

# AYUSH Cancer Conclave 2019

## Accepted Posters Papers with Abstracts

### 1. An outlook to prostate cancer and its Ayurvedic approach

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**Introduction:** Prostate cancer occupies the second position among cancers in males. Clinical symptoms of prostate cancer include frequent nocturnal urination, haematuria, pain on back, hips and upper thighs, painful ejaculation. In *Ayurveda Rachana Shaareera*, prostate gland can be correlated to 'Pourusha Grandhi' which is a part of *Mootravaha Srotas* (Urinary system). Cancer is more or less correlated to 'Arbuda' in Ayurveda. Considering the symptoms of prostate carcinoma, the disease can be allied with 'Vatashthila' and 'Mootra Grandhi' among the *Mootraghata Rogas* described in Ayurvedic classics. **Aim:** In this study highlighted to prostate cancer and its ayurvedic approach (classical view and its management). **Materials and methods:** This work is an appraisal on prostate cancer in *Ayurvedic* perspective and its management methods in *Ayurvedic* system of medicine. **Results:** Treatment etiquette in prostate cancer can be summarized as normalizing *Apana Vayu* (Type of *Vata* which manages excretory function of body), *Mutra Sangahara* (urine retention) and *Arbuda Shamana* (pacify to tumour). The treatment principles include *Srotosodhana* (purification of macro and micro channels of body), *Vata anulomana* (regularising physiological movement of *Vata*), *Lekhana* (scrapping), *Chedhana* (excision) and *Rasayana Chikitsa* (rejuvenation therapy). Specific drugs for the treatment of prostate cancer keeping the above protocol are *Chiravilwadi Kashaya* for *Apana Vayu Vaigunaya* (viatiation of *Apana Vayu*), *Chandraprabha Vati* as *Mutra Sanga Hara* and *Rasayana, Varatika Bhasma* and *Kanmada Bhasma* as *Mutra Sangha Hara, Arbuda Samana, Rasayana. Lokeswara Rasa* as *Arbuda Shamana, Sukumara Rasayana* as *Anulomana* and *Rasayana. Shiva Gulika* as *Rasayana, Arogyavardhini Vati* as *Rasayana*. Based on the therapeutic action of *Aushadha Dravya* as *Dosha Prashamanam, Dathu Pradooshanam, Swasthavritta*, the above formulations are proposed to act on different stages of *Roga samprapti* like *Paka* (Suppuration), *Kledana* (nourishment), *Vibhajana* (division), *Vivardhana* (growth) and *Samhanana* (Compactness) of *Dathu* (tissues) mediated by *Dosha*. After weighing the *Tara- Tama Bheda* of *Dosha*, intensity of *Dosha-Dooshya Samoorchana*, a *Vaidya* must choose above formulations which can assure specific and symptomatic relief on prostate cancer. **Conclusion:** The above formulations which are widely used in various other systemic diseases can be revived for the treatment of prostate cancer. Thus an attempt should be made to bring light to the hidden capability of these formulations in curing prostate cancer.

**Keywords:** *Pourusha Grandhi, Mootravaha Srotas, Vatashtila, Mootra Grandhi*

### 2. Therapeutic effects of anti-cancer drugs

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**Background:** Ancient systems of medicine are purely of curative, preventive, social. Now, we don't discover it but we re-discover it. The uncontrolled division and proliferation of cells. Ayurveda and traditional system of medicines are in an upsurge presently. The monoclonal activities of cells are even broken by our native drugs. The therapeutic and bioactive molecules in Ethanol and Methanolic extract; Flavonoids of natural drugs are taken into account. **Aims:** The impending documentation is confined with products of cancer management. The drugs taken into account in this poster presentation are *Curcuma longa, Withania somnifera, Acorus calamus*. The drugs taken acts against the cancer cells with their properties at molecule level. **Results:** The Oncopharmacological property of the plants and their derivatives are the essence in treating the cancer cells and their action. **Conclusions:** The pharmacodynamic and the pharmacokinetic action of the *Curcuma longa, Withania somnifera, Acorus calamus* are useful in targeting the cancer cells.

**Keywords:** Anti-cancer, monoclonal activity, replication

### 3. Role of Triphala in prevention of Retinoblastoma: A conceptual study

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**Background:** Retinoblastoma is a common type of ocular cancer in children. In retinoblastoma cancer spread within eye and beyond the eyes mainly brain and spine. Although chemotherapy is the preferred type of therapy, a successful treatment for retinoblastoma requires enucleation (removal of eye ball). Use of *Triphala* internally and as *Netra Kriya Kalpas* (therapeutic procedure for eye vision) can preserve the vision and also in detecting cases halt the spread to other parts of the body. **Aim:** To know the role of *Triphala* in protection of the spread of Retinoblastoma. **Materials and methods:** Literature are searched from the Medline database, science direct used keywords like *Triphala (Amalaki- Emblica officinalis L., Hartitaki- Terminalia chebula (Retz.), Vibhitaki- Terminalia bellirica Roxb.)*, Chebulinic acid, Chebulagic acid, Retinoblastoma, *Netra pathyas* (wholesome for eye vision), *Netra Kriya Kalpas*. By using the comprehensive search and filters applied, 5 studies are selected. Out of 5, two are in-vitro studies of *Triphala* and Chebulinic acid cancer cell lines

study. One *in-vivo* study Chebulagic acid in retinoblastoma cells. Modern and Ayurveda textbooks like Clinical ophthalmic oncology, Retinoblastoma, Susruta samhita, Astanga Hridaya for finding the role of *Triphala* in Retinoblastoma. **Results :** *Embllica officinalis* L., *Terminalia chebula* (Retz.), *Terminalia bellirica* Roxb. contains high levels of anti oxidants. *Triphala* and active constituent chebulagic acid and chebulinic acid shown significant anti-proliferative potential on Retinoblastoma cells. *Haritaki*, *Vibhitaki*, *Amalaki* is having *Chakshushya Guna* (good for vision). *Ruksha* (dryness) and *Ushna* (hot) property of *Triphala* remove the *Abhishyandatva* (conjunctivitis) of Srotas present in *Netra* (eye). To preserve the vision and prevent the spreading of retinoblastoma *Netra Kriya Kalpa* like *Seka* (closed eye irrigation) and *Kshalana* (open eye irrigation) with *Triphala Kashaya* (decoction), *Aschotana* (instillation) with *Triphala Kwatha* (decoction) or *Triphala Arka* (distilled medicine), *Pindi* (Poultice) with *Triphala* and honey, *Lekhana Anjana* (scaping collyrium) prepared out of *Triphala*, *Tarpana* (suspension of ghee in eye) with *Triphala Ghrita* (ghee). Internally *Triphala* along with *Ghrita* and *Madhu* (honey) act as *Rasayana* (rejuvenation therapy) and also increases the immune system of the patient. Internal use of *Triphala* told for *Netra Raksha* (care of eye), as *Netra Pathya* and as a *Nitya sevaniya dravya* (rutein wholesome diet). **Conclusion:** *Triphala* can play an important role in protection of eye and prevents the spread of retinoblastoma.

**Keywords:** Chebulagic acid, chebulinic acid, *Netra Kriya Kalpa*, retinoblastoma, *Triphala*

#### 4. Cosmetic toxicity- An Agada view

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**Background:** Incidence of cancer is on an alarming rate in the present era, among which skin cancer, breast cancer are the most common. While reviewing on this, we can see that the main culprit behind these cancers and that too especially among women is the daily use of wide range of cosmetics. When we have a close look into these products whether it is the talcum powder, facewash, deodorant etc. we see that it's just a combination of chemicals of which parabens, used as preservatives is the most common. **Aim:** The study is a necessity to highlight as well as create awareness of the harmful effects of these cancer-causing cosmetics along with a safer alternative. **Materials and methods:** Various articles and journals regarding the carcinogenic effects of cosmetics have been analysed and it was found that, an article published in Journal of drugs and dermatology explains that parabens which have been extensively used in skincare as antimicrobial agent are potential carcinogens in breast cancer, uterine cancer and skin cancer. Another article, GC-MS method for the determination of paraben preservatives in the human breast cancerous tissue successfully validated for the determination of parabens in cancerous breast tissue. All these references were collected and further compared to those mentioned in our *Samhitas*. **Results:** Sushruta Acharya in Sushruta Samhita, *Kalpa Sthana* has mentioned the various *Adhishthana* for *Vishadana* (effective places of *Visha* on body) and when we look into those we find that the *Adhishthana*, *Visha Lakshana* (toxic effect) mentioned in our classics and those signs and symptoms of cosmetic toxicity are found to be the same. **Conclusion:** While the chemicals in cosmetics make

us look, feel and smell good, researches have proven that beyond a certain level, there are chances of these becoming cancerous and paraben groups are the major amongst them. So, at least now we should go for an effective as well as potent alternative. Acharya Sushruta in Sushruta Samhita *Kalpa Sthana* has explained about the *Visha Adhishthana* (effective places), *Lakshana* (symptoms) with its effective management. With this reference, cosmetic toxicity can be effectively managed by considering it under *Gara Visha* with various *alepas* and *panas* mentioned from an *Agada* prospective.

**Keywords:** Cancer, *Garavisha*, parabens

#### 5.A review on cancer management with treatment protocols of Ayurveda

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**Background:** Cancer is a term used for a group of diseases in which cells in the body grow and divide in an uncontrolled manner. The normal cells change into cancer cells due to lifestyle-related factors, viral infections, physical, chemical and biological agents that are carcinogens. In *Ayurveda*, *Mandagni* (low appetite) is the main cause of cancer. So, there is a need for better preventive, curative, In Ayurvedic Classical texts such as Susruta Samhita, Charak Samhita, disease entities like *Arbuda* (tumour), *Granthi* (cyst) were described, that can be probably considered as cancer-based on its physical appearance and signs. **Aim:** To explore for new leads to develop drug management of cancer. **Materials and methods:** Information regarding cancer (its etiology, occurrence, pathogenesis, treatment) is collected from various books of pathology and medicine. Recent researches regarding cancer and its treatment modalities from SCI indexed journals were analyzed. **Results:** Many experimental and clinical studies have been published on ayurvedic drugs which have anti-tumor activities and also immune-modulators *Guduchi* (*Tinospora cordifolia* (Willd.) Hook.f. and Thoms.), *Ashwagandha* (*Withania somnifera* (L.) Dunal), *Shatavari* (*Asparagus racemosus* Willd.), *Pippali* (*Piper Longum* Linn.), *Triphala* (*Embllica officinalis* L., *Terminalia chebula* (Retz.), *Terminalia bellirica* Roxb.), etc. In the textbooks, mostly the drugs having *Katu*, *Tikta*, *Kashaya Rasa*, *Ushna Veerya* have a cytotoxic effect on tumor cells. Treatment modalities in *Ayurveda* are *Shodhana* and *Samana* process. In *Shodhana* (bio-purification) by *Panchakarma*. In *Samana* (pacification) process (a) *Rasayana Chikitsa* (rejuvenation therapy) for nutritive crisis and immune-compromised state (b) *Dhatwagni Chikitsa* (treatment for tissue formation enzymes) for the treatment of *Aama Dosha* and *Mandagni* (low appetite) (c) *Vyadhi Pratyhanika Chikitsa* (disease specific treatment) by *Katu* (pungent), *Tikta* (bitter), *Kashaya* (astringent), *Ushna Veerya* (heating nature of an ingested substance) herbal and minerals *Dravya* (d) *Lakshanika Chikitsa* (symptomatic treatment) (e) *Satwavyajaya Chikitsa* (subjugation of mind counselling) in patients with emotional impairment involving psychotherapy, *Yoga*, meditation, regular exercise, relaxation (f) *Cauterization* (g) excision (h) *Pathya-Apathya*: dietary intervention. **Conclusion:** The traditional practice in *Ayurveda* continues to be explored for new leads to develop drug management of cancer. Numerous medicinal plants in *Ayurveda* literature have shown potential benefits in curing cancer. *Rasayana* therapy, dietary intervention, *Yoga*, and meditation can act as palliative care for the treatment of cancer. According to WHO reports, 30%-60% occurrence of cancer can be prevented by

following a suitable lifestyle, dietary intervention, regular exercise, and *Yoga* & meditation. *Ayurveda* simulating malignancies may help to construct a pathophysiological and therapeutic lead for future studies in the area of herbal therapy for cancer.

**Keywords:** Cancer, *Mandagni*, palliative approach

## 6. Efficacy of *Brahma Rasayana* in cancer cachexia- A review

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**Background:** Cancer cachexia is characterized by systemic inflammation, negative protein and energy balance and an involuntary loss of lean body mass, with or without wasting of adipose tissue. The metabolic mechanism of adipose mass reduction, loss of skeletal muscle and fatty degradation are known to be mediated by proinflammatory cytokines, neuropeptides, hormone catabolic factors and digestive factors. Cancer treatments with chemotherapeutic agents and ionizing radiation have considerable effect on haemopoietic system. But it produces side effects and most important being myelosuppression which at times produce life threatening consequences. *Ayurveda* recommends the use of appropriate *Rasayanas* with adaptogenic, immunopotentiating and antioxidant drugs like *Amalaki Rasayana*, *Chyavanaprasa*, *Ashwagandha Avaleha* and *Brahma Rasayana*. *Brahma Rasayana* was found to activate antibody-dependent cytotoxicity significantly and found to act as immunomodulators. **Aim:** This study is intended to collect all the related literature of *Brahma Rasayana* and to access its efficacy in cancer cachexia. **Materials and methods:** The literary research was done through various data bases such as published journals, research articles, classical references including *samhithas*. The literature search was done on various databases including Pubmed, DHARA, AYUSH Research Portal, Science direct by using the MESH Terms *Brahma Rasayana* and cancer cachexia, *Brahma Rasayana* and *Ayurveda*, *Brahma Rasayana* and cancer. From obtained 311 combined results 258 records were excluded on the basis of filters applied on clinical trial and included 53. Then the articles were screened on the basis of title relevance and abstract from which 5 numbers of most comprehensive articles were selected. **Results:** From various studies, it is found that *Brahma Rasayana* is having immunomodulatory action and it stimulates haemopoietic system. A study also shows that it can reduce the oxygen radicals and harmful effects produced by the oxygen free radical mediated injuries. **Conclusion:** *Brahma Rasayana* has been shown to protect the undesirable side effects of radiation and found to reduce myelosuppression in cancer patients. As the preparation given is a multitude of biological activities, it should be inferred that activity of *Brahma Rasayana* is a combined effect of several plant derived compound. Active principle involved in it is yet to be confirmed. As *Brahma Rasayana* is a polyherbal compound, its multifold benefits and active principles involved in it is yet to be analysed in future studies

**Keywords:** *Brahma Rasayana*, Cancercachexia, *Rasayana*, *Ayurveda*, Cancer

## 7. Conceptual foundation of *Ayurveda* in understanding carcinoma

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**Background:** *Ayurveda* Studies in carcinoma have explored its correct equivalence in terms of similarity in signs and symptoms. Conclusions do not vary much though there are several scattered principles in classical texts which help in understanding Carcinoma in *Ayurveda*. **Aim:** This study is proposed to explore the conceptual foundation of *Ayurveda* in understanding Carcinoma. **Materials and methods:** Review of relevant references from published papers and classical texts of *Ayurveda*. **Results:** *Gramya Ahara* (traditional diet), described in *Pranakamiya Rasayana*, includes series of *Ahara* (diet) which causes vitiation of all three *Doshas* Viz. *Vata*, *Pitta* and *Kapha* (three functional energy of body). Such consumption results in different *Dhatugata Lakshanas* (symptoms on bodily tissue) like- *Vidahata* of *Rakta*, *Shithilata* of *Mamsa*, *Vishyandana* of *Meda*, *Vimuchana* of *Sandhi*, *Asandhana* of *Majja* in *Asthi*, *Apravartana* of *Shukra* and *Kshaya* of *Ojas*. A person consuming these foods is susceptible to many diseases and will not be able to enjoy the full span of life. Furthermore, the vitiated *Vata* from this *Ahara* lodges the component of *Kapha*, *Pitta*, etc. in the specific *strotas* causing the hindrance in the normal functioning of particular *Dhatu*. This phenomenon results in cluster of different localized and generalized signs and symptoms which get manifested with *Gata* or *Avruta Vata* (covered by *Vata Dosh*). **Conclusion:** *Dhatugata Lakshanas* of *Gramya Ahara* together with the concept of *Gata* and *Avruta Vata* substantiates the manifestation of carcinoma in *Ayurveda* and draws the attention of a physician to adopt proper modality of treatment so that the *Vighatana* of *Samprapti* can be achieved.

**Keywords:** Carcinoma, *Gata* and *Avruta Vata*, *Gramyahara*, *Samprapti Vighatana*

## 8. *Arbuda*: Ayurvedic concept of understanding biology of cancer

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**Background:** An integrative approach is required to improve the lacuna in the management of cancer with minimum side effects. **Aim:** Present study is aimed to explore and understand the concept of *Arbuda* (tumour) that has resemblance with biology and clinical features of Ayurvedic cancer so that much more contributions to the preventive and curative aspect of cancer can be adopted to the suffering humanity. **Materials and methods:** Informations about cancer and its clinical conditions are reviewed from modern text books and the diseases with similar clinical manifestations to cancer described in *Ayurveda* are reviewed and critically analyzed from authentic texts of *Ayurveda* and published research articles. **Result:** Numerous references have been coated in identification and

description of malignant diseases in different contexts in the classical Ayurvedic texts. Descriptions regarding etio-pathogenesis, growth pattern, sites and types of *Arbuda* go hand in hand with the clinical manifestations of malignant lesions and the preventive measures as well as effective treatment protocols have been described under the same. **Conclusion:** In depth understanding of *Arbuda*, its preventive measures and clinical management as per *Ayurveda* will bring about a considerable cost effective and easily accessible mode of treatment of cancer with fewer side effects for the suffering population. Systematic and rigorous research is needed to explore the hidden knowledge and pinpoint the specific benefits that *Ayurveda* can offer in the management of cancer.

