nourishes and rejuvenates the tissues and is a natural antioxidant.

Triphala is known for its anti-cancer properties. Toxicity study showed that triphala was non-toxic up to a dose of 240 mg/kg. One of the studies stated that, it is a good radioprotective agent. It is useful in reducing the growth of cancerous tumors cells in the body. It is useful in the prevention of cancer and that it also possesses antineoplastic, radioprotective and chemoprotective effects. Triphala slows down the growth of pancreatic cancer cells. Scientists found that the tumors in triphala-treated mice were half the size of those in the untreated mice, without any side effects on normal pancreatic cells. It helps in reducing the spindle formations there by reducing the risk of growth of metastasis of cancer cells. According to December 2005 Journal of Experimental and Clinical Cancer Research from the Radiation and Cancer Biology Laboratory at Jawaharlal Nehru University noted that Triphala was effective in reducing tumor incidences and increasing the antioxidant.

- d. Tulsi (*Ocimum sanctum*) – Holy Basil. Pacifies Vata and Kapha, increases Pitta. Ignites the digestive fire, is a cardiac tonic. Have anti-inflammatory, antioxidant capabilities. Reduces the effect of chronic stress, promotes wound healing, lowers blood sugar levels in Diabetes type II, improves memory and lowers cholesterol. Benefits the immune system, preventive against tumors and especially beneficial in the first stage of many types of tumors. Tulasi is pungent and bitter in taste (rasa), pungent in the post digestive effect (vipaka) and has hot potency (virya). It possesses light (laghu) and dry (ruksha) attributes. On the contrary the seeds are oily (snigdha) and slimy (picchila) in attributes and have a cold potency (virya). Tulasi is salutary to increase appetite and improve digestion.
- e. Foods that help prevent and inhibit tumor growth are Raisins, soaked in water, Red beets detoxify the liver as beet juice and soup with herbs according to your constitution, raw beets, Carrot juice has anti-carcinogen properties when used for 3 months, Turmeric (*Curcuma*) powder, in the morning with a

glass of lukewarm water is antibacterial, stops bleeding, heals tissue and is a strong anti-inflammatory. (dr.A.Mehta)

Turmeric (Curcumin)

has been extensively researched for decades and has demonstrated clear anti-cancer power in clinical trials, it is still not widely prescribed in cancer therapy as there is little financial incentive to do so. Drug companies cannot patent natural substances, and without a patent there is no profit. The good news is that you are still able to receive many of the benefits of curcumin by using the spice turmeric liberally in your cooking and/or through supplements. One challenge with getting enough curcumin into your diet is that it is not highly bioavailable. In other words, the human body doesn't absorb much curcumin when it's ingested alone. Curcumin is also not soluble in water, only in fat. Therefore, it's best to combine turmeric with a healthy oil such as extra virgin olive or coconut oil whenever possible in recipes. (Note: never use vegetable oils such as corn, soy, canola, sunflower, etc. as these are pro-inflammatory oils, contribute to cancer, and are often rancid and genetically modified.)

When combined with other powerful nutrients such as fish oil, olive or coconut oil, and/or black pepper, curcumin's anti-cancer effects are further amplified as it becomes more readily available to the body.

According to Dr. Michael Greger, MD, piperine (the phytochemical in black pepper that gives it its pungent flavor), increases the absorption of curcumin by as much as 2,000%. Apparently, even a little pinch of black pepper (as little as 1/20th of a teaspoon) can have positive and significant absorptive effects on the body. Dr. Greger also noted that eating the whole fresh turmeric root is best and mixing natural oil with it can enhance curcumin's delivery as much as seven to eight times. (dr. V. Desaulniers)

Herbs Used When Effects From Allopathic Medicine Side

- i. Diarrhea - Bilva, Amla
- ii. Constipation - Haritaki
- iii. Sleeplessness - Jatamansi
- iv. Fatigue - Bala
- v. Memory decline - Brahmi, Haritaki, Vacha
- vi. Hair Loss - Brahmi, Bringaraj oil (dr. A. Mehta)

Classical Ayurveda and Cancer

'Arbuda' is the Sanskrit word for tumor. According to Sushruta the three Doshas (Vata, Pitta and Kapha) when aggravated may develop a malignant tumor; especially aggravated Kapha and Vata Doshas. This affects the tissue, which might result in developing a malignant tumor.