**Keywords:** *Arbuda*, *Ayurveda*, cancer

## 9. Chemotherapy- An Ayurvedic approach

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**Background:** Chemotherapy can be defined as the treatment of disease by the use of chemical substances, especially the treatment of cancer by cytotoxic and other drugs. Cancer cells tend to grow fast, and chemo drugs kill fast-growing cells. But because these drugs travel throughout the body, they can affect normal, healthy cells that are fast-growing, too. Damage to healthy cells causes side effects. Side effects are not always as bad as you might expect, but many people worry about this part of cancer treatment. Still now there is no option in *Ayurveda* practice for chemotherapy. On the other hand there is a good scope in management of adverse effects of chemotherapy. **Aim:** Main objective of this research work is to reestablish therapies that can replace the chemotherapy and use of *Agada Tantra* in management of adverse effects of chemotherapy. **Materials and methods:** Thorough literature review was done to find out therapies that can replace the chemotherapy in *Ayurvedic* texts. Correlate adverse effects of chemotherapy with Ayurvedic *Visha Lakshana* (toxic effect) to adopt effective management was done. Interpretation was done relevantly. **Results:** With literature review most relevant therapy found to replace chemotherapy was *Prativisha Chikitsa* (antidote therapy) described in 48<sup>th</sup> chapter of *Astanga Samgraha*. In this reference they indicate *Visha* for management of incurable diseases like cancers. When considering the adverse effects of chemotherapy most of symptoms can be correlate with *Garavisha* (acute toxicity) and *Dushivisha* (chronic toxicity). Therefore treatment of *Garavisha* and *Dushivisha* can be use to manage adverse effects of chemotherapy. **Conclusion:** Use of *Prativisha Chikitsa* can replace chemotherapy treatment in cancer management. *Garavisha* and *Dushivisha Chikitsa* might be effective in management of adverse effects of chemotherapy.

**Keywords:** Cancer, chemotherapy, *Dushivisha*, *Prativisha*, *Garavisha*.

## 10. A review on the efficacy of *Arkeshwara Rasa* – A herbo metallic formulation in pancreatic cell cancer

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**Background:** The researches on complementary and alternative medicine that deals with cancer management has given greater emphasis recently. *Ayurveda*, a traditional Indian medicine of plant drugs has been successful from very early times in using the natural drugs for preventing or suppressing various tumors using various lines of treatment. **Aims:** Here an effort is made to analyse the efficacy of one of such herbo metallic preparation *Arkeshwara Rasa* in pancreatic cell cancer. **Materials and methods:** The authentic classics and scientific works were thoroughly analysed to understand the anti cancerous activity of *Arkeshwara Rasa*. Various databases like Pubmed, Google scholar, Scopus, Dhara and Sciencedirect were searched with the keywords *Arkeshwara Rasa*, herbo metallic preparation, cancer & *Ayurveda*, cancer & *Rasashastra*. One article related to the formulation (vitro study) & two articles related to ingredients in the formulation were reviewed. **Results:** *Arkeshwara Rasa* showed potent activity against pancreatic cancer cells (MIA-PaCa-2). *Arkeshwara Rasa* exhibited significant effects on cancer cells due to synergistic effects of different compounds in it. Studies reveal that the ingredients like *Triphala* (*Amalaki- Emblica officinalis* L., *Hartitaki- Terminalia chebula* (Retz.), *Vibhitaki- Terminalia bellirica* Roxb.), *Arka* (*Calotropis procera* (Aiton) W.T. Aiton), *Chitraka* (*Plumbago zeylanica* L.) in this formulation having anticancer activity, which enhances its therapeutic value. Mercuric sulphide used in this preparation are proved to be nontoxic due to the process of preparation results in abolition of the toxicity of mercury, and enhancing its quality. **Conclusion:** The various plant ingredients of *Arkeshwara Rasa* have reported to have anticancer activity and together they might have produced the anticancer effect.

**Keywords:** Anticancer drug, *Arkeshwara Rasa*, cancer and *Ayurveda*, Herbometallic formulation.

## 11. Anti-tumourous activity of *Roudra Rasa* in Oropharyngeal carcinoma: A comprehensive review

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**Background:** *Roudra Rasa* is a unique herbo-mineral formulation specified in the treatment of *Arbuda* in various classical literatures of *Rasashastra*. The classical reference of the drug found in the text *Bhaishajya Ratnavali* is taken for the review. **Aim:** This paper is an attempt to understand and review the anti-tumorous action of the formulation *Roudra Rasa*. **Materials and methods:** The authentic classics and scientific works were thoroughly scrutinized in order to understand the anti-tumorous effect of *Roudra Rasa*. Various databases like Pubmed, Google scholar, Scopus, Dhara, and Science direct were searched using the keywords *Roudra Rasa* and tumour, *Roudra Rasa* and cancer, *Roudra rasa* and *Ayurveda* and cancer, *Rasashastra* and cancer. Five relevant articles were reviewed. **Results:** By screening all the scientific data available, it was found that several researches were carried out to evaluate the anti tumorous activity of *Roudra rasa*. In an in vitro study, the drug was evaluated against human nasopharyngeal KB cells for their cytotoxicity. *Roudra Rasa* was found to possess potent cytotoxicity and

apoptotic action against KB cells and hence controls the uncontrolled cell proliferation. This action may be contributed by the formulation as a whole or by the individual ingredients or the *Bhavana Dravyas* used in the preparation, as it exhibits antioxidant and free radical scavenging action. Honey, known to be effective against ehrlich ascites and solid carcinoma and having antiproliferative and antineoplastic activity is advised as the adjuvant along with the formulation. The antiproliferative activity in both ascites tumour and solid tumour was also established in experimental models. **Conclusion:** Considering the therapeutic potential of the formulation, it should be given much importance, even though the formulation is not much popular in the present day clinical practice. Several studies were conducted on different types of cancer cells especially oral cancer and the formulation was found to be quite effective. Further researches to clinically establish the maximum therapeutic potential of the drug is the need of the hour.

**Keywords:** *Arbuda*, *Ayurveda*, cancer, *Roudra Rasa*, tumour

## 12. Role of *Ashwagandha* in cancer management- A review

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**Background:** To analyse withaferin- A withanolide from the plant *Ashwagandha* has been found to be valuable in the management of cancer. **Aims:** A comprehensive attempt was made to review about the role of *Ashwagandha* (*Withania somnifera* (L.) Dunal.) in cancer management. **Materials and methods:** It based on classical text, scientific journals from PubMed and Google scholar. **Results:** Properties and action of *Withania somnifera* (L.) Dunal, is *Tikta* (bitter); *Kashaya Rasa* (astringent); *Laghu Guna* (light); *Ushna Veerya* (hot in potency); *Madhura Vipaka* (sweet taste conversion after digestion); *Vata-Kaphapaha* (pacify to *Vata-Kapha*); *Balya* (gives strength) and *Rasayanakarma* (rejuvenating effect). *Vata Dosha* is responsible for cell division. Aggravation of *Vata Dosha* and suppression of *Kapha Doshas* or both the *Doshas* interacting with one another may results in proliferation of cells. *W. somnifera* is also reduces the side effects of chemotherapeutic agents, cyclophosphamide and paclitaxel, without interfering with the tumour-reducing actions of the drugs. *Withaferin-A* suppresses experimentally induced carcinogenesis, largely by virtue of its potent, anti-inflammatory, anti-proliferative and apoptosis inducing properties. The active component *Withaferin-A* isolated from the extract showed significant antitumour and radiosensitising effects in experimental tumours without any systemic toxicity. *Withania somnifera* can be used as an adjuvant during cancer chemotherapy for the prevention of bonemarrow depression associated with anticancer drugs. It has an anti-angiogenic activity. A study found that *Ashwagandha*, its active ingredient caused selective killing of cancer cells. Other studies have found that reproduction of leukemia, breast, colon cancer cells was slowed or stopped by *Ashwagandha*. It builds immunity during chemotherapy treatment. *Withania somnifera* have anti- tumor effect on Chinese hamster ovary (CHO) cell carcinoma. **Conclusion:** The available scientific data support the conclusion that *Withania somnifera* (as a *Rasayana*) is a strong adaptogen for promoting overall improved stamina, longevity,

strength, mental vigor and improved quality of life in cancer management.

**Keywords:** Anti-angiogenic activity, radio sensitising effect, *Withania Somnifera*

## 13. Radiomodulatory and immunomodulatory effects of *Brahma Rasayana* -A scientific review

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**Background:** Radiation therapy has cytotoxic effects, which are hazardous to normal cells causing side effects like fatigue, skin problems and hair loss. *Rasayana Prayoga* (rejuvenation therapy) can be considered as an adjuvant medication to modern radiotherapy and chemotherapy. *Brahmya Rasayana* is an Ayurvedic formulation which possesses immunomodulatory, radioprotective and chemo preventive effects. **Aims:** The aim of present review is to screen the ingredients of *Brahma Rasayana* to evaluate their radiomodulatory and immunomodulatory effects. **Materials and methods:** A comprehensive literature review was conducted using various classical texts and scientific journals in Pubmed, Google scholar, Scopus, Dhara. **Result:** *In-vitro* studies suggest that *Brahma Rasayana* scavenged Fe<sup>2+</sup> ascorbate and Fe<sup>3+</sup> ADP ascorbate induced lipid peroxidation and scavenged the hydroxyl superoxide, the nitric oxide generated in vitro. Oral administration of *Brahmya Rasayana* increased serum level of interleukin 2 and granulocyte macrophage colony stimulating factor (GM-CSF) in normal and irradiated mice. Studies have shown that chebulinic acid isolated from fruits of *Abhaya* (*Haritaki-Terminalia chebula* Retz.) specifically induces apoptosis in acute myeloid leukaemia cells. Another study showed that aqueous extract of *Terminalia chebula* act as potent antioxidant and probable radioprotector. *Amalaki* (*Emblca officinalis* Gaertn.) is reported to possess radiomodulatory, chemomodulatory, chemopreventive, free-radical scavenging, antioxidant, anti-inflammatory antimutagenic and immune modulatory activities that are effective in the treatment and prevention of cancer. Molecules like ellagic acid, pyrogallol, chebulagic acid, gallic acid, quercetin were identified by high pressure liquid chromatography (HPLC) technique which can be matched to its anticancer properties. Curcumin, a natural component of *Haridra* (*Curcuma longa* L.) possess anti-angiogenic and angio-inhibitory property. Curcumin is also considered as an anti-tumoral, antioxidant and anti-inflammatory agent capable of inducing apoptosis in numerous cellular systems. Study on *Oroxylum indicum* fruits showed antioxidant potential and can protect DNA from radiation induced damaged in both invitro and invivo models without recognizable toxic effects. *Brahmya Rasayana* is taken along with *Shashatika Payas* and *Shashatika Sali* contains brown brik trypsin inhibitor protein, which is known for its anticarcinogenic effect. **Conclusion:** Based on the literary review and known pharmacological actions, it is very well evident that *Brahmya Rasayana* has a significant role in reducing the side effects of chemotherapy and radiotherapy.

**Keywords:** *Brahmya Rasayana*, immunomodulatory effects, radiomodulatory effects

## 14. Combined effect of *Kanchanara Guggulu* and *Shataputi Abhraka Bhasma* as supportive drug of choice in cancer management – A review

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**Background:** *Kanchanara Guggulu* is a polyherbal formulation showing wide range of indications including *Arbuda*. *Shataputi Abhraka bhasma* is 100 times calcinated nanoparticles of biotite an *Ayurvedic* nanomedicine which is said to **Aims:** The purpose of this work is to review the anticancer activity of *Shataputi Abhraka Bhasma* and *Kanchanara Guggulu* based on scientific studies and their combined effect on the basis of *Yogavahi* action of *Abhraka Bhasma*. **Materials and methods:** Literary search was done with various classical texts and databases like PubMed, Google scholar, Ddhara and most relevant studies were taken in account for this work. **Results:** Cytotoxic and antiproliferative activity of *Kanchanara Guggulu* - In vitro study. In Allium assay all concentrations of the extract and methotrexate significantly inhibited the division of *A. cepa* root cells, decreasing root growth and mitotic index compared to control. In the antiproliferative study reduction of dividing *Saccharomyces cerevisiae* cells and inhabitation of cell viability compared to control. The antimitotic and antiproliferative effects may be due to the presence of flavonoids, a polyphenol which have beneficial health effects and is considered as therapeutic agents against cancer. Effect of *Putra* (process of medicated ash preparation) on in-vitro anticancer activity of *Shataputa Abhraka Bhasma* on lung cancer, leukemia and prostate cancer cell lines. *Abhraka* on calcination it get converted into nanoparticles of iron oxide probably Fe<sub>2</sub>O<sub>3</sub> not less than 20%. Iron oxide (FeO, Fe<sub>2</sub>O<sub>3</sub>, Fe<sub>3</sub>O<sub>4</sub>) shows the property paramagnetism. In modern medicine Magnetic nanoparticles are used in target cell drug delivery by applying external magnetic field. *Yogavahi* property can be utilised by giving *Abhraka bhasma* as an adjuvant along with potent anticancer formulations and paramagnetism exhibited can be adopted for target drug delivery system. Its numerous actions like *Pranjabodhaka*, *Rujaprashamana* (analgesic), *Vrishya* (aphrodisiac), *Ayushya* (strength), *Balya* (stemina), *Keshya* (anti hair fall), *Chakshushya* (increase eye vision), *Kshayaghna* (astringent) and *Deepana* (appetizer) are supportive, restorative and curative for the mental and physical ailments of the patients. **Conclusion:** From the classical literary searches and scientific research works it can be concluded that combination of both the preparations can be advised as supportive drug of choice in cancer management.

**Keywords:** Cancer, drug delivery system, flavonoids, Fe<sub>2</sub>O<sub>3</sub> nanoparticles, *Kanchanara Guggulu*, *Shataputi Abhraka Bhasma*

## 15. Review on effect of *Triphala* in preventive and treatment aspect of cancer

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**Background:** *Triphala* is an *Ayurvedic* formula prepared by three drugs *Harithaki Terminalia chebula* Retz.), *Vibhitaki (Terminalia bellirica* (Gaertn.) Roxb.) and *Amalaki (Embllica officinalis* Gaertn.). *Triphala* is an important medicine of the *Rasayana* group of drugs and is believed to promote immunity, health and longevity. It has immunomodulatory action by stimulating neutrophil function. *Triphala* is widely used in gastrointestinal disorders and as colon tonifier. Anti proliferative and proapoptotic effects of *Triphala* could be used in management of cancer. **Aim and objective:** Studies shows *Triphala* has significant role in prevention and management of colon cancer and pancreatic cancer. **Materials and methods:** Review and discussion made about the mode of action of *Triphala* in preventive and curative aspect of cancer based on various research studies published in scientific journals and available at Google scholar, PubMed. **Results:** *Triphala* consisting of equal part of three medicinal dried plant fruits; *Amalaki (Embllica officinalis* Gaertn.)- a Vitamin C, nicotinic acid, tannins, gallic acid, ellagic acid; *Bibhitaki (Terminalia bellirica* (Gaertn.) Roxb.)- sitosterol, gallic acid, ellagic acid, galactose, fructose; *Haritaki (Terminalia chebula* Retz.)- tannic acid, gallic acid, chebulinic acid and anthraquinone. The chemical investigations have found that *Triphala* have a lot of chemical compounds to cure the cancer and ulcerous cells in human body. Elemental characterization of *Triphala* powder and tablets by instrumental neutron activation analysis, thermal analysis and spectral studies on gallic acid gives the mode of action. Biological activities of gallic acid: Analgesic, Anti-inflammatory and Antioxidant. Ellagic acid: Ellagic acid is a phenolic compound and known to inhibit certain carcinogen induced cancers and may have other chemopreventive properties. *Triphala* extract suppresses proliferation and induces apoptosis in human colon cancer stem cells via suppressing c-Myc/cyclin D1 and elevation of Bax/Bcl-2ratio. *Triphala* inhibits both in vitro and in vivo xenograft growth of pancreatic tumour cells by inducing apoptosis. **Conclusion:** Experimental studies have shown that *Triphala* has antioxidant properties and useful in prevention of cancer also possesses antineoplastic, radioprotective and chemoprotective effects.

**Keywords:** Antineoplastic, cancer, gallic acid, phytochemicals, *Triphala*

## 16. Brief review on the anticancerous effect of *Arogyavardhini Vati* by its free radical scavenging activity

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**Background:** Free radicals originate from the utilization of oxygen and the metabolism of organic compounds, and can be scavenged in living organisms by a range of enzymes and small antioxidant molecules. **Aims and objective:** To analyse the anticancerous effect of *Arogyavardhini vati* (AV) by its freeradical scavenging activity. **Materials and methods:** A comprehensive literary search was done from classical *Ayurveda* text books like *Bhaishajya ratnavali Kustharogadhikara*, *Rasaratnasamuccaya* 20<sup>th</sup> chapter and from different articles and journals. Various databases like

Google scholar, Pubmed, Scopus, were searched using the key words. Filters like within 10 years and free full texts were applied. An in vivo study and theoretical analysis of AV, In vitro studies of Amalaki (*Emblia officinalis*) and Shilajatu (*Asphaltum punjabinum*) were considered here. **Discussion:** An in vivo study in Albinorats was conducted which proves the free radical scavenging activity of AV by its antioxidant nature. Lipid peroxidation, glutathione, catalase, amylase, superoxide dismutase levels were estimated for four days. In a study, *in-vitro* screening of free radical scavenging activity of Shilajatu, by lipid peroxidation method with special reference to Rasayana Karma was done and in another study, evaluation of antioxidant profile and activity of Amalaki was done in in vitro method. Antioxidants act as the body's first line of defense against damage from natural process called oxidation. Hence antioxidant agents could intervene with carcinogenesis. **Results:** In the antioxidant assay of above in vivo study AV showed the significant reduction of malondialdehyde concentration and significant improvement in glutathione, superoxide dismutase, Catalase Amylase activity. The aqueous extracts of Amalaki showed protection against tert-butyl hydroperoxide induced cytotoxicity and production of reactive oxygen species in cultured C6 glial cells. Shilajatu also showed a powerful antioxidant property. **Conclusion:** Thus AV may provide an anticancerous effect by its free radical scavenging activity which will enhance the anticancerous effect of cancer medications when it will be given as an add on therapy with these medications.

**Keywords:** Arogyavardhini Vati, Amalaki, Shilajatu, free radical scavenging activity, antioxidant property and anticancerous effect.

## 17. Role of Bhallathaka, Chitraka and Tugaraka Rasayana in the management of cancer - A review

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**Background:** Ayurveda takes into consideration, the whole body, mind and spirit while dealing with the maintenance of health, promotion of health and treating ailments. **Aim:** Rasayana (rejuvenation therapy) is a unique concept of Ayurveda which refers to immune boosting medications which helps to stimulate the body's immune system and have an important role in management of cancer due to its antioxidative property. **Materials and methods:** All literature regarding cancer (*Arbuda*), the preventive and therapeutic aspect of Ayurveda through Rasayana Chikitsa, some important anti-cancerous Rasayanas like Bhallathaka Rasayana, Tugaraka Rasayana and Chitraka Rasayana has been reviewed and studied. **Result:** Rasayana Chikitsa is one of the therapeutic approaches through which restoration of normal function of the body takes place. Charaka defines Rasayana as a means by which one gets optimum quality of Dhatu (body tissues). Rasayana directly enriches the Dhatus. Different studies have done to prove the efficacy of Rasayana in cancer treatment. Bhallathaka (*Semicarpus anacardium*) Rasayana is an important anti-cancerous Rasayana and having anti-oxidant property. The researches proved the anti-tumour and anti-oxidant action of Bhallathaka in rats. Bhallathaka Rasayana promotes nutrition through improving the Agni (digestion). Chitraka

(*Plumbago zeylanica* L.) Rasayana and Plumbagin has stronger anti-cancer and anti-oxidant activity. Plumbagin has a protective effect in radiation. Tugaraka (*Hydnocarpus laurifolia* (Dennst.) Sleumer.) Rasayana shows anti-oxidant activity in animal models. Rasayana act at three levels of bio-system to promote nutrition, digestion and metabolism. **Conclusion:** Ayurveda offers a wide range of medicines and treatment which should be incorporated with the main stream of cancer medicine.

**Keywords:** Anti-cancerous, anti-oxidant, Bhallathaka Rasayana, Chitraka Rasayana, Rasayana, Tugaraka Rasayana

## 18. A concurrent supportive pain management with Ponkaradi Gutika in cancer

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**Background:** Pain is the most common complication caused due to cancer. According to WHO, the prime option to manage cancer pain is oral morphine. They recommend a "by the clock" (3-6 hourly) administration of morphine which has side effects such as constipation, drowsiness, headaches, difficulty in sleeping etc. **Aim:** the aim of study is alternative approach with Ponkaradi Gutika concurrently as a supportive therapy could help avoid morphine in mild pain and reduce its dose in moderate and severe pain to a certain extent. **Materials and methods:** All the relevant classical literatures and electronic databases were screened and analyzed. Used key words were Cancer, Ayurveda, Pain Management, Ponkaradi Gutika, Kantha Bhasma, Hingu (*Ferula asafoetida* Linn), Swarnamakshika Bhasma, Lashuna (*Allium sativum* Linn), Ardraka (*Zingiber officinalis* Roscoe). **Result:** Ponkaradi gutika is a formulation explained in Sahasra Yoga with ingredients Tankana (*Borax anhydrous*), Surya Kshara (*Potassium nitrate*), Kantha Loha Bhasma (medicated iron ash), Jeeraka (*Cuminum cyminum* Linn.), Hingu, Swarna Makshika Bhasma (possessed ash of chalcopyrite) Shudha Ahiphena (processed *Papaver somniferum* Linn.), Lata Karanja (*Caesalpinia Crista* Linn. [C. bonduc (L) Roxb.] ), Lashuna and Ardraka juice. Tankana (Borax) contains 11.3% boron which is an anticancerous agent. Surya kshara is meant to reduce the hypersensitivity by calming the nerve irritations. The volatile oils present in Jeeraka and terpenoid coumarins present in Hingu are proved for their chemopreventive potential and Hingu has chemomodulatory influence too. Shudha Ahiphena is having morphine as a major ingredient and acts as an excellent analgesic. Lashuna is a proved anticarcinogen. Ardraka is antioxidant and anti-inflammatory. A pungent component present in Ardraka named 6-shogaol has inhibitory action on cancer cell invasion. Both Kantha Loha Bhasma and Swarna Makshika Bhasma are antioxidant, anti-inflammatory and at the same time act as a source of iron. So most of these drugs contain anti-inflammatory and analgesic property which makes it an option for supportive pain management. **Conclusion:** Though modern medicine has highly advanced in the management of cancer pain, they are significantly deficient in case of side effects, and so, it is important to emphasize the need of an integrative approach to reduce the risk of side effects of Morphine with an alternative analgesic and anti-inflammatory drug.

**Keywords:** *Ardraka, Ayurveda, cancer, Hingu, Kantha Bhasma, Lashuna, pain management, Ponkaradi Gutika, Swarnamakshika Bhasma*

## 19. Role of *Guduchi Sattwa* in cancer – A review

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**Background:** *Tinospora cordifolia* (*Guduchi* or *Amrita*) of Menispermaceae is an important drug of Ayurvedic System of Medicine and found mention in various classical texts for the treatment of diseases such as *Kamala, Jwara, Prameha* and *Kushtha* etc. *Guduchi Sattwa* is said to be the starchy preparation of *Guduchi*, is considered to be the best *Rasayana* and is a potent anticancer drug. **Aim:** This review aim to role of *Guduchi Sattwa* in cancer. **Materials and methods:** Review of literature includes the through screening of classical literature regarding the drug and pharmaceutical preparation. Databases like pubmed and scopus were taken for the review purpose and search was completed using the keywords such as *Guduchi Sattwa*, anti cancerous, natural product and Ayurveda etc. A total of 120 studies were analysed which mainly focussed on experimental and clinical studies. For the study purpose *guduchi satwa* was used as dry stem powder extract. Dosage of 100 g. The main part of the plan used was stem extract. **Result:** The extract gave maximum benefit when compared to the standard drug. A myriad of biologically active compounds, including alkaloids, diterpenoid lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds, and polysaccharides that are isolated from different parts of the plant body. The alkaloids that are derived from the stem root, glycosides from the stem, diterpenoid lactone from the whole plant, steroids from stem and aerial part have been reported to have different biological roles that are both preventive and curative role in disease condition. *Tinospora cordifolia* extracts are extensively used in various herbal preparations for the treatment of cancer. The chemical constituents of *T. Cordifolia* belong to different classes such as alkaloids, glycosides, steroids, phenolics, aliphatic compounds, polysaccharides, leaves are rich in protein (11.2%), calcium and phosphorus. The stem contains clerodane furono diterpene glucoside (amritoside A, B, C and D) and the structure has been established by different spectroscopic studies. Anticancer activity studied the anticancer activity of *T. Cordifolia* palmatine extract in animal models, alkaloid using response surface methodology (RSM). The extract indicates the 4yhn potential in 7, 12-dimethyl-benz (a) anthracene DMBA induced skin cancer model in mice. Rahulet *al.*, prepared the extract of 200, 400, 600 mg/kg dry weight in adose depend upon manners. 50% methanolic extract of cordifoliato C57BI mice for 30 days at a dose of 750 mg/kg body weight the tumor sizereduced life span. Mishraet *al.*, showed the anti-brain cancer po-tential, 50% ethanolic extract of *T. Cordifolia* (TCE) using C6 glioma cellssignificantly induced differentiation in C6 glioma cells and reduced cellproliferation. *Sattwa* or *Sara* of a herb is the essence or active part of *Guduchi* and is a potent anticancer drug. **Conclusion:** The active ingredients present in the *Guduchi sattwa* plays a pivotal role in both preventing and curing cancer, The *Sattwa* can be given to all age groups with minimum dosage. The *Sattwa* act as *Rasayana* during its regular intake.

**Keywords:** *Guduchi Sattva*, anti cancerous, *Ayurveda*

## 20. *Ksheera Basti* in alleviating abdominal discomfort in patients with refractory cancer - Observations and inferences

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**Background:** Patients with refractory cancer are not offered primary treatment of cancer in Ayurveda, but are offered palliative care targeted at improving quality of life. Almost a quarter (23%) of cancer patients present with abdominal symptoms before being diagnosed with one of 27 common and rarer cancers. **Aim:** This paper attempts to draw inferences from observations made in clinical settings to draw clues which would help to plan and execute well designed studies to evaluate the potential role of *Ksheera Basti* (enema therapy with medicated milk) in alleviating abdominal discomfort and improving quality of life in patients with cancer. **Materials and methods:** Patients who approach Ayurvedic centres for treatment are those who are in advanced stages of the disease or are non-responsive to conventional treatment or are unable to undergo chemotherapy or radiotherapy due to adverse events. Most of them are not offered treatment for cancer but are offered palliative care targeted at improving quality of life. Some of the common symptoms which impair quality of life are pain, abdominal discomfort including nausea, bloating and constipation. **Results:** All of the procedures and treatment, *Ksheera Basti* is one of the Ayurvedic interventions with great potential for use in managing abdominal symptoms and other problems associated with cancer. *Ksheera Basti*, which is actually a water in oil emulsion, could possibly trigger the enteric nervous system located in sheaths of tissue lining the esophagus, stomach, small intestine and colon, leading to relation of the smooth muscles of GIT which helps in reducing the abdominal discomfort. *Basti* also helps in release of serotonin which possibly helps in reduction of pain and elevating the mood and improving social behavior and sleep. **Conclusion:** The observations provides a clue to help choosing protocol to evaluate the efficacy of *Basti* in the management of specific symptoms associated with cancer and could help in widespread use in cancer patients for symptomatic relief and in improving quality of life. The mode of action in each of the conditions could then be evaluated for furthering the understanding.

**Keywords:** Abdominal discomfort, *Ksheera Basti*, refractory cancer

## 21. Role of *Chandraprabha Vati* in management of cancer- A review

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**Background:** Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. It can start almost anywhere in the human body. Cancer is the second leading cause of death globally. The most common treatment of cancer in



modern medicine is surgery, chemotherapy and radiation. Other options include targeted therapy, immunotherapy, laser, hormonal therapy etc. In *Ayurveda* cancer is described as Arbuda. There is no specific treatment for cancer is there in *Ayurveda*, certain drugs are there which is having anticancer properties which can be used for controlling cancer. In *Chandraprabha Vati* there are ingredients that are having anticancer, antioxidant activity, and there are ingredients having rasayana property which help the cancer patients to regain strength. **Aims:** The purpose is to analyse the role of *Chandraprabha Vati* in management of cancer based on probable mode of action of the ingredients and available research article. **Materials and methods:** *Chandraprabha Vati* is a common preparation mentioned in Sarangadhara Samhitha, *Madhyama Khanda*. It contains 37 ingredients such as *Chandraprabha (Curcuma zedoaria)*, *Triphala (Terminalia chebula, Terminalia bellerica, Emblica officinalis)*, *Trikatu (Piper longum, Piper nigrum, Zingiber officinale)*, *Haridra (Curcuma longa)*, *Musta (Cyprus rotundus)*, *Devadaru (Cedrus deodara)*, *Guggulu (Commiphora mukul)*, *Shilajatu (Black bitumen)*, *Swarna Makshika bhasma* (possessed ash of Chalcopyrite), *Bhunimba (Andrographis paniculata)* *Guduchi (Tinospora cordifolia)*. The search for research articles was done on Google scholar. Studies on anticancer and antioxidant activity of most of the ingredients were found. Studies are also there on the development of oxidative stress in chemotherapy patients. The classical texts were also referred to analyse the therapeutic action of ingredients. **Results:** *Chandraprabha Vati* can be effective due to the probable mode of action of each ingredient. Ingredients such as *Shilajatu (Asphaltum punjabianum)*, *Guggulu (Commiphora wightii (Arn.))*, *Swarna Makshika Bhasma* (possessed ash of chalcopyrite), *Loha Bhasma* (possessed ash of iron) have rejuvenative property. These may be effective in general weakness of patients who have undergone chemotherapy. Research articles have revealed that most of the ingredients in this preparation have antioxidant and anticancer activity. Drugs such as *Devadaru (Cedrus deodara (Roxb.) G. Don.)* have free radical scavenging activity, *Guduchi (Tinospora cordifolia (Willd.) Hook. f. and Thoms.)* have antitumor activity. Chemical constituents like Curcumin, piperin, which is present in certain ingredients like *Haridra (Curcuma longa Linn.)*, *Pippali (Piper longum linn)* etc also have anticancer activity. *Triphala [Amalaki-Emblica officinalis Gaertn.]*, *Bibhitaki- Terminalia bellirica (Gaertn.) Roxb.)*, *Haritaki (Terminalia chebula Retz.)* is also having antioxidant, anticancer, immunomodulatory properties. **Conclusion:** In present era cancer is very common, it can occur at any age. Based on the pharmacological properties of ingredients and research articles *Chandraprabha Vati* will be effective as co therapy for cancer treatment and in patients where radiation is contraindicated.

**Keywords:** Anticancer, antioxidant, cancer, *Chandraprabha Vati*, chemotherapy, oxidative stress

## 22. Nishakathakadi Kashayam for pancreatic cancer - A review

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**Background:** Pancreatic cancer is the seventh leading cause of cancer related deaths in the world. In *Ayurveda*, *granti* and *Arbuda* is the term used to describe benign and malignant cancer respectively.

*Acharya Sushruta* have clearly mentioned regarding pathogenesis, signs & symptoms and different treatment modalities like *Shashtra*, *Kshara*, *Agnikarma* and purifactory methods such as *Virechana* (purgation), *Raktamokshana* (bloodletting) procedures depending upon the predominance of *dosha* involved. Here *Nishakathakadi Kashayam* which is a widely used *Ayurvedic* medicine for treating mainly type 2 diabetic mellitus can prove its efficacy in curing signs and symptoms of pancreatic cancer due to its specific action on pancreas. **Aims:** The objective of this study is to analyse probable mode of action of *Nishakathakadi kashayam* in treating pancreatic cancer based upon available research article on different ingredients present in it. **Materials and methods:** The main signs and symptoms of pancreatic cancer include diabetes, jaundice, loss of appetite, weight loss, pain in upper abdomen etc. Here *Nishakathakadi Kashayam* (decoction) which contains 8 ingredients such as *Nisha (Curcuma longa Linn)*, *Kathaka (Strychnos potatorum Linn)*, *Paranti (Ixora coccinea Linn)*, *Lodra (Symplocos racemose Roxb.)*, *Amalaki (Emblica officinalis Gaertn.)*, *Bhadrika (Aerva lanata (L.) Juss. ex Schult.)*, *Ekanayakam (Salacia prinoidea (Willd.) DC.)* and *Ushira (Vetiveria zizanioides (L.) Nash)* may be effective in reducing these signs and symptoms. Literary search is being done from classical text and also from databases such as PubMed, Google scholar etc. **Result:** *Nishakathakadi Kashayam* may have action over pancreatic cancer due to antidiabetic, antioxidant and anticancer activity of different drugs present in it. Research studies have shown that *Haridra (Curcuma longa)* is having action over pancreatic cancer, is anti-oxidant, analgesic, anti-inflammatory and anti-septic in nature. Other drugs such as *Kathaka (Strychnos potatorum)* is having anti-inflammatory; *Lodra (Symplocos racemosa)* is having anti-oxidant, antidiabetic, antilipidemic; *E. officinalis* is reported to have antioxidant, free radical scavenging, anti-inflammatory, anti-mutagenic and immunomodulatory activities and *S. prinoidea* is having antidiabetic action. Thus these herbs may have action over different biological pathway which is involved in mutagenesis and metastasis. These properties of herbs make the *Kashaya* efficacious in the treatment and prevention of pancreatic cancer. **Conclusion:** In this era, cancer is an upcoming killer disease where actions of *Ayurveda* medicine have to be studied and practised along with contemporary system for the wellbeing of society. Here the drugs present in *Nishakathakadi Kashayam* are proven to improve the function of pancreas and as a result of its anti-cancer, anti-oxidant activity it can help in management of pancreatic cancer. Thus this review is an attempt to support the further research works both preclinical and clinical studies of *Nishakathakadi kashayam* on pancreatic cancer that may be done on this to prove its efficacy scientifically.