This tumor will have the following features

- a. Round
- b. Firm

- c. Causing mild pain
- d. Large
- e. Deeply rooted in the body
- f. Slow growth
- g. Showing no suppuration
- h. A swollen, fleshy growth

A malignant tumor does not suppurate because it contains an excess of Kapha and adipose tissue, thus forming firm little balls.

Sushruta (The Sushruta Samhita is the major surgical text of Ayurveda, by the surgeon Sushruta. Ashtanga) describes 6 types of tumors, the first four are benign and can be successfully treated at an early stage with proper therapies. The last two tumors are malignant.

Tumor	Caused By
Vatika Granthi	Vata Dosha
Paitika Granthi	Pitta Dosha
Kaphaja Granthi	Kapha Dosha
Medas Granthi	Affected adipose tissue
Rakta Arbuda (blood tumor)	Affected blood (malignant)
Mamsa Arbuda (muscle tumor)	Affected muscle tissue (malignant)

Symptoms of benign tumors

Tumor	Caused By
Vatika Granthi	Variable stinging, sharp pain, large, black, mobile enlarges or shrinks, hard bulging, aggravated Vata
Paitika Granthi	Burning sensation, yellow or red color, grows quickly, Aggravated Pitta
Kaphaja Granthi	No pain, big hard lump, cold, skin color, itches, aggravated Kapha
Rakta Granthi (blood)	Aggravated Vata, Pitta and Kapha circulate through the blood stream, with Pitta Dosha as main cause for the disturbance.
Mamsa Granthi (muscle tissue)	Excessive consumption of wrong kinds of meat.
Medas Granthi (fatty tissue)	Fatty, soft, mobile. Symptoms similar to disturbed Kapha; increases or decreases in size with gain or loss of weight of the patient. Vata transports fat to the muscle tissue or skin.
Asthi Granthi (bone tissue)	Fractures or injuries to the bone, that accumulate Vata.
Sira Granthi (channels)	Deverely accumulated Vata, weakens the blood consistency which enters the channels of the body.
Vrana Granthi (ulcer)	Excessive intake of all types of food, whilst recovering from ulcer.

Internal hemorrhage, where Vata dries up the vitiated blood. Benign tumors, when detected in an early state are curable because the drying, compressing and contracting qualities of Vata have closed the blood vessels. This has made it impossible for the tumor to root deeply in the tissues and growth and nourishment are highly limited. However when these tumors are in the blood stream, they are much more serious and harder to cure. Important features for a successful chance of recovery are pain and mobility of the tumor. Whenever a tumor is firmly attached and has started to grow, it is hard to treat and recovery is extremely difficult.

Malignant tumors

Rakta Arbuda occurs when aggravated Doshas hamper blood vessels in their functioning, impeding the blood circulation as well. This leads to disturbances in the blood, comparable to the accumulation of toxins (ama) in the blood. These toxins (e.g. carcinogens) can be the cause of a tumor. When tumors develop in the blood vessels, their spreading through the blood- and lymphatic system will soon become a reality. This large spreading of tumors will make recovery extremely difficult. Symptoms of blood tumor: little fluid or pus accumulation (inflammatory signs) around the tumor, grows quickly, covered with small metastases and secretion of disturbed (vitiating) blood. This form is very difficult to cure.

Mamsa Arbuda occurs when muscles get disrupted from fighting for instance. When from the punching the muscles show a swelling which is stony hard, painless, glossy, immobile without inflammatory signs of the same color as the surrounding, then this is the tumor. This form is more common in non-vegetarians. Mamsa Arbuda is extremely difficult to cure for the same reasons as Rakta Arbuda.

Three forms of metastasising according to Sushrut

- a. Raktarbuda: When a tumor is surrounded by smaller tumors
- b. Adhyarbuda: Development of another tumor over the first tumor. Or when a tumor arises
- c. On a pre-existing site or near a primary tumor.
- d. Dviarbuda: When two tumors arise at the same time.