**Keywords:** *Amalaki*, anticancer, antidiabetic, *Curcuma longa*, *Nishakathakadi Kashayam*, pancreatic cancer.

## 23. Management of chemotherapy and radiation side effects through Agada and Rasayana principles - A review

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**Background:** Surgery, radiation therapy, chemotherapy and biological therapy are four major strategies for the management of

cancer. Among these therapies chemotherapy drugs and radiotherapy are highly toxic and both damage adjacent healthy cells causing side effects of acute, intermediate and of late onset. **Aim:** *Ayurveda* principle can provide a definite protective as well as preventive role in managing the side effects of chemo therapy as well as radiation therapy. **Materials and methods:** All the available classical literature, databases like PubMed, scopus and *Dhara* has been reviewed. **Result:** *Agada* (anti-toxic) and *Rasayana* (rejuvenation) are the major two limbs of *Ayurveda* in the aspect of protective, preventive and rejuvenation of *Sharira* (body) from *Shiryamana Avastha* (mental health). *Agada* principles can effectively act on toxins and brings the vitiated *Dosha* (three functional energy of body) and *Dathus* (body tissues) to normalcy. *Rasayana* acts in protection of *Sharira* from the toxicity as well as nourishes the healthy tissue. In ayurvedic perspective the side effects of chemo-radiotherapy can be correlated to that of *Dushivisha* and as aggravated *Pitta Dosha* condition. So *Pitta Ahara* treatment along with *Agada Pana* like *Dushivishahari Agada* can be given to reduce the *Dosha* vitiation and the toxic effect of cancer therapy. After that *Rasayana Chikitsa* can be given to nourish all *Dhatu* and restore the basic homeostatic balance. It's possible mechanisms in cancer management is due to its properties like immune stimulation, antioxidant, quenching free radicals, increasing cellular detoxification, repair damaged non proliferating cells, inducing cell proliferation and self renewal of damaged proliferating tissues and replenishing them by eliminating damaged or mutated cells with new cells. **Conclusion:** *Agada* and *Rasayana* therapies can be given as an adjuvant to chemo-radiotherapy as a protective aspect and to reduce its ill effect. Studies shall to be undertaken to implement different Ayurvedic perspective for the management of cancer and to enhance the life expectancy of the sufferer.

**Keywords:** Adverse effects, *Agada* principle, chemotherapy, *Dushivisha*, *Dushivishahari Agada*, radiation therapy, *Rasayana* principle

## 24. Effect of *Indukantham Kashaya* in cancer biology

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**Background:** Management of cancer includes surgery, chemotherapy, radiation, hormonal therapy, targeted therapy and palliative care depending on type, location, grade of the cancer and patient's health. These treatments can be cytotoxic to cancer cells and even healthy cells thus making the patient immune-compromised, thereby, patient becomes susceptible to recurrent infections and debility. Chemotherapy can cause erosion of mucous layer producing symptoms such as retrosternal burning sensation or gastritis, angular stomatitis etc. An interesting observation has been found with the administration of *Indukantham Kashaya* to a post chemotherapy patient, showing considerable relief from symptoms such as fatigue, infections, low appetite, irregular bowels, nausea and vomiting, weight changes and mood changes. *Indukantham Kashaya* is a decoction prepared from the ingredients of *Indukantham ghee:- Putika (Holoptelea-integrifolia)*, *Daru (Cedrus-deodara)*, *Bilva (Aegle-marmelos)*, *Agnimantha (Premna-integrifolia)*, *Shyonaka (Oroxylum-indicum)*, *Patala (Stereospermum*

*suaveolens)*, *Gambhari (Gmelina arborea)*, *Brihati (Solanum indicum)*, *Kantakari (Solanum xanthocarpum)*, *Gokshura (Tribulus-terrestris)*, *Shalaparni (Desmodium gangeticum)*, *Prishnaparni (Uraria-picta)*, *Pippali fruit and root (Piper-longum)*, *Chavya (Piper-chaba Hunter)*, *Chitraka (Plumbago-zeylanica)*, *Nagara (Zingiber-officinalis)*, *Yavakshara (Kshara of Hordeum vulgare)*. **Aims:** This article aims at analysing the effect of *Indukantham Kashaya* in cancer biology. **Materials and methods:** *Ayurveda* scriptures and modern textbooks were referred. Online databases like PubMed, Scopus and Ayush portal were explored for better understanding. **Results:** It has been found that *Indukantham Kashaya* is indicated in *Vata-Roga* (involving nervous disorders), *Kshaya* (debility of tissues), *Mahodara-Gulma* (abdominal disorders), *Shoola* (abdominal pain), *Nimnonnatha-Jwara* (fluctuating fever) and *Balavardhana* (increases body strength). **Conclusion:** *Indukantham Kashaya* can be effectively used to manage common chemotherapy complications such as fatigue, recurrent infections, anaemia, nausea, vomiting, improper appetite, constipation / diarrhoea, numbness, tingling, pain.

**Keywords:** Cancer biology, *Indukantham Kashaya*, post chemotherapy complications

## 25. A herbal mouth wash in the supportive management of oral cancer

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**Background:** *Tinospora cordifolia* (Thunb.) Miers (*Guduchi*) and *Azadirachta indica* A. Juss. (*Nimba*) gaining importance in cancer research owing to their effect in cancer management. **Aims:** The present study was designed to investigate a concept and review of probable mode of action of *Guduchi Nimba Kashaya* (decoction) with honey and oil (*tila*) mentioned in Ashtanga Hridayam as a supportive therapeutic management for oral cancer (*Mukharbuda*) and its modification in the form of mouthwash. **Materials and methods:** A review and discussion was made about the probable mode of action of a formulation told in Ashtanga Hridayam, *Utharasthanam*. Computerized literature search were performed to find out all published articles in the subject. The following database were used PubMed, Scopus, Dhara using specific keywords. **Result:** Nimbolide was shown to inhibit the development and progression of 7, 12-dimethylbenz[a]anthracene (DMBA)-induced hamster buccal pouch (HBP) carcinomas that closely emulate human OSCCs in histology. Anticancer action of neem extract are associated with inhibition of excessive proliferation, induction of cell death, suppression of angiogenesis, restoration of cellular redox balance and enhancement of immune response against tumor cells. The antineoplastic activity of *Guduchi* in cultured HeLa cells and in ehrlich ascites carcinoma bearing mice and the analgesic activity of *Guduchi* has been studied well. *Guduchi* inhibits cell division in mononuclear cells and causes significant reduction in the number of nucleate cells. Phytochemicals with high phenolic and flavonoid content in honey contribute its antioxidant and anti-inflammatory activities. Varieties and variants of polyphenols in honey showed anti-proliferative property against several types of cancer. The anti-cancer effects of sesamin have been mainly attributed to its anti-

proliferative, pro-apoptotic, anti-inflammatory, anti-metastatic, anti & pro-angiogenic and pro-autophagocytic activities. Studies showed significant result in demonstrating the efficacy of each *Guduchi*, *Nimba*, *Tila Taila* (seeds oil of *Sesamum indicum* Linn.) and honey separately in cancer management. Hence combination of these and concept of its modification into a mouthwash may have therapeutic potential in cancer management. **Conclusion:** The potential of using *Guduchi Nimba Kashaya* and its modification in the form of mouthwash as a supportive product in oral cancer is worth further exploration.

**Keywords:** *Guduchi Nimba Kashaya*, mouthwash, oral cancer

## 26. Apoptotic activity of *Phyllanthus niruri* L. in cancer: A scientific review

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**Background:** Cancer cells are known to possess certain features like capacity to metastasize, failure to apoptosis, uncontrolled growth, altered metabolism, skip the immunity and increased angiogenesis. *Phyllanthus niruri* L. (*Bhumiylaki*), a drug belonging to the genus *Phyllanthus* is proved to have anticancer effect and apoptotic activity. **Aims:** The present study aims at exploring the apoptotic activity of *Phyllanthus niruri* in cancer. **Materials and methods:** *Samhitas* like Charaka Samhita, Susrutha Samhita and Ashtanga Hridaya were reviewed. Databases like PubMed, Google Scholar and Scopus were searched to find out various studies on *Phyllanthus niruri*. **Result:** Failure to apoptosis is one among the cardinal pathology of cancer. Some of the plants exhibit significant apoptotic activity in cancer cells and *Phyllanthus niruri* is one among that. Certain studies on *Phyllanthus niruri* proved to induce apoptosis in cancer cells (prostate cancer cells, Human liver carcinoma). The study of *Phyllanthus* on prostate cancer cell showed disruption of antiapoptotic balance and this was mainly due to the bioactive compounds present such as gallic acid and geranin. Also in another study, an active constituent corilagin was found to be having anti-tumor activity. **Conclusion:** *Phyllanthus niruri* L./ *Bhumiylaki* is a drug having anticancer effect and apoptotic activity. Hence this drug can be used in the treatment of cancer and more formulations using this are to be explored.

**Keywords:** Apoptosis, anti-tumor, cancer, human liver carcinoma, *Phyllanthus niruri*, prostate cancer

## 27. A conceptual review on the effect of *Tila (Sesamum indicum) Rasayana* in post chemotherapy and radiotherapy oral ailments

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**Background:** The prevalence of cancer has doubled in the past 26 years due to which the population seeking cancer therapies have also proportionally increased. The aim of radiation and chemotherapy is to destroy the cancer cells. But while doing so they cause many side effects. Researches show that over 400000 patients suffer from oral ailments due to radiation and chemotherapy. The effective treatment protocol is however limited. **Aim:** To review the effect of *Tila (Sesamum indicum L.)* in the decreasing the side effects post chemotherapy and post radiation therapy. **Materials and methods:** *Brihatrayis*, and databases as PubMed, Cochrane Library were reviewed. **Results:** Oral complications are common in cancer patients post chemo and radiation therapy, especially those with head and neck cancer. Radiation therapy and Chemotherapy affects the normally rapidly growing cells in the mouth and alters the normal nature of lining of the oral cavity and salivary gland thereby resulting in oral mucositis, infections, tooth decay, bleeding gums nerve damage. *Krishna Tila* when used in forms as *Taila Gandusha* (gargling), as *Tila Kashaya Gandoosha* & *Krishna Tila* as such (*Vata-Tapika Rasayana*) have tremendous result in these conditions. *Tila* is *Balya* (strength providing), *Dantya* (good for teeth), is *Twachya* & *Vrane Hita* (ulcers) & *Kapha-Pittahara* therefore can be used in oral mucositis, infections post chemo and radiation therapy. *Tila Kalkodakam* is mentioned as *Ropana Gandoosham*. Root of Sesame contains chlorosesanone which has antifungal effect. Polyunsaturated fatty acids present in sesame oil curb the free radical injury occurring in mouth. Toxins and bacteria from the body are expelled through the tongue and trapped in the oil and expelled from the body. The benefits of sesame oil on oral health are because of saponification, emulsification and mechanical cleansing action. *Tila* can be taken as *Rasayana* on everyday basis (when taken with cold water.) thereby strengthening the teeth as well as delay the pace of oncogenesis. *Arbuda* occurs because of the increased *Chala Guna* of *Vata* along with *Kapha* & *Pitta*. *Tila* is *Kapha-Pitta Ahara* and doesn't vitiate *Vata*. Sesamin, the most important active ingredient possesses anti-cancerous property. The anti-cancer effects of sesamin is due to its anti-proliferative, pro-apoptotic, anti-inflammatory, anti-metastatic and pro-autophagocytic activities. **Conclusion:** *Tila* when taken as such with cold water, when used as *Taila* for *Gandoosha* and in *Kashayam* form to be also used as *Gandoosha* is effective in mucositis, infections, tooth decay, bleeding gums nerve damage which occurs post chemotherapy & radiation therapy.

**Keywords:** Mouth ailments, chemotherapy, radiation therapy, *Sesamum indicum*, *Tila*

## 29. Role of Pranayama in breast cancer patients undergoing radiotherapy – a review study

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**Background:** The symptoms related to breast cancer and its treatment may distraught body image in women diagnosed with breast cancer. Chemotherapy and radiation therapy may generate fear, anxiety and emotional catastrophe leading to impaired quality of life. *Pranayama* practices may laid a great importance in improving overall quality of life by reducing mental disturbances. **Aims:** The present study is

intended to review the effectiveness of *Pranayama* in the management of stress related events in breast cancer patients undergoing radiation therapy. **Materials and methods:** Data mining was carried out from Classical *Yoga* literatures, peer reviewed journals and data bases like PubMed, Science direct, DHARA, AYUSH Research Portal and Google Scholar were reviewed. There are total 184 search results obtained, after filter applied 21 articles found related to *Pranayama* and breast cancer, from that 9 relevant articles were included. Key words used are cancer, *Pranayama*, Breast cancer, *Yoga*, radiotherapy, breathing exercise. **Results:** Studies reported that, the levels of glutathione (GSH) and protein thiols, two important antioxidants were significantly higher in patients with breast cancer who practised *Pranayama* along with contemporary treatment. *Pranayama* was found to be more effective in post-chemotherapy related nausea and vomiting. Studies also showed that *Pranayama* like *Nadisodhana*, *Bhramari*, *Ujjayi* and *Seethali* are effective on the emotional aspects such as frustration, worry, anxiety and impatience and significant improvement in cognitive function among breast cancer patients undergoing radiation therapy. Study reveals that *Pranayama* was effective in improving the level of antioxidants and reducing cancer related fatigue experienced by the women who practiced *Pranayama* than the women who had undergone radiation therapy alone. *Pranayama* might have a capacity in managing self-reported psychological distress and modulating circadian patterns of stress hormones in early breast cancer patients undergoing adjuvant radiotherapy. **Conclusion:** *Pranayama* like *Nadishodhana* and *Bramari* showed their anxiolytic effect in early breast cancer patients undergoing conventional treatment. Practice of *Pranayama* has offered novel approaches which can be implemented as one among the credible remedies to get rid of emotional concerns in breast cancer patients undergoing radiotherapy.

**Keywords:** Breast cancer, cancer, *Pranayama*, radiotherapy

### 30. Anti cancerous effect of *Curcuma longa* linn. (turmeric)– A review

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**Background:** Cancer is the most progressive and devastating disease posing a threat of mortality to the entire world despite significant advances in medical technology for its diagnosis and treatment. Surgery, Chemotherapy and radiation therapy are major clinical treatment used for the cancer, but these methods has serious side effects. **Aim:** Recently considerable attention has been focused to identify naturally occurring chemo preventives. From many medicinal plants. *Curcuma longa* is one such herb being studied extensively for its diverse health benefits. **Materials and methods:** Literary search has been carried out through various databases. PubMed, Science direct, Ayush portal, DHARA, & Google Scholar using appropriate keywords a total of 19600 papers were obtained, filters applied only article related to tittle, preclinical studies record included 278. article screened on the basis of tittle relevance and abstracts 5 (2-in vivo, 3 invitro) were selected for the review. **Result:** Totally, 5 papers have been reviewed and found that the rhizome of *Curcuma longa* has anti cancerous and chemo preventive activity. *Curcuma longa* can prevent skin tumor induction, helps for the prolongation of mean latency periods of tumor development, tumor

volume and inhibits tumor growth. Invitro stuies shows that the turmeric has ability to induce the apoptosis in every cancerous cell lines like HL-60, HELA etc. From the in vivo studies it was evident that bone marrow depression, which is a major side effect of cytotoxic chemotherapy can be prevented with the use of turmeric and it can be concluded that *Curcuma longa* has anti cancerous and chemo preventive activity. **Conclusion:** *Curcuma longa* contains Curcumin and oleoresin, the active compounds which has been reported to have anticancerous effects on breast cancer and oral cancer respectively. The review shows that, Turmeric acts orally and topically in the initiation stage than in the promotion stage of mammary carcinoma.

**Keywords:** *Curcuma longa*, cancer, anti-cancerous activity, turmeric

### 31. Role of honey and *Ghrita* in Oral mucositis – A review

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**Background:** Mucositis is one of the adverse effects induced by chemotherapy or radiotherapy in patients with head and neck carcinoma. In this condition, there will be painful inflammation and ulceration, which usually get infected and can lead to septicaemia. It is one of the leading causes for patient morbidity and mortality. **Aims:** The aim of this study is to review the efficacy of honey and *Ghrita* (ghee) as prophylaxis and in reducing the severity of oral mucositis and its sequelae. **Materials and methods:** Various databases like Pubmed, DOAJ (Directory of open access journal), were searched using the keywords ‘honey and *Ghrita* and mucositis’, ‘honey and mucositis’, ‘*Ghrita* and mucositis’, ‘mucositis and Ayurveda’ for articles within a period of last 10 years. **Results:** Previously various treatments like topical application of vitamin E, Zinc, Glutamine, lower energy laser treatment etc has been carried out but they are either costly or need further studies or interfere with the on-going cancer treatment leading to treatment break. Honey in comparison to the other treatment measures have shown more effectiveness by delaying OM onset, decreasing the OM severity, early ulcer healing thereby reduction in pain and improvement of quality of life, weight loss and overall health of the patients. Also, it has been noted that it does not interfere with the on-going treatment and therefore there is no treatment interruptionsFrom ancient time onwards, honey and *Ghrita* have been successfully used in the treatment of various wounds. It is known that topical application of honey on wound induces faster epithelization, decreased fibrosis, subsidence of acute inflammatory changes and control of infection. **Conclusion:** Honey having a pH of 3.2-4.5 inhibit the growth of organisms, and due to its osmotic action, it will reduce oedema and pain. Also due to its anti-oxidant and anti-inflammatory properties, it increases the nitric oxide in the lesion leading to rapid healing and helps in free radical scavenging action generated during radio-chemotherapy. *Ghrita* on other hand shows increased neovascularization indicating its effect to enhance wound healing. Honey and *Ghrita* together faster epithelization, less inflammatory actions and decrease fibrosis. As honey liquifies at room temperature, when added with *Ghrita*, its viscosity is maintained which will help in longer contact duration with the ulcers.