Those tumors that cause large secretion of fluid in the surrounding tissue, are located in vital locations or channels (lymphatic system and blood vessel system) or tenaciously attached to the surrounding tissue are highly difficult to cure. Malignant tumors do not suppurate and do not exude fluid, blood or pus anymore. They are no longer removed by the body, grow quickly and cover a large area. They are caused by three vitiated Doshas and always affect muscle tissue, adipose tissue and blood.

(dr. Anil Mehta)

Triguna and Cancer

Not only the body functions but also the mental functions can contribute to the development of a tumor: the Triguna.

- i. Sattva (goodness, purity) harmonious, balanced mind or attitude, friendliness, calm,

- ii. Rajas (passion) dynamic mind, sometimes restless, forceful.
- iii. Tamas (ignorance) quite state of mind, sometimes slow and uninterested.

When someone is blocked in his development for some reason, he may become frustrated. This will imbalance the mind and lead to all kinds of symptoms like hyperactivity, lethargy, indifference or even depression. The last three are mental attitudes Ayurveda refers to as "Tamasic", the negative aspect of Tamas. Tamas has a strong resemblance with the Tridosha Kapha. When a chronic disease such as cancer develops, Tamas and Kapha can reinforce each other. Ayurveda considers psychotherapy as a meaningful part of the treatment. Health can only be attained through balancing body, mind and spirit.

Modern Research on Ayurveda and Cancer

Modern research is being conducted to explore the anti-cancer effects of herbs and formulations described in classical texts and used by Ayurvedic physicians in clinical practice.

Plumbago Rosea, Withania Somnifera, Semecarpus Anacardium, Achyranthes Aspera, Saraca Asoka, Hemidesmus Indicus, Pandanus Odoratissimus, Curcuma Longa, Tinospora Codrifolia, Commiphora Mukul and the list goes on.

Varanadi Ghritam and Indukantam Ghritam are formulations that have been explored for their beneficial effects in cancer. The traditions of text and practice in Ayurveda continue to be explored for new leads to develop drugs for management of cancer.

Vincristine and Vinblastine were harvested from the plant Vinca Rosea for the management of leukemia. This plant does not, however, figure prominently in the classical Ayurvedic texts. The numerous medicinal plants mentioned in Ayurvedic literature have shown potential benefits in the management of cancer, but the preliminary findings have not been translated into potent medicines that can be effectively used at the point of care.

An article reports in the Journal Integrative Cancer Therapies that Asian botanicals (from both Chinese and Ayurvedic medicine) are being evaluated for their ability to improve therapeutic gain through the modulation of reactive oxygen species. An increase in the efficacy of radiotherapy on tumor tissue allows a reduction in the dose applied to normal tissues. In addition, some botanicals may selectively protect normal tissue or increase its repair following radiation therapy. The results are promising enough to consider clinical trials. Biran Lawenda from Uniformed University of Health Sciences, Bethesda points out that numerous botanical agents, many of which are used in whole medical system practices (i.e. traditional Chinese medicine, Ayurvedic medicine etc.) have been shown to exhibit radiomodifying effects on tumors and normal tissues in-vitro and in-vivo studies. Some of these agents can enhance the therapeutic gain of radiotherapy by either acting as a radiosensitizer to tumor cells and/or as a radioprotector to normal cells.

Conclusion

The resulting vision of Ayurvedic pathology offers the possibility to develop individualized treatment modules according to causal

factors. The causal factor will be one of the three Doshas that is prevented from correct functional communication due to lifestyle habits, diet, secondary effects of medication, environmental chemicals, or psychosomatic reasons. The possible causes for the disruption of Dosha function are unlimited. If identified? the causes should be removed, as the cause of Dosha pathology will prevent the re-establishment of homeostasis [1-30].

How does Ayurveda aim to treat cancer?

- i. Curative: Medicines who have shown encouraging results for cancer.
- ii. Supportive: Include Ayurveda in allopathic treatment to combat their side effects and improve quality of life
- iii. Prophylactic: Include Swasthavritta (Hygiene), Ahara (Diet), Vihara (Life styles) who are especially required to prevent cancer
- iv. Palliative: Various groups of drugs to increase immunity Ojas. And drugs known for their anti inflammatory properties.

Through identification of causal factors that inhibit immune response treatments that reestablish homeostasis would also allow the innate power (Bala) of immunity to manifest on a general level. If the innate strength is sufficient then refined cellular nutrient extract (Ojas) would permit and support correct cellular functional communication. The enzyme activity that is present in all cellular functions would then be stimulated to remove any non-digested substances that had accumulated through time and deposited throughout the tissues by the circulatory system. This combined activity would permit an increase in the cancer cell suppression mechanisms resulting in the reduction of cancer cells and their proliferation..

References

1. Vahl TP, Kodali SK, Leon MB (2016) Transcatheter Aortic Valve Replacement 2016: A Modern-Day "Through the Looking-Glass" Adventure. *J Am Coll Cardiol* 67(12): 1472-1487.
2. Ross J Jr, Braunwald E (1968) Aortic stenosis. *Circulation* 38(1 Suppl): 61-67.
3. Varadarajan P, Kapoor N, Bansal RC, Pai RG (2006) Survival in elderly patients with severe aortic stenosis is dramatically improved by aortic valve replacement: results from a cohort of 277 patients aged > or =80 years. *Eur J Cardiothorac Surg* 30(5): 722-727.
4. Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin J, et al. (2014) 2014 AHA/ACC guideline for the management of patients with valvular heart disease: executive summary: a report of the American College of Cardiology/ American Heart Association Task Force on Practice Guide- lines *Circulation* 129(23): Circulatio 129(23): 2440-2492.
5. Arora S, Misenheimer JA, Ramara R (2017) Transcatheter Aortic Valve Replacement: Comprehensive Review and Present Status. *Tex Heart Inst J* 44(1): 29-38.
6. Eweborn GW, Schirmer H, Heggelund G, Lunde P, Rasmussen K (2013) The evolving epidemiology of valvular aortic stenosis. The Troms study. *Heart* 99(6): 396-400.
7. Dweck MR, Boon NA, Newby DE (2012) Calcific aortic stenosis: a disease of the valve and the myocardium. *J Am Coll Cardiol* 60(19): 1854-1863.
8. Carabello BA, Paulus WJ (2009) Aortic stenosis. *Lancet* 373(9667): 956-966.
9. Bates ER (2011) Treatment Options in Severe Aortic Stenosis. *Circulation* 124(3): 355-359.
10. Swinkels BM, Plokker HW (2010) Evaluating operative mortality of cardiac surgery: first define operative mortality. *Neth Heart J* 18(7-8): 344-345.
11. Osswald BR, Gegouskov V, Badowski-Zyla D, Tochtermann U, Thomas G, et al. (2009) Overestimation of aortic valve replacement risk by EuroSCORE: implications for percutaneous valve replacement. *European Heart Journal* 30(1): 74-80.
12. Agarwal S, Tuzcu EM, Krishnaswamy A, Schoenhagen P, Stewart WJ, et al. (2015) Transcatheter aortic valve replacement: current perspectives and future implica- tions. *Heart* 101(3):169-177.
13. Inoue K, Owaki T, Nakamura T, Kitamura F, Miyamoto N (1984) Clinical application of transvenous mitral commissurotomy by a new balloon catheter. *J Thorac Cardiovasc Surg* 87(3): 394-402.
14. Cribier A, Eltchaninoff H, Bash A, Borenstein N, Tron C, et al. (2002) Percutaneous transcatheter implantation of an aortic valve prosthesis for calcific aortic stenosis: first human case description. *Circulation* 106(24): 3006-3008.
15. Webb JG, Chandavimol M, Thompson CR, Ricci DR, Carere RG, et al. (2006) Percutaneous aortic valve implantation retrograde from the femoral artery. *Circulation* 2006 113(6): 842-850.
16. Leon MB, Smith CR, Mack M, Miller DC, Moses JW, et al, (2010) PARTNER Trial Investigators. Transcatheter aortic-valve implantation for aortic stenosis in patients who cannot undergo surgery. *N Engl J Med* 363(17): 1597-1607.
17. Capodanno D, Leon MB (2016) Upcoming TAVI trials: rationale, design and impact on clinical practice. *EuroIntervention* 12(Y): Y51-Y55.
18. Kadakia MB, Herrmann HC, Desai ND, Fox Z, Ogbara J, et al. (2014) Factors associated with vascular complications in patients undergoing balloon-expandable transfemoral transcatheter aortic valve replacement via open versus percutaneous approaches. *Circulation Cardiovascular interventions* (4): 570-576.
19. Blackstone EH, Suri RM, Rajeswaran J, Babaliaros V, Douglas PS, et al. (2015) Propensity-matched comparisons of clinical outcomes after transapical or transfemoral transcatheter aortic valve replacement: a placement of aortic transcatheter valves (PARTNER)-I trial sub-study. *Circulation* 131(22): 1989-2000.
20. (2017) US Securities and Exchange Commission. Boston Scientific Corporation, Form 8-K.
21. Lee M, Modine T, Piazza N, Mylotte D (2016) TAVI device selection: time for a patient-specific approach. *EuroIntervention* 12(Y): Y37-Y41.
22. Smith CR, Leon MB, Mack MJ, Miller DC, Moses JW, et al. (2011) Transcatheter versus Surgical Aortic-Valve Replacement in High-Risk Patients *N Engl J Med* 364(23): 2187-2198.