**Keywords:** *Ayurveda*, *Ghrita*, honey, mucositis

## 32. Role of *Ayurveda* in psycho-oncology: A review

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**Background:** Going through cancer is a devastating experience for patients, their family members and caregivers. It affects their physical, emotional, social and spiritual wellbeing. The branch of psycho-oncology deals with psychosocial responses of patients, family and caregivers at all stages of cancer. It helps to reduce the burden of disease, improve quality of life from the time of diagnosis, through treatment, survivorship and palliative care. **Aim:** This paper examines the applicability of *Ayurveda* to deal with the psychosocial issues of cancer experience and thus improve quality of life. **Materials and methods:** Classical textbooks of *Ayurveda* and electronic databases were reviewed for the details regarding psychosocial elements of cancer and its possible management through *Ayurveda*. **Results:** *Ayurveda* offers various preventive and curative methods for mental well-being. Imparting *Jnana* (knowledge), *Vijnana* (science), *Dhairya* (patience), *Smriti* (memory) and *Samadhi* (superior state of *Yoga*), the five attributes of *SatvavajayaChikitsa* (mental consulting) in cancer patients and caregivers is an effective way to take care of their mental and social health. *Ayurvedic* formulations and single drugs which help in relieving psychosocial issues may be administered. External therapies like *Abhyanga* (medicated body massage therapy), *Shirodhara* (hair massage therapy with medicated oil) are helpful in relieving the mental stress. Involving in regular exercise, following *AcharaRasayana* (behavioural rejuvenation therapy) and *Sadvritta* (routine management) helps maintain a peaceful mind. Both internal and external therapies should be administered after considering the strength of patient, disease and the main therapy. The mental attributes of family members and caregivers should also be taken care with these modalities as they will also be highly affected with cancer experience. **Conclusion:** Psychosocial care is very important in all phases of the cancer experience. The branch of psycho-oncology supports cancer patients, family members and caregivers to adjust with pre and post treatment lifestyle changes, enhance their emotional wellbeing, and improve the quality of life. *Ayurveda* with its psychosomatic approach can contribute to this field and thus helps in improving the quality of cancer care.

**Keywords:** *Ayurveda*, Psycho-oncology, *Satvavajaya Chikitsa*

## 33. Analogical reasoning of chemotherapy induced myeloid suppression and its management through *Ayurveda*: A review

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**Background:** Chemotherapy is the most effective method in which oncogenic cells are terminated. Albeit its effectiveness, Chemotherapy

has its fair share of drawbacks as it also affects rapidly growing cells in the body. One of its main spin-offs is the myeloid suppression which leads to anemia, neutropenia, and thrombocytopenia. **Aims:** This review aims for an analogy of Chemotherapy induced myeloid suppression in *Ayurveda* and management of the same using *ayurvedic* practices for shielding hematopoietic cells that are most affected by the toxic effects of chemotherapy. **Material and methods:** Literature search was carried out from various relevant classical literature of *Ayurveda*, databases like PubMed, AYUSH Research Portal, Science Direct. Using the keywords chemotherapy and *Ayurveda*, and *Dushivisha*, *Withania somnifera* (L.) Dunal/*Andrographis paniculata* (Burm.f.) Nees/gold/*Indigofera tinctoria* L. and immunomodulation and got seven relevant articles. **Result:** *Dushi Visha* gradually affects all *Dhatu* and produce symptoms. Here chemotherapy also produces the same affect. Carcinogens are the substances which altering the cellular metabolism thereby damage DNA and interferes with biological processes and induce the uncontrolled, malignant division, leading to tumors. Chemotherapy not only suppresses the carcinogenic cells but also suppress other rapidly growing cells in the body such as hair follicles, bone marrow, gastro intestinal tract. The major side effect is bone marrow suppression in which symptoms such as anaemia, dizziness, paleness due to low RBC and vomiting, diarrhoea, redness, due to low WBC, Easy bruising, dark or black bowels, bleeding from gums, nose etc. due to low platelet count. **Conclusion:** In *Ayurveda*, carcinogenic substance can be related to *Visha* and chemotherapy as *Vishaghna Aushadha* (anti toxic medicines). As per the concept of *Dushi Visha*, *Visha* which is killed or destroyed by antipoisounous medicines continues to exist in the body and produces symptoms such as *Bhinna Purisha Varna* (different color of stool), *Dushta Astra Rogi* (chronic piles), *Murchan* (vertigo), *Vaman* (vomiting), *Atisara* (diarrhia) which is similar to the symptoms produced by the effects of chemotherapy. The course of treatment which is administered post chemotherapy session should ideally include *Dushivishari Agada* mentioned in *Kriyakoumudi*. The major ingredients present in the formulation have immunomodulatory effect of improving the T cell activity. Presence of gold and ghee will boost up the immunomodulation and thus prevents myeloid suppression.

**Keywords:** *Ayurveda*, chemotherapy induced myeloid suppression, *Dushivisha*, immunomodulation,

## 34. Role of *Amalaki* and its formulations in cancer- A review

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**Background:** *Amlaki* (*Phyllanthus emblica* L.) is commonly known as Indian goose berry. The bioactivity of fruit extract is by polyphenols, especially tannins and flavonoids such as ellagic acid, corilagin, chebulagic acid, etc. that have potent tumor repressive properties against a number of cancer types both *in-vitro* and *in-vivo*. **Aim:** In this paper an attempt is being made to collate and review the articles that highlight the role of *Amlaki* and its formulations in the management of cancer. **Materials and methods:** Literature search was done with classical literature texts and databases like Google scholar, PubMed etc. In Google scholar by using the key words *phyllanthus emblica* and cancer got 487 articles. In PubMed

got 82 articles with the key words *Phyllanthus emblica* and cancer. 11 articles with the key word *Amalaki Rasayana* and 18 articles with the key word *Brahma Rasayana* among them 40 were selected based on priority. From that most relevant seven papers are selected which includes both prevention and management of cancer. **Results:** The inhibition of tumor incidences by fruit extract of this plant has been evaluated on two-stage process of skin carcinogenesis in swiss albino mice. Chemo preventive potential of phyllanthus fruit extract on 7,12-dimethylbenz(a)anthracene (DMBA) induced skin tumorogenesis in Swiss albino mice have been found. Polyphenol extract of *Phyllanthus emblica* induces inhibition of cell proliferation and triggers apoptosis in cervical cancer cells. Studies show the effect of *Brahma Rasayana* in reducing metastatic spread. *Amalaki Rasayana* showed stable maintenance of DNA strand break repair without toxic effects. **Conclusion:** From this review it is evident that *Amalaki* and its formulations plays major role in the management of cancer. Well documented randomized controlled clinical trial helps to revalidate the role of *Amalaki* in the preventive and curative aspects of cancer.

**Keywords:** *Amalaki*, *Ayurveda*, Cancer, *Phyllanthus emblica*

## 35. Anti-cancer activity of Ayurvedic drugs - A review

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**Background:** The presence of several bioactive compounds such as alkaloids, flavonoids, polyphenols, saponins etc are responsible for their anticancerous effect. The currently available therapies for cancer have many lacunae including side effects. The natural drugs obtained from these medicinal plants provide a better alternative to fight against this devastating disease. It is very essential to further screen and to investigate other *Rasayana* drugs for their anticancerous effect. **Aims:** To evaluate the anticancer activity of Ayurvedic drugs *Ashwagandha* (*Withnia somnifera* (L) Dunal), *Amalaki* (*Phyllanthus emblica* Linn), *Haridra* (*Curcuma longa* L.) and *Pippali* (*Piper longum* L.). **Material and method:** Scientific literature was accessed from various electronic databases such as PubMed, Google Scholar, Science Direct and Library search. **Result:** Review of various literatures cleared that the Ayurvedic drugs *Ashwagandha*, *Amalaki*, *Haridra* and *Pippali* possess potent anticancerous activity. Their mode of action can be explained on the basis of *Rasapanchaka* (five factors of substance) and phytoconstituents. Major constituents of *Ashwagandha* are withaferin A (which inhibits RNA and protein production) and withanolide D (which inhibits RNA production). *Amalaki* is rich in polyphenols and hydrolysable tannin derived compounds that act as antioxidants. Curcumin present in *Haridra* possess potent anti-oxidant and free-radical quenching properties. Major constituent of *Pippali* is piperine, a pungent alkaloid. Piperine has been reported to possess effective chemopreventive activity. From this it is clear that these drugs possess anticancer activity. **Conclusion:** From the review it can be concluded that the drugs *Ashwagandha*, *Amalaki*, *Haridra* and *Pippali* possess potent anticancerous activity. Recent researches have proved that most of the *Rasayana* drugs mentioned by Acharya possesses anti cancerous activity.

**Keywords:** *Amalaki*, anti-cancer drugs, *Ashwagandha*, *Haridra*, *Pippali*

## 36. Anti-cancerous property of Triphala- A review

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**Background:** Cancer is the primary cause for reducing quality of life and second leading cause of death. In *Ayurveda*, all forms of extra growth of cells come under the reference of *Arbuda*. After vigorous researches it is proved that the efficacy of surgery, chemotherapy and radiotherapy has been improved significantly but still produces some adverse effects. This pay light for the need of researches in the field of *Ayurveda* can counter act these undesired adverse effects, along with allopathic treatment or alone. *Triphala* a polyherbal formulation composed of *Terminalia chebula* Retz, *Terminalia bellerica* (Gaertn) Roxb., *Embllica officinalis* Gaertn in equal proportions. The major constituents of the formula are tannins, gallic acid, ellagic acid, chebulinic acid which are potent antioxidants and has ferric reducing antioxidant activity and inhibits the growth of cancer cell by inducing apoptosis a key molecule for anti tumour efficacy of *Triphala*. **Aim:** The aim of this study is to review literature and the efficacy of anticancerous properties of *Triphala*. **Material and methods:** A comprehensive literature review was conducted using various classical texts and scientific journals like pubmed, scopus. **Result:** Ellagic acid prevents certain carcinogen induced cancers and its effect on cell cycle and apoptosis were studied in cervical carcinoma cells. *Triphala* as a whole is rich in Mg, K, Ca, Fe and selenium. Clinical studies shows that there is association between selenium deficiency and cancer, suggested that selenium inhibits the replication of cancer cells. Excessive production of reactive oxygen species (ROS) leads to oxidative stress, apoptosis. Results show that *Triphala* induced apoptosis in pancreatic cancer cells is initiated by ROS generation. **Conclusion:** *Triphala* being an anti-cancerous polyherbal drug can be administered in different ways according to the site and condition of cancer. *Triphala* as *Choorna* with honey or ghee or *Triphala* decoction as mouth wash or for washing malignant ulcer, *Triphala ghrita* as a *Rasayana*. Thus further studies are required to access the efficacy of *Triphala* in various formulations.

**Keywords:** Anticancer, *Arbuda*, cancer, *Triphala*

## 37. How can we implement an integrated approach to reduce the incidence rate of cancer? – A critical review

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**Background:** Chemo-prevention, a relatively new and promising strategy to prevent cancer, is defined as the use of natural dietary compounds to block, inhibit, reverse or retard process of carcinogenesis. **Aim:** To review the research articles related to integrated approach to reduce the incidence rate of cancer. **Material and methods:** Reviewing the scholarly articles from

GoogleScholar, PubMed, ScienceDirect it is noted that there are 641000, 93, 957 articles are related to cancer in each. In that MESH terms such as chemo prevention, angiogenesis, anti cancerous antibody, antioxidants for each more than 200 studies were noted in various systems of sciences. From that 10 articles were selected and reviewed. The plant kingdom has been documented as the most important source to provide antioxidant and chemo preventive agents with novel structures and unique mechanism of action. Many plants have been examined to identify new and effective antioxidants to elucidate the mechanism of cancer prevention. **Results:** *Ashwagandha* (*Withnia somnifera* (L) Dunal), *Amalaki* (*Phyllanthus emblica* Linn), *Haridra* (*Curcuma longa* L.) and *Guduchi* (*Tinospora cordifolia* (Thunb.) Miers) are some herbal drugs which are proved for its anti cancerous activity. Honey is also proved for anti angiogenesis. Angiogenesis is a major pathological component of a grave disease like cancer. Apoptosis is a form of cell death that allows for the elimination of damaged or unwanted cells without damaging the organism. **Conclusion:** Current scenario researchers are in search of anticancerous agents which trigger the apoptosis. Integration should be done to isolate bioactive compound from the anti angiogenesis active plants and make it easily available to the human society. In Ayurveda, it is said that person is healthy till his/ her *Agni* (digestion) is robust. A person becomes diseased if *Agni* is vitiated and Person succumbs to death when his/ her *Agni* is doused completely. Genetic mutation of DNA nucleus, which is also described in *Ayurveda* as *Beeja Dosha* (genetic defects). So early correction & detection of *Beeja Dosha*, follow the path to improvise immunity, know the deficiencies supplement it through organic diet, periodical comprehensive health check up.

**Keywords:** Chemoprevention, anti-oxidants, angiogenesis

### 38. Role of *Rasayana Dravya* in cancer prevention - A review

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**Background:** Chemotherapy and radiotherapy are the tools to fight against cancer. Patients sometimes discontinue the treatment because of the severe side effects of chemotherapy and radiotherapy. Treatment or prevention which is cost-effective and with less side effects are acceptable. **Aims:** Purpose of this review is to analyse the various qualities and actions of *Rasayana Dravyas* in preventing cancer. **Materials and methods:** By going through papers published on PubMed and compiling them. **Result:** Drugs with activities such as immunomodulation, rejuvenation, antioxidants etc. may be used for prevention of cancer and in preventing disease progression and metastasis of cancer. Several preclinical and clinical studies have proved the beneficial effects of various *Rasayana Dravyas*. **Conclusion:** According to *Ayurveda*, *Rasayana Dravyas* acting as immuneboosters, immunomodulators, antioxidants, rejuvenators may help to improve the quality of life of cancer patients. Studies provides a ray of hope towards the successful integrated treatment of an Allopathic modality along with Ayurvedic medicine as an adjuvant.

**Keywords:** Chemo therapy and radiation therapy, immunomodulation, *Rasayana*, Adjuvant or co-therapy

### 39. Role of *Ayurveda* in integrated cancer therapy

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**Background:** Conventional medicines like chemotherapy, radiotherapy and surgery have side effects that are tough to handle. Integrative oncology takes a holistic approach in managing side effects that come with cancer treatment, recovery and survivorship. This combines a range of therapies and general life style practices that help to heal manage side effects of treatment and improve the overall quality of life before, during and after cancer. **Aim:** To review the various published articles on integrated approach for cancer treatment. **Materials & methods:** Various journals were reviewed to enumerate the role of *Ayurveda* in cancer management. **Result:** Therapeutic approach of *Ayurveda* is classified into four categories which include *Prakritisthapani Chikitsa* (health maintenance), *Rasayana Chikitsa*, (restoration of normal function), *Roganashani Chikitsa* (disease cure) and *Naishthiki Chikitsa* (spiritual approach). Various *Rasayanas*, immune modulatory drugs like *Withania somnifera* (L.) Dunal, *Plumbago rosea* L., *Embilica officinalis* Gaertn, *Allium sativum* L., etc., palliative care and dietary practices of *Ayurveda* were clearly dealt. In patients with advanced diseases suffering from severe pain, non-healing ulcer, foul smelling fungating growth, cachexia and extreme tiredness, use of poultice with preparations containing *Neem* (*Azadirachta indica* A.Juss.) which has antibiotic properties, can be used to control the infection. Herbal decoctions can be used to clean the wounds and dressing can be made with Ayurvedic remedies. This can minimise the use of antibiotics. **Conclusion:** *Ayurveda* has pilot role in maintenance of health and rehabilitation and palliative care. *Ayurveda* has a potentially important role to play in cancer prevention and control, encompassing the domains of preventive and clinical oncology involving risk reduction, health promotion, improving prognosis.

**Keywords:** *Ayurveda*, cancer, integrated therapy

### 40. Chebulic, gallic, ellagic acids - the potent molecular rivals in *Triphala* for the prevention of cancer: A review

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**Background:** Cancer, one of the deadliest challenges spreading drastically in 21<sup>st</sup> century, has now officially become the most dangerous killer in the world according to the World Health Organization. It's a lifestyle disorder and result from free radical formation by various physical and mental factors. About one third of cancers are known to be preventable and primary prevention is the most cost effective way to fight against cancer. *Triphala*, the combination of three fruits namely *Amalaki-Embilica officinalis* Gaertn.), *Bibhitaki- Terminalia bellirica* (Gaertn.) Roxb.), *Haritaki* (*Terminalia chebula* Retz.) in equal proportion are used as *Rasayana* (rejuvenation) in managing degenerative and metabolic disorders possibly through lipid peroxide inhibition and free radical

scavenging activity. *Triphala* contain anti-cancerous phytochemicals like chebulinic acid, ellagic acid, ethyl galate, tanic acid, gallic acid, quinic acid, beta sitosterol etc. along with other anti-oxidant elemental contents. **Aim:** This review paper elucidates the molecular mechanism of selected compounds of *Triphala* against cancer in cellular and in vivo models. **Materials and methods:** Data's was collected from GoogleScholar, PubMed, ScienceDirect, AYUSH portal, DHARA using key words chebulic acid, Gallic acid, ellagic acid and anti-cancerous activity. 10 articles were found to be most relevant. **Result:** It was reported that, chebulinic acid has tumour inhibitory effects by suppression of vascular endothelial growth factor (VEGF) and induces apoptosis in COLO-205 cell line. Gallic acid has a significant chemo preventive effect on dimethyl hydrazine (DMH) induced colon carcinogenesis. Also, Ellagic acid protects K562 cells from free radical damage in aminolevulinic acid based photodynamic therapy. **Conclusion:** In this review it is clear that *Triphala* is useful to prevent cancer by its free radical scavenging, increased anti-oxidant enzyme production, reduced cellular damage, inhibition of lipid peroxidation, and immunomodulatory effects.

**Keywords:** Chebulic acid, gallic acid, ellagic acid, anti-cancerous activity

## 41. Role of *Achara Rasayana* in cancer prevention- A conceptual analysis

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**Background:** The prevention of cancer is still considered as a challenge for all system of medicine. Research studies have provides strong evidence about the link between psychological factors like chronic stress, depression and cancer progression. Ayurvedic system of medicine depicts some rules and regimens regarding diets and behaviour for a healthy living. *Achara Rasayana* (behavioural rejuvenation therapy) is an eccentric concept in *Ayurveda* which explains the moral and ethical values, charitable conduct, mental-personal hygiene, compassion, devotion and yogic life style. Practicing these customs brings out rejuvenation in body-mind system and will assists in reversing the cancer progression. **Aim:** This article aims to evaluate the role of *Achara Rasayana* in prevention of cancer. **Matyerial and methods:** Literary searches were done through different databases, text book of Medicine, Surgery and *Ayurveda* classics for the proper understanding of cancer and *Achara Rasayana*. **Results:** Functional and biological aspects in micro environment of tumor can be altered by sympathetic nervous system and hypothalamic-pituitary-adrenal (HPA) axis with related hormones. Beta adrenergic receptors, glucocorticoids, and stress hormones like norepinephrine and epinephrine plays an integral role in initiation and progression of cancer. In the context of *Achara Rasayana* Acharya has mentioned that one who optimistically follows all conducts in *Achara Rasayana* need not take other *Rasayana* for desired result and those who takes *Rasayana* with out following the codes and conduct will not receive the optimum result. **Conclusion:** Full benefit of implementing the beneficial modalities for any ailment can only be achieved through a resonating level of sound mental health. So practice of *Achara Rasayana* will helps in bringing up a well designed Ayurvedic preventive strategy for the cancer.

**Keywords:** *Achara Rasayana*, cancer, mental hnealth,

## 42. Role of restorative *Yoga* in improving the quality of life of patients with cancer- A conceptual study

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**Background:** Quality of Life has been defined as a personal sense of well-being encompassing a multidimensional perspective that generally include physical, psychological, social and spiritual dimensions. Now it has become a keen area of concern among cancer survivors. Restorative *Yoga* is a type of gentle *Yoga* which involves prolonged holding of a few simple poses, supported by props, to achieve a deep level of relaxation. It includes light twists, seated forward folds and gentle back-bends. **Aim:** This paper is aimed with a perspective to throw light on the role of restorative *Yoga* practices in improving the quality of life of patients with cancer. **Material and methods:** Indexed and non indexed journals, books on restorative *Yoga*, Studies on intervention of restorative *Yoga* in ovarian and breast cancer have been referred. **Result:** Literature search from studies and articles revealed that marked differences were seen between baseline and post intervention follow up while analyzing the scales like FACT G, CES D, FACT Sp, FACT Fatigue, Anxiety scale and positive and negative affect scale for assessing physical, social and mental well being. The common *Yoga* postures included in the restorative *Yoga* practice are legs up the wall pose, corpse pose, reclining butterfly pose and half sun salutation. Apart from a normal *Yoga* practice, Restorative *Yoga* is about slowing down and balancing the nervous system. In practice, at first the sympathetic nervous system is stimulated by movements along with breath and later the parasympathetic nervous system is stimulated by offering rest to the body, thereby enhancing full body restoration. **Conclusion:** In a *Yogic* view, cancer is nothing but an imbalance in any of the *Panchakoshas* (five sheaths) of human body. *Yogic* practices have action at each of these *Panchakosha* level and provide with positive energy which nourishes healthy life patterns. The basis of restorative *Yoga* is support by props which help patients to completely relax and rest. For a cancer survivor, feeling safe with the support of props is both physical and emotional. Thus Restorative *Yoga* interventions during and post treatment have benefits like reducing stress and anxiety, relief from insomnia, reducing pain and fatigue and healing emotional pain.

**Keywords:** Cancer, quality of life, restorative *Yoga*

## 43. Role of fasting in prevention of cancer-A conceptual study

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**Background:** Fasting is defined as an abstinence from food for



a certain period of time. It acts as an inhibiting factor for mTOR (mammalian target of rapamycin, which could be considered as a master controller of protein synthesis). Fasting triggers autophagy, which in turn reduces mTOR and removes accumulated toxins that helps in prevention of cancer? **Aims:** Purpose of the study is to explore the possibilities of fasting in cancer prevention. **Materials and methods:** Information was gathered through literary searches from naturopathy text books. Web searches include research journals articles from Google Scholar and Pub Med, Research on role of autophagy in cancer, alternate day fasting and chronic disease prevention: a review of human and animal trial was considered. **Result:** Evidences from research suggest that autophagy promotes cell health and is crucial for cell development maintenance and differentiation. A review study on effect of alternate day fasting suggests its protective effect against cancer risk on animal trial. Results of study on effect of prolonged fasting showed a positive effect on reversing immune suppression. Even in history fasting was given great importance as a religious practice. Even in the normal human body cancer cells do exist, which is been suppressed by the immune system. These tumor cells survive through energy from the food we consume. In fasting the tumor cells are made to starve and its survival is made impossible. **Conclusion:** From all these evidences, it could be concluded that fasting shall be used as one of the important measures in prevention of cancer.

**Keywords:** Autophagy, cancer, fasting, prevention,

## 44. Cancer etiopathogenesis in Ayurveda - A conceptual study

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**Background:** Causes of cancer are multifactorial in nature. The major causative factors are errors in life style, diet, environment, chemicals, and psychosomatic interaction. Prevention has always been first and important goal in *Ayurveda*. According to *Ayurveda*, *Nidana parivarjanam* (avoid causes) is considered as the first line of management in all diseases. **Aim:** The purpose of this approach is to explore the management, prevention, to re-establish harmony and for creating awareness related to cancer. For this etiopathological factors of cancer were analysed. **Materials and methods:** Portrayals of Cancer were reviewed from various *Ayurveda* classics; Charaka Samhita, Sushruta Samhita, Ashtanga Hridayam and articles from PubMed and Google Scholar. **Result:** Cancer is considered as derangement of *TriDoshas* (three functional energy of body). Causes of cancer mainly come under three groups; (1) environmental, (2) dietary, (3) life style related. While assessing the manifestation of *Arbuda* (tumour) in *Ayurveda*, *Mithya Ahara Vihara* (imbalanced rutein and diet) precipitate *Tridosha Dushti* (vitiated *Tridosha*) mainly *Vata*, *Kapha Doshas* which results in *Agni Vaishamyata* (improper digestive power), which in turn leads to *Ama* (toxic product of improperly digested food) formation and subsequently the individual easily become vulnerable to cancer. Suppuration will not happen due to *Vata* and *Kapha* predominance during the early stages and *Pitta* plays a vital role in bringing the *Paka* (metabolism). The *Dhatus* (tissues) involved are *Rakta* (blood), *Mamsa* (muscles) and *Meda* (fat) *Dhatu*, which in turn leads to the vitiation of their respective *Srotas* (channels). According to Sushruta, *Arbuda* manifests from

the 6<sup>th</sup> skin layer *Rohini* which represents epithelium from where most of the cancers are originated. *Arbuda* begins in the form of swelling which is deep rooted, firm and painless. Hence we should be aware of etiological factors while some of the factors are modifiable. **Conclusion:** Avoiding *Samashana* (wholesome food taken with unwholesome food), *Mithyashana* (intake of more food in inadequate quantity and improper time) and *Vishamashana* (intake of food in inadequate quantity and improper time) and intake of excess sweet, sour, salty, spicy, pungent, bitter, astringent and dry food will prevent the vitiation of *Kapha*, *Pitta* and *Vata* respectively. A judicious balance of each tastes ensure their equilibrium. Along with this, adequate physical activity and a balanced state of mind ensures that the *Agni* is protected. Also the practical implementation of healthy regimens of *Dinacharya* (day routine), *Ritucharya* (seasonal routine), *Sadvritta* (routine management), *Acharya Rasayana* (behavioural rejuvenation therapy) in our day today activities results in overall improvement of health of the individual thereby preventing dreadful diseases like cancer to a certain level.

**Keywords:** *Ayurveda*, cancer, etiopathogenesis,

## 45. A conceptual review on pathogenesis of cancer in modern and Ayurvedic perspective

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**Background:** Tumor formation is *Kapha-Vataja* and *Dhatu* (tissue) involved are *Mamsa* (muscle), *Meda* (fat) and *Rakta* (Blood). *Vata* is responsible for faulty cell division and *Kapha* for their growth. In malignancies *Pitta* is also vitiated. Increased *Dhatwagni* (tissue metabolism), make its aggressive spread to its surroundings as it slowly digest tissues of the body. In modern view genetic alteration is the common pathology; cell mutations cause the cell to become malignant. **Aim:** The present study is to understand *Samprapti* (pathogenesis) of cancer in Ayurvedic and modern view. **Materials and methods:** Literature search was carried out in various classical literatures of *Ayurveda*, databases like pubmed, google scholar etc. Using keyword 'pathogenesis of cancer in *Ayurveda*' 112 articles and with keyword 'pathogenesis of cancer', 80000 articles were found in pubmed. With keyword 'pathogenesis of cancer in and modern' 445 articles found in pubmed central. Among them, five relevant articles were *Ayurveda* selected. **Results:** In modern view, genetic changes that contribute to cancer tend to affect three main types of genes. Proto oncogenes, tumor suppressor genes and DNA (Deoxy ribonucleic Acid) repair genes. Proto oncogenes are involved in normal cell growth and division, but on alteration, they will become more active and become cancer causing genes. Tumor suppressor genes on alteration may divide uncontrollably. DNA repair genes on alteration may tend to develop additional mutations in other genes. In *Ayurveda*, '*Eka Desha Vridhi*' (tumor growth) and '*Anya sthaniya kshaya*' (loss of body weight) is the general concept of pathology. Both exogenous and endogenous causes leads to *Dosha dushti* and *Agnimandya* anywhere in body, leading to vitiation of *Rakta Mamsa* and *Medus*, and further leads to formation of a mass (*Mamsapinda*) that increases its size quickly. **Conclusion:** The present review helps to compare the pathogenesis of cancer in modern and Ayurvedic

perspective, but many of the points are still remained unexplained which has to be excavated by further research.

**Keywords:** *Arbuda*, cancer, pathogenesis, *Samprapti*

## 46. Role of Yoga in management of insomnia among cancer patients – A conceptual study

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**Background:** Cancer diagnosis and its treatment constitute physical and psychological threats to the patients. Adverse effects are common in patients undergoing chemotherapy in which 90% of patients report insomnia during or after treatment. Insomnia can be a contributory factor of physical and psychological ailments or pharmacological interventions. Insomnia has to be approached in a detailed manner as it can be severe enough to increase mortality. Sleep medications are usually avoided as it can induce negative interactions with cancer therapeutics. Exercise is better opted in this condition. *Yoga* with a holistic approach balances the mental state is a good body-mind exercise. Its efficiency has been proven in management of insomnia among cancer patients by activating the body's parasympathetic activity. **Aims:** This study aimed to perform a systematic review to identify and appraise outcome of existing clinical research in which different *Yoga* techniques were used as method of intervention for cancer and its treatment induced adverse effects. **Materials and Methods:** Several databases like pubmed, google scholar, AYUSH research portal were searched using keywords cancer, insomnia, *Yoga*. Existing clinical research on effectiveness of *Yoga* for treating insomnia in patients were reviewed. **Results:** Pro-inflammatory cytokines production increases in cancer patients, which act on CNS (central nervous system) and alter the rest activity rhythm. This alters the normal sleep pattern. Reduced physical activity during the cancer treatment diminishes functions of circadian, physical and immune systems further impairs the sleep. *Yoga* is capable of positively influencing each of these systems as it incorporates both active and passive exercises. *Ujjayi*, *Kapalabhati* and *Nadishuddhi Pranayama* techniques can improve the sleep pattern of cancer patients. *Yoga Nidra* can bring out parasympathetic shift. *Gentle Hatha Yoga* and restorative *Yoga* can modify sleep quality and duration. By improving the sleep, mood and vitality *Kundalini Yoga* proved its effectiveness in cancer patients. **Conclusion:** *Yoga* can be advised for improving the quality of life along with better recovery of cancer patients. Performance status and general condition of the patient has to be validated while selecting the *Yoga* intervention. *Yoga* which reduces the cortisol, inflammatory cytokines and improves the natural killer cells is always a good choice of intervention for cancer and its treatment induced adverse effects.

**Keywords:** Cancer, insomnia, *Yoga*, review, sleep

## 47. Role of Agnihotra Homa in cancer: A conceptual study

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**Background:** *Agnihotra Homa* is one which heals environment, body and mind. It is the simplest form of *Homa* performed in many countries all over the world. Although it's an ancient fire ritual, it is based on the scientific aspects. It invokes sunrise and sunset timings, when rays produced from the sun. the burning of cow ghee, dried cow dung, unpolished rice in the typical inverted pyramidal shaped copper pot with the chanting of *Mantra* about *Surya* (sun) and *Agni* (fire). It is found that sun rays and that of *Agnihotra* resonate to generate a huge amount of vital energy useful for life processes. The fumes and ash of *Agnihotra* are useful to purify water and air, reduces the pathogenicity of microorganisms and help to improve the health of living beings. Researches have proven that it neutralise the effect of radioactivity, chemicals and it is bacteriostatic. These come under physical, chemical and biological carcinogens. Many research have proven that 1/3<sup>rd</sup> of the cancer patients are experiencing psychological disorder like depression, stress, anxiety etc., Intervention that prevent the cancer reducing the psychiatric disorder and improve quality of life are need of the hour. **Aim:** the present study is focused on a need of *Agnihotra Homa* for prevention of cancer, to reduce the psychiatric disorder and to improve quality of life. **Materials and methods:** The process of offering two oblations of two pinch full of rice smeared with cow's ghee into fire prepared out of dried cowdung in a pyramid shaped copper vessel exactly at sunrise and sunset times, chanting two *Sanskrit Mantras* is called *Agnihotra*. Papers published in databases, *Vedic* science books and other books related to *Agnihotra* were also referred for this study. **Results:** Several research studies unravel the benefits of *Agnihotra Homa* in terms of lowers stress level, increased will power, confidence level, it neutralise the effect of radiation, chemicals and it is bacteriostatic. By continues *homa* humans become more resistant to diseases due to aura energy created around the proximity of the pyramid. **Conclusion:** From this conceptual study we can say that *Agnihotra Homa* has an important role in cancer.

## 48. Review on withaferin a and withanolide d (Withania somnifera (L.) Dunal) in the management of cancer

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**Background:** Withaferin A is an ingredient of *Ashwagandha* mainly present in leaves regulates the estrogens and selectively kills the cancer cells. Withanolide D is another active constituent present in the root of *Ashwagandha*, has cytotoxic effect against cancer cells and also induces apoptosis in leukemia. **Aim:** This review is to elucidate the use of *Withania somnifera* (L.) Dunal in the management of cancer. **Materials and methods:** Literary review done with databases like PubMed, Google Scholar for studies published in between January 2000 to December 2018. Using the key word withaferin A and Withanolide D. 266 articles were found in Pub Med, among these 166 articles were selected by adding key word cancer treatment, 10 relevant papers were reviewed. **Results:** The active chemical constituents of *Ashwagandha* are Withaferin A, Withanolide D. These compounds has the ability to block the cell signaling, signaling prostaglandin production, cell cycle productions,

and inflammatory cytokines etc., The studies shows that Withaferin A is used in conditions like lung adenoma, breast carcinoma, uterine fibroids, cervical carcinoma, lymphoma colorectal carcinoma, thyroid carcinoma. The alcoholic extract of dried root of *Ashwagandha* has specific effect on tumor cells due to the presence of Withaferin A in its leaf; it also inhibits the cell growth, cell attachments, selective killing of cells radio sensitizing effect without systemic toxicity. Ethanolic extract inhibits lymphoma. Withanolide D present in the roots have anticancerous agents it boost the immune system, increases the WBC (White Blood Cells) count, lung cancer. **Conclusion:** The article shows that presence of Withaferin A, Withanolide D and other antioxidants in *W. somnifera* has significant role in the treatment of cancer and management of side effects.

**Keywords:** Cancer, withaferin A, *Withania somnifera*, withanolide D

## 49. A conceptual review on anti-cancer effect of curcumin in breast cancer

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**Background:** Turmeric/*Haridra* (*Curcuma longa* L.) is a well known Ayurvedic drug, curcumin extraction from *Curcuma longa* tends to inhibit cell growth effect of mitomycin C in human breast cancer MCF-7 cells via the p38 MAPK pathway. The cell cycle arrests other carcinogenic cell. Anti-cancer effects of curcumin in mediating the breast cancer cell proliferation rate and invasion NFκB (nuclear factor kappa-light-chain-enhancer of activated B cells) inducing genes of down regulation. **Aim:** The present study was a conceptual review on the anti cancer effect of curcumin in available from present database. **Materials and methods:** Literature research on anti cancer effect of curcumin published during 1985-2018 in various Databases and relevant literatures were searched, analysed the results and interpreted the data. Using the keyword curcumin, 632 articles found in PubMed, 17 were selected by adding the key word “breast cancer treatment” and relevant 8 articles are selected. **Results:** The recent pharmacological and phyto-chemical studies on curcumin have shown anti-oxidant, anti-inflammatory, anti-cancerous activity. Pharmacological activity of curcuminoids is due to unique molecular structure. Laboratory studies have shown that it is able to kill cells and prevent growth via activation of tumor suppressor gene p53 which is the protector of all genes and regulates the various cellular and molecular pathways. **Conclusion:** From this review, it is evident that pre-clinical studies carried out on curcumin plays major role in the management of breast cancer. Conducting well documented clinical trial help to substantiate the role of curcumin in the preventive and aspect of breast cancer.

**Keywords:** *Ayurveda*, breast cancer, curcumin

## 50. Conceptual study on the preventive and supportive aspect of Rasayana in cancer

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**Background:** *Rasayana Chikitsa* (rejuvenation therapy) is the branch of Ayurveda, which deals with various aspects of preventive health care. The purpose of *Rasayana* therapy is to delaying the degenerative process in the body. **Aim:** This paper expounds the importance of *Rasayana* in preventive and supportive aspects of cancer in both and modern science. **Materials and methods:** Literature search were done in both ancient *Ayurveda* Ayurvedic texts like Sushruta samhitha, Astanga Hridaya etc. and modern medical texts with the backing of journals and the studies in Google Scholar, PubMed, Scopus, etc. Along with the ayurvedic literature, this paper also deals with some of the relevant articles on the topic from the year 2000 onwards. Using the keyword cancer and *Rasayana* (rejuvenation), *Triphala Rasayana*, *Brahmya Rasayana*, *Ashwagandha Rasayana*, *Rasayana Avaleha*, 54 articles found in PubMed. After reading four articles were selected among this one on *Rasayana Avaleha* , one on *Brahma Rasayana* and two studies on *Triphala Rasayana*. **Results:** The insight of *Rasayana* concept, various research aspects in cancer, as well as preventive aspects, could be identified through the review. Based on the review, the following results were found *Rasayana Avaleha* counteracts the various adverse effects of chemotherapy and radiotherapy. The radio-protective and anti-cancer activities of *Triphala Rasayana* and the antioxidant activity of *Brahma Rasayana*. **Conclusion:** *Rasayana* drugs have the ability to prevent further advancement of cancer and also enhance the lifestyle of patients. The *Rasayana Yoga* explained in the *Ayurveda* literature require further study to explore their complete usefulness in cancer therapy.

**Keywords:** *Brahma Rasayana*, cancer, *Rasayana*, *Rasayana Avaleha*, *Triphala Rasayana*

## 51. Effectiveness of Ashwagandha Rasayanam and Yoga therapy in promotion of quality of life in grade three breast cancer after radiation and chemotherapy:A case report

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**Background:** Breast cancer is most common as well as second leading cause of cancer in women. The chemical constituent withanolide of *Ashwagandha* (*Withania somnifera* (L.) Dunal) has a therapeutic potential against breast cancer. *Yoga* therapy is also benefited for people those who are suffering with cancer. Radiation therapy, chemotherapy are the most tested therapeutic modality in practice. Chemotherapy drugs have many side effects like nausea, vomiting, risk of infection etc. In the present paper, there are two puposes for, reducing the side effect as well as to improving the quality of life. **Aim:** To study the effect of *Ashwagandha Rasayana* in promotion of quality of life in grade three breast cancer patient after radiation and chemotherapy and to know the effect of *Yoga* therapy in patient who are suffering from breast cancer. **Case history:** The present case is a 50 year old female patient who came to our OPD having breast cancer with the complaints of nausea related with vomiting three

times per day, fatigue, mucocitis after radiation and chemotherapy since two weeks. The patient was admitted and advice to take 15 gms of *Ashwagandha Rasayanam* twice daily with *Anupanam* of milk for three months. Also advice for *Yoga* therapy daily once. The improvement of quality of life was assessed through IQOLA SF – 36v2 assessment criteria. **Results:** There is a progressive improvement in quality of life and improved level of immunity in patient with grade three breast cancer after radiation and chemotherapy with the administration of *Ashwagandha Rasayana*. Also there is stress reduction, and pain reduction by regular *Yoga* therapy. **Conclusion:** The present paper reveals the effect of *Ashwagandha Rasayana* and *Yoga* therapy in palliative care of grade three breast cancer after radiation and chemotherapy.

**Keywords:** *Ashwagandha Rasayana*, breast cancer, chemotherapy, radiation

## 52. Insights on prevention of cancer from *Ayurveda* - A review

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**Background:** Cancer is the uncontrolled growth of abnormal cells in the body. Cancer develops when the body's normal control mechanism stops working. Old cells do not die instead they grow out of control forming new abnormal cells. These extra cells may form a mass of tissue called a tumor. There are several risk factors which contribute to the development of cancer. The most common risk factors for cancer include smoking, tobacco, aging, radiation exposure, chemicals and other substances, some viruses and bacteria, certain hormones, family history of cancer poor diet, lack of physical activity or being overweight. We can prevent many forms of cancer by avoiding some of these risk factors while some others cannot be prevented. **Aims:** A brief review on prevention of cancer from *Ayurveda* is being discussed under this topic. **Materials and methods:** For this review online database like PubMed, Google Scholar were searched and several articles related with the topic were selected. These articles stated inflammation as a hallmark of the neoplastic process. Chronic inflammation is considered as a major driving force in carcinogenesis. This forms a connecting link between cancer and metabolic syndrome and one among the triad with aging and cancer. **Results:** Ayurvedic classics have given references for the concept of *Mandagni* (low appetite) being the cause for all diseases. *Mandagni* itself is one of the factors for producing *Ama* (toxic product of improperly digested food). Excessive *Ama* can circulate and interact with excretory products to produce a reactive and toxic form with antigenic and pro-inflammatory properties. This form of *Ama* can potentially disrupt the immune system and increase the severity of any existing disease. While there are reliable biomarkers for chronic inflammation there are few markers for a mechanistic link between early inflammation and digestive disorders. Prevention is always better than cure. **Conclusion:** *Ayurveda* emphasizes on the *Swasthyarakshana* (protect to health) i.e. the maintaining the health of normal individuals. Accordingly Ayurvedic drugs and life style management are largely designed to restore the body's natural defence mechanisms and self-healing powers.

**Keywords:** *Ayurveda*, cancer, inflammation

## 53. Anti-metastatic effect of leech therapy in cancer treatment - A review

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**Background:** Leech therapy (*Jaloukavacharana*) in the field of cancer treatment is an advantage, as it is cheap, effective and easy to apply. Cancer treatments using leech (*haementeria officinalis*) therapy are being explored because of the platelet inhibitors and special enzymes like antistasin contained in leech saliva which has anti-metastatic activity. **Aims:** The present paper is to summarize the experimental research progress of antistasin. **Materials and methods:** Literature search was carried out in various databases and relevant classical literatures to identify the concepts of cancer in *Ayurveda*, various alternative medicines and modern system of medicines. Reviews were conducted on most relevant papers. 404 articles were found in Google scholar using keywords antistasin, leech and cancer. Using key word 'antistasin', 79 articles were found in PubMed. Among these five were selected by adding word 'cancer'. **Results:** Antistasin, a leech derived 119 aminoacid protein which exhibits potent and highly selective inhibition of coagulation factor Xa. Tumor cells contain a procoagulant that can directly activate factor Xa by which fibrin formation is inhibited. Fibrin promotes metastatic spread of tumor cells. Hence leech therapy possess anti-metastatic effect. **Conclusion:** Scope of leech therapy in cancer management has to be explored by further research since the leech therapy is economical and effective and further researches has to be implemented in it.

**Keywords:** Anti metastasis, anti-stasin, cancer, haementeria officinalis, *Jaloukavacharanam*, leech, *Raktamokshana* in cancer

## 54. Kshara in liver cancer w.s.r to *Bhunimbadi Kshara*- A review

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**Background:** *Kshara* (alkaline substances) is the one which possess *Ksharana* property, acts immediately and administered in cases where surgery is contraindicated or difficult to be done. **Aim:** Present this study is considering this point, the use of *Kshara* can be an effective solution in the management of cancer. **Materials and methods:** *Bhunimbadi Kshara* is a formulation which has ingredients such as *Bhunimba* (*Andrographis paniculata* (Burm.f.) Nees), *Haritaki* (*Termineliachebula* Retz), *Katukarohini* (*Picrorrhia kurroa* Royle&Benth), *Patola* (*Tricosanthes dioica* Roxb.), *Nimba* (*Azadirachta indica* A.Juss), *Parpataka* (*Fumaria parviflora* Lamk) and *Maahisha Mutra* (buffalo urine). In this study all the relevant Ayurvedic literatures were referred in detail to elucidate the property of the ingredients in *Bhunimbadi Kshara* and its probable mode of its action in alleviating the symptoms and treating liver cancer. The information were also been collected from recent scientific research journals and databases regarding the effect and properties of all

the drugs in *Bhunimbadi Kshara* and its role in treating cancer. **Results:** Liver cancer mainly has the symptoms such as loss of appetite, weight loss, nausea, upper abdominal pain, enlarged liver etc. As per classical text *Bhumimbadi Kshara* is mentioned in the context of *Agni Vardhaka* (appetite stimulant) and the drugs individually possess the properties such as *Deepana* (appetizer), *Anulomana* (facilitates the transportation of various entities with in the body), *Lekhana* (scraping), *Rasayana* (rejuvenation) and given in conditions such as *Yakrit Roga* (liver disease), *Shotha* (oedema), *Gulma* (lump), *Udara* (abdominal disease), *Chardi* (vomiting) etc. According to recent Research journals, *Bhunimba* (*Andrographis paniculata* Nees.), *Haritaki* (*Terminalia chebula* Retz), *Katukarohini* (*Picrorhiza kurroa* Royle & Benth), *Patola* (*Luffa acutangula* Linn), *Nimba* (*Azadirachta indica* A.Juss.), *Parpataka* (*Fumaria officinalis* L.) were proven to have immuno modulatory, hepatoprotective, anti hepatotoxic, chemopreventive, antioxidant, anti-tumourous, anticancerous and cytotoxic to cancer cells. Hence these drugs can be used in the form of *Kshara* as it possess the properties like *Chedana* (excision), *Bhedana* (incision), *Lekhana* (scraping), *Tridoshaghna* (pacify to *Tridosha*) and *Ksharana* (alkaline effect) according to classical literatures. **Conclusion:** Thus by reviewing the properties of *Bhunimba*, *Haritaki*, *Katukarohini*, *Patola*, *Nimba*, *Parpataka* and *Maahisha Mutra* (buffellow urine) as per Ayurvedic literatures and recent scientific journals, it can be concluded that the ingredients in *Bhunimbadi Kshara* have the potential to provide significant improvement in the functions of liver and thereby as a result of it *Bhunimbadi Kshara* helps in managing the symptoms of liver cancer and the above findings would augur well for future scientific studies.

**Keywords:** Antioxidant, *Bhunimba*, *Haritaki*, hepatoprotective, *Katukarohini*, *Kshara* and anticancer, liver cancer, *Nimba*, *Patola*, *Parpataka*

## 55. Meta-analysis of cancer biology in Ayurveda - A conceptual study

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**Background:** In India, as per cancer statistics estimated number of people living with cancer is around 2.25 million every year. In *Ayurveda*, *Granthi* (cyst) and *Arbuda* (tumour) are the terms suites for benign and metastasis stage respectively. Though many researches in academia and institutes have undertaken, the results are not promising to meet the need of cancer population. It may be due to inclusion of broad areas of oncology with minimal sample, short duration cross sectional study design. **Aim:** The present attempt to review the articles related to research on cancer systematically in database to understand the trend of research in *Ayurveda* and suggest to meet the requirements of the needy. **Materials and methods:** Total nine articles were selected from 1982 to 2017, which are eligible for study through which analysis explored. **Results:** In the articles reviewed, the authors are understanding *Arbuda* as cancer and tried to translate patho-physiology in terms of *Ayurveda*. However few authors quoted words of Acharya Sushruta involvement of rohini layer of skin manifest *Arbhuda* and its management is highlighted with *Yantra Shastra Kshara* followed by *Panchakarma* (five biopurification therapy of *Ayurveda*). Few article also highlighted management

of the same, targeting impaired *Agni* (digestion and metabolism), *Ama* (toxic product of improperly digested food) and preventing the progression with disease specific medicine. In this meta-analysis of available articles related to cell biology of cancer discussed about the factors like *Dosha* (functional energy), *Dushya* (affecting factor), *Agni* (digestion), *Bala* (strength) etc, which are pre request for the planning the treatment. **Conclusion:** Involvement of deeper tissue in the disease management should involve *Panchakarma* followed with *Shastra Karma* (surgical). As it is helpful for correcting basic factors involved in pathogenesis of *Arbuda*.

**Keywords:** *Arbuda*, cancer in *Ayurveda*, cancer biology, meta-analysis

## 56. Preventive strategy in Paurusha Granthi Arbuda – A review

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**Background:** *Paurusha Granthi Arbuda* (Prostate cancer) 1.6 million new cases per year and 366,000 deaths per year in the world. Incidence in Indian population is 15% and 20–30 new cases/month in India. **Aim:** To know about different *Ahara* and *Vihara* that should be adopted while devising a preventive strategy against *Paurusha Granthi Arbuda*. **Materials and methods:** Peer reviewed articles, authentic websites, journals and classical texts are used as reference for this review study. PubMed was searched using the keywords prostate, cancer, lifestyle and prevention. 485 articles were found, out of which 157 articles were found to be relevant. **Results:** Diet regulation and proper daily regimen have considerable preventive effect on *Paurusha granthi Arbuda*. **Conclusion:** A specified list of *Hita Ahara* and *Vihara*, which should be prepared after taking into consideration the local variations in food, has to be followed as a preventive strategy against *Paurusha Granthi Arbuda*.

**Keywords:** *Arbuda*, cancer, lifestyle, *Paurusha Granthi*, prevention, prostate

## 57. Natural liquid serving approach for clinical and post hospitalization recovery

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**Background:** There are three pillars of health diet and lifestyle, Environment and Stress. Many diseases are life style disease. Health problem are convergence of multiple health destroying factors, they grow in our body day after day, stays for months, years and comes out aggressively when our body cannot tackle it. Cancer is a convergence of multiple health destroying factors which multiply. Our body is overburdened, our immune system is overwhelmed, it cannot keep it up the over burden, load body is putting on it. Our body doesn't have energy to fight against some remaining cell or causing factors. Cancer cell started multiplying and forming a lesion, ulcers, lump, bump, tumour, or spreading in your blood. The body created cancer. These

are your cells, your body created it so your body can heal it. **Aim:** Our main focus is to develop natural servings products and introducing food comes from nature in diet, be it fruits, veggies, herbs, spices which helps building immunity system, improve body's resistivity to fight against cancer and other diseases. **Materials & methods:** We understood the difficulties faced by sets of cancer patients. Some major noted treatment complications due to radiation & chemotherapy: Unable to eat/drink due to mouth ulcers-throat sores, loss of appetite, fatigue, nausea, fever, weight reduction, change in blood profile, low energy level due to collapsed immunity. Servings were designed keeping two primary goals: 1) Improving reduced food intake of people due to various complications. 2) Providing essential nutrition in various food forms which can be consumed by people having special dietary requirements & challenges. Preparation approach: Constant & variable serving approach by an amalgamation of wholesome superfoods & Ayurvedic ingredients into food forms. Different sizes of strainers and measuring tools used to set the right consistency and measure the nutrition value. Form of food, consistency, & preparation approach varies for people having RT tube (special strainers which remove hard particles & make a cream-like structure which can be easily consumed in cases of RT, oral obstructions.) Liquid serving increases the highly nutritious food consumption & helps to take maximum nutrition. As a part of the constant approach, servings having anti-cancerous, anti-oxidant, anti-inflammatory properties, ingredients that help to reduce free radical and supports the growth of good cells (check poster presentation table) should be given on daily basis. Approx 1 litre daily supply of serving should have vitamin A, carotenoid, carotene, falcarinol, anti-oxidant, and anti-cancerous property content. As a part of the variable approach, servings should be prepared from a group of superfoods which meets patient's daily nutrition need (phytochemicals, minerals, vitamins, fiber, healthy fats, fatty acids, protein). If your diet before the disease was like 1% anti-cancer, anti-oxidant. We should take it to 100%. **Results:** We've good cells and we've bad cells, we should try to activate as many good cells as possible, that can make difference. It's a process of cleaning a body, throwing out all toxins, reducing load on body. Every cell has been replaced with new good cell. Nutrients work together to feed cells, slow down and cut the Growth of many different cancer cells, and it feeds and makes your immunity system Stronger. Making your diet upto 100% anti-cancer with help of most anti-cancer ingredients. Recovery phases are mentioned below: 1. repair, 2. detoxification, 3. cell regeneration, 4. boosting the immunity system. **Conclusion:** Try to change the way you're living and remove all of the cancer-causing factors in your life. One to two-year period is essential because it's a process of cell regeneration, it's a process of cleaning a body, throwing out all toxins, reducing load on body. Every cell has been replaced with new good cell. Cancer should not be tagged as a lifetime disease; take a charge of your health and don't give up!

**Keywords:** Cancer, diet for cancer, food science, liquid diet lifestyle, natural therapy, soup, super foods

## 58. Role of ageing in cancer - A conceptual study

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**Background:** Older adults account for 60% of cancer incidences

and 70% of cancer related deaths. Modification of normal cells to cancer requires series of transformations at genetic, cellular, tissue and organ system level. **Aim:** Ageing process shares several similarities with cancer development, making it a risk factor for cancer. **Materials and methods:** Modern and *Ayurveda* literature were revised to acquire present knowledge of topic. Databases like Medline, Pubmed (1991-2018), *Dhara*, AYUSH Research Portal and Google Scholar were searched using the key words cancer, ageing, *Rasayana*. **Results:** Ageing is associated with changes like genomic instability, telomere attrition, epigenetic alterations, changes of protein spectra, mitochondrial dysfunction, cellular senescence, stem cell exhaustion and altered intercellular communications. Telomere shortening- a driver of ageing increases cancer risk while telomere dysfunction promotes malignancy. Mitochondrial deterioration promotes production of reactive oxygen species that interfere with DNA and protein function, facilitating cancer development. Accumulation of senescent cells and changes in enzyme activity make tissue environment permissive to cancer. Age-associated genetic modifications including hypermethylation, mutations and translocation are responsible for neoplastic development. Immune and endocrine function decline is implicated in ageing and carcinogenesis. According to *Ayurveda*, *Vata Dosh* vitiates during old age. At cellular level, *Vata* is associated with signaling pathways regulating cell growth, differentiation and cell death. *Vatakopa* (vitiating *Vata Dosh*) along with *Kshaya* of *ojas* and *Agni* associated with senility might be responsible for increasing incidence of cancer in old age. *Ayurveda* recommends *Swasthavritta* (health management) including proper following of *Dinacharya* (day routine), *Ritucharya* (seasonal routine), *Pathya* (wholesome diet) and *Hita Ahara Vihara* (suitable diet schedule), *Sadvritta Palana* (manage to routine) to manage these imbalances along with *Rasayana* (rejuvenation) to improve metabolic processes resulting in best possible biotransformations, producing best quality *Dhatus* (tissues) to delay senility. This can be utilized in prevention of cancer of old age. **Conclusion:** As age advances, body accumulates all sorts of damages that eventually lead to subsequent diseases. Any intervention that prevent or delay onset of these damages can decrease incidence of senile diseases also. *Swasthavritta* and *Rasayana* recommended by *Ayurveda* to address the imbalances in senility can be used in preventing cancer associated with old age or to reduce severity of illness to a great extent.

**Keywords:** Ageing, cancer, *Rasayana*

## 59. A conceptual overview of cancer palliative care in Ayurveda

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**Background:** Each year an estimated 40 million people are in need of cancer palliative care globally and from this only about 14% of people receive the same. Research studies shows that *Ayurveda* medicines act synergistically to potentiate the efficacy of allopathic anti-cancer drugs thereby reducing the side effects and improving the quality of life. **Aim:** The aim of this article is to highlight the role of *Ayurveda* in Palliative care for improving the immune system, relieving the pain and controlling the side effects pertaining

to management and rehabilitation of cancer patients by uplifting their quality of life. **Materials and methods:** A thorough literary search was done through various databases like Pubmed, Google scholar, Classical *Ayurveda* text books and scientific scholarly articles. **Result:** *Ayurveda* is well renowned to manage the cancer in various ways like supportive, palliative and prophylactic care with its broad spectrum of drug formulations and treatment modalities. The rasayanas, mentioned in *Ayurveda* can be used in improving the immune system and hence can be used to improve the quality of life of patients undergoing cancer therapy. Major post cancer treatment side effects like pain, nausea, vomiting, constipation, diarrhoea, weakness, insomnia, surgical stiffness, muscular atrophy, etc can be well managed by various Ayurvedic treatment modalities like *matra Vasti*, *Sirodhara*, *Karaskara Ksheera Dhara* etc and formulations like *Aswagandha Churnam*, *Drakshadi Kashayam*, *Dadimadi Choornam* etc. **Conclusion:** Taking into consideration the relevance of Ayurvedic palliative care, WHO has stated certain primary objectives of treatment of cancer. At present AYUSH department is increasingly integrating mainstream cancer palliative care programmes in India. Thus Ayurveda potentially plays an important role in cancer palliative care encompassing the domains of preventive and clinical oncology involving risk reduction, health promotion, improving prognosis and treatment response, long term survival, preventing recurrence, minimizing treatment side effect, toxicity and adverse events.

**Key words:** Cancer palliative care, Ayurvedic treatment modalities, drug formulations

## 60. Adopting *Upavasa* in cancer management: A conceptual view

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**Background:** *Upavasa* (fasting) is an emerging trend in cancer management by its tumor -suppressing nature and characteristics that reduces chemotherapy side effects. Autophagy is a cell recycling process in which human body consumes its own damaged cells and unused proteins. This process happens when a person undergoes *Upavasa*. *Upavasa* is one among *Dashavidha Langhana* (therapy which lightens the body by relieving heaviness) in Ayurveda. **Aims:** Conceptualising the role of *upavasa* therapy in cancer management. **Materials and methods:** Literature searches were conducted in PubMed, Google scholar databases using seven relevant articles were reviewed for the study. **Result:** Recent animal studies and a few preliminary human trials have shown that the suppression of tumour progression by fasting might be due to a few characteristics like decreased blood glucose production, autophagy, increased production of tumor-killing cells etc. During fasting, the normal cells are metabolically less active, where as cancer cells are hypermetabolic. As chemotherapy works by targeting the fast growing cells, cancer cells become more vulnerable to the effect of chemotherapy than normal cells. So by adopting *Upavasa* we are saving the normal cells from toxic effects of chemotherapy. The first symptom in the pathogenesis of cancer (*Arbuda*) is swelling (*Sotha*) which is due to *Mandagni* resulting in *Ama* (toxic product of improperly digested food). In the management of *Ama*, *UpavasaRoopi Langhana* is the ideal line of management. This can be achieved by *Anashana* or *Alpabhojana* (low diet) which results *Amapachaka* effects at the *Koshta* as well

as *Sarvadaihika* level. As cancer is a debilitating disease, patients are *Ksheenbala* (low strength), so *Upavasa Roopi Langhana* is more effective. *Langhana* kindles digestive fire, controls *Ama*, cleanses tissues and channels, thereby becoming a self-preservation mechanism which the body can remove the dysfunctional cells and recycle them towards cellular repairing and cleaning. **Conclusion:** Studies reveals that the risk of cancer is less in people who undergo often fasting. *Upavasa* might be an effective method in cancer management by reducing the toxic effect of chemotherapy and suppression of fast growing cancer cells. Clinical studies needs to be conducted in large population to elaborate this concept.

**Key words:** Autophagy, chemotherapy and cancer, fasting.

## 61. A review on role of *Rasayana* in combating radiation and chemotherapy induced blood disorders

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**Background:** Chemo and radiotherapy have helped significantly in the fight against cancer. The chemotherapeutic agents introduced into the blood stream kills the active cancer cells but as an inevitable consequence damage the rapidly dividing normal cells too. Destruction of bonemarrow cells during these therapies results in myelosuppression and consequent immunosuppression. Chemoinduced blood disorders are currently managed by injecting granulocyte colony stimulating factors and platelet infusion which further add to the burden of the patient. Integration of modalities like the *Rasayana Chikitsa* (rejuvenation therapy) in Ayurveda that aids in tissue regeneration and cell renewal, with conventional treatments can maximise treatment outcomes and is palliative too. **Aim:** Present studies suggest that *Rasayanas* possess myeloprotective and haemopoietic stimulatory function against cytotoxic agents and hence can be effective in the management of chemo induced blood disorders. **Materials and methods:** Major databases, Medline, PubMed (1995-2018), Scopus (2000-2018), *Dhara* and Ayush Research Portal were searched using the keywords chemotherapy, *Rasayana*, haematopoiesis, myelosuppression. Avoiding duplication and irrelevant articles 17 articles were selected. **Results:** Deterioration of the microenvironment for cell nourishment by conventional cancer treatments could be effectively controlled by *Rasayana*. An in vivo study on *BrahmaRasayana* and *Ashwagandha Rasayana* showed chemoprotective action against cyclophosphamide induced leukopenia. The total WBC counts in study group were 3800 and 3000 cells/mm<sup>3</sup> respectively while it dropped to 700cells/mm<sup>3</sup> in controls. The bonemarrow cellularity were also high (3.45x10 and 2.38x16 cells/femur) compared to controls (0.72 x 10 cells/femur). A study on the effect of *Brahma Rasayana* in radio and chemotherapy patients have showed a lowering in the nadir of neutrophils and lymphocytes, and total number of consecutive days of leukopenia and neutropenia after the treatment. Studies on *Rasayana Avaleha* and *Chyavanaprasha* have shown increased cellular repair index. *Rasayana* can thus substantially combat chemoinduced blood disorders. **Conclusion:** The inevitable side effects of cancer treatments could be well managed by Ayurveda. Use of *Rasayana* as an adjuvant in cancer treatment will be highly beneficial in radio and

chemotherapy induced blood disorders. Judicious administration of *Rasayana* with due consideration to the *Agni* and *Bala* of the person as adjuvant to the conventional cancer treatment can enhance the patient's quality of life multidimensionally.

**Keywords:** Chemotherapy, Myelosuppression, *Rasayana*

## 62. Risk assessment, prevention and early detection of Marjolin's ulcer by the application of *Shatkriyakala*

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**Background:** Marjolin's ulcer (MU) is a rare yet grievous form of Cancer manifesting as Squamous/basal cell carcinoma or melanoma. It develops from burns, pressure ulcers, venous ulcers, osteomyelitis, surgical and radiation scars, animal bites, pilonidal abscess, hydradenitis suppurativa, skin grafting etc. **Aim:** To apply *Shatkriyakala* in understanding the pathogenesis of Marjolin's ulcer. **Materials and methods:** To understand the pathogenesis of Marjolin's ulcer a thorough review of available online and offline literatures namely Pub Med, Scopus, and AYUSH portal were done. A total of 9471 articles were available out of which 15 were found relevant. A review of *Shatkriyakala* was done basing *Sushruta Samhita* and online databases. Filters such as free full text, review and Mesh were used. Boolean operator AND was also used, wherein six other relevant articles were obtained. The present review is based on these findings. **Results:** *Shatkriyakala* is a distinct concept introduced by Acharya Sushruta, which describes the pathogenesis of an inflammatory response in six stages. In the chapter *Vranaprashana*, Acharya has vividly explained the transformation of a *Vrana shopha* (inflammation) into a *Vrana* (ulcer) and subsequent complications, devising the concept of *Kriya Kala*. The same may be implemented to understand the etiopathology of any disease including cancer. Marjolin's ulcer (MU) is a rare yet grievous form of skin cancer developing from scar tissues and chronic ulcers. Repeated irritation of wound by constant dressings, chronic infection and decreased vasculature facilitates vitiation of *Doshas* in the *Dushta Vrana* (chronic ulcer). This causes structural damage of DNA and alters gene transcription which is understood as *Chaya Avastha* (initiation of disease). The mutation of genome will set forth an innate mechanism to repair DNA and alter cell cycle, which is inferred as *Prakopa* (stage of aggravation). If the causative factors persist, DNA repair and cell apoptosis fails, leading to DNA cross linkages, cellular infiltration and expression of proto oncogenesis analogous to *Prasara* (stage of spread) and *Sthana Samshraya* (stage of localization). The onset of malignant tumors is characteristic of *Vyakta Avastha* (stage of manifestation) which when left untreated initiates metastasis, deduced as *Bheda Avastha* (stage of complications). **Conclusion:** A proper understanding of *Kriyakala* will help a physician in risk assessment, prevention and early detection of Marjolin's ulcer developing from a chronic ulcer.

**Keywords:** Cancer, *Dushtavrana*, marjolin's ulcer, *Shatkriyakala*

## 63. Ayurvedic perspective of managing oxidative stress in cancer

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**Background:** Oxidative stress is basically an imbalance between the free radical production and the body's ability to counteract or detoxify their harmful effects by antioxidants through the mechanism of neutralization. Researches have revealed how continued oxidative stress causes chronic inflammation, increases the mutation rate within the cells promoting oncogenic transformation, leading to chronic diseases including cancer and cardiovascular diseases. Evidence suggests that antioxidants when taken as a supplement isn't good for health rather, could be combined in a different way in whole foods. **Aim:** Oxidative stress management in *Ayurveda* includes personalised recommendations for lifestyle and use of specific diet and therapies like *Rasayana* (rejuvenation), having multipronged mechanism, resulting in the promotion of health and prevention of disease, by enlivening the body's inner intelligence on cancer. **Materials and methods:** Basic texts of *Ayurveda* and research articles including review papers were thoroughly studied to understand the Ayurvedic management of oxidative stress in prevention and cure of cancer. Using keyword "oxidative stress", 204956 articles were found from pubmed. 23799 articles from "oxidative stress and cancer" and 203 articles from "oxidative stress and *Ayurveda*" were obtained. 22 articles were obtained from keyword "oxidative stress and *Rasayana*". **Results:** Review of the current literature available on *Rasayanas* indicates that anti-oxidant and immunomodulation are the most studied activities of it. A study reveals that, both lymphocytes and neutrophils were significantly increased to acceptable level by *Rasayana* treatment in patients receiving chemotherapy and radiation therapy. Also, drugs such as *Amritaprasham*, *Ashwagandha Rasayana*, *Brahma Rasayana* and *Chyavanprasha* have shown immunomodulatory effects. **Conclusion:** Prevention, suppression or delaying the onset of the disease is important. A significant part of Ayurvedic therapeutics is preventive in nature by augmenting defense mechanism against disease, revitalizing the body in debilitated conditions and thus creating a sense of well-being by increasing the quality of life. As an adjuvant to ongoing medicines, *Rasayana* drugs can provide promising results to combat diseases like cancer and improve quality of life of patients by reducing oxidative stress.

**Keywords:** Anti-oxidants, *Ayurveda*, cancer, oxidative stress, *Rasayana*.

## 64. Inflammatory changes leading to cancer– A review

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**Background:** Human body consist of a defensive shield that any fighting force would be proud of. Among them, the most powerful weapon is inflammation, a well-orchestrated manoeuvre designed to eliminate enemies such as bacteria, injured cells and chemical irritants. But inflammations have another dark side which is a powerful force in cancer development. As we are looking to cancers which are caused by infectious agents like *Helicobacter pylori* or Hepatitis B, involvement



of chronic inflammation is more. While coming to the inflammatory conditions like Rheumatoid arthritis, inflammatory bowel diseases (crohns disease) chances of getting malignancy is more. **Aim:** The aim of this study is to assess how an inflammation leads into a cancer stage. **Materials and methods:** Modern textbooks, online databases like PubMed, Scopus and Science direct were taken into account as for bringing up the data. **Results:** After searching in online databases 410 review articles were found. Applying filters (inflammation and cancer), 2 articles found to be relevant Number of books searched=3 MESH terms: Cancer changes, inflammatory changes, tumor. **Conclusion:** As we coming to the discussion part, it is proven that Inflammation impacts on every single step of tumor genesis, from initiation through tumor promotion and then to metastatic progression. In a developing tumor cytokine production occur as a result of activation of NF-kB in immune cells further leading to chemokine production which can attract more inflammatory cells into the tumor.

**Keywords:** Inflammatory Changes, Tumor, Cancer changes

## 65. Ayurvedic management for obesity linked cancers in young adults- A review

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**Background:** The risk of developing obesity- related cancer is increasing in younger generations, along with increase rates of obesity. The chronic inflammation of the adipose tissue which results in genotoxic stress which may contribute to carcinogenesis and initiation of cancer. Excess body weight is also known as carcinogen, and exposure to these carcinogens during early life may have an influence on cancer risk during their developmental periods. The incidence increased for six of the 12 obesity related cancers like colorectal, uterine corpus (endometrial), gall bladder, kidney, multiple myeloma and pancreas in the younger generations. During cancer progression, the tumour cells engage in a metabolic symbiosis with the adipose tissue ie mature adipocytes provide adipokines and lipids to cancer cells. The stromal and immune cells infiltrate carcinomas and secrete paracrine factors within the tumour microenvironment. **Aim:** The current management of this is life style modifications and weight reduction along with the therapeutics. Lifestyle modifications can be brought about by adopting the *Sadvrittis* (rutein management) like *Dinacharya* (day rutein), *Rtucharya* (seasonal rutein) etc. **Materials and methods:** Ancient classical Ayurvedic textbooks, modern textbooks of medicine, recent research papers were reviewed thoroughly. **Results:** In *Ayurveda*, the causes are of exogenous and endogenous. The exogenous causes are of *Medas* potentiating diet and regimen. On the basis of the *Samanya Viseshasiddhanta* (principle of similarity-dissimilarity), the excessive consumption of similar substance (*Dravya Samanya* such as animal and plant fats