23. Mack MJ, Leon MB, Smith CR, Miller DC, Moses JW, et al. (2015) 5-year outcomes of transcatheter aortic valve replacement or surgical aortic valve replacement for high surgical risk patients with aortic stenosis (PARTNER 1): a randomized controlled trial. *Lancet* 385(9986): 2477-2484.
24. Haussig S, Mangner N, Dwyer MG, Lehmkühl L, Lücke C, et al. (2016) Effect of a Cerebral Protection Device on Brain Lesions Following Transcatheter Aortic Valve Implantation in Patients With Severe Aortic Stenosis: The CLEAN-TAVI Randomized Clinical Trial. *JAMA* 316(6): 592-601.
25. Grube E, Schuler G, Buellesfeld L, Gerckens U, Linke A, et al. (2007) Percutaneous aortic valve replacement for severe aortic stenosis in high-risk patients using the second- and current third-generation self-expanding CoreValve prosthesis: device success and 30-day clinical outcome. *J Am Coll Cardiol* 50(1): 69-76.
26. Mack MJ, Brennan JM, Brindis R, Carroll J, Edwards F, et al. (2013) Outcomes following transcatheter aortic valve replacement in the United States. *JAMA* 310(19): 2069-2077.
27. Leon MB, Smith CR, Mack MJ, Makkar RR, Svensson LG, et al. (2016) Transcatheter or surgical aortic-valve replacement in intermediate-risk patients. *N Engl J Med* 374 (17): 1609-1620.
28. Amat-Santos IJ, Dahou A, Webb J, Dvir D, Dumesnil JG, et al. (2014) Comparison of hemodynamic performance of the balloon-expandable SAPIEN 3 versus SAPIEN XT transcatheter valve. *Am J Cardiol* 114(7): 1075-1082.
29. Reardon MJ, Van Mieghem NM, Popma JJ, Kleiman NS, Søndergaard et al, (2017) the SURTAVI Investigators. Surgical or transcatheter Aortic-Valve Replacement in Intermediate-Risk Patients. *N Engl J Med* 374: 1609-1620.
30. Ludman PF, Moat N, deBelder MA, Blackman DJ, Duncan A, et al. (2015) UK TAVI Steering Committee and the National Institute for Cardiovascular Outcomes Research. Transcatheter aortic valve implantation in the United Kingdom: temporal trends, predictors of outcome, and 6-year follow-up: a report from the UK Transcatheter Aortic Valve Implantation (TAVI) Registry, 2007 to 2012. *Circulation* 131(13): 1181-1190.
31. Barbanti M, Petronio AS, Etori F, Latib A, Bedogni F, et al. (2015) 5-Year Outcomes After Transcatheter Aortic Valve Implantation With CoreValve Prosthesis. *JACC Cardiovasc Interv* 8(8): 1084-1091.
32. Barbanti M, Tamburino C (2016) Late degeneration of transcatheter aortic valves: pathogenesis and management. *EuroIntervention* 12(Y): Y33-Y36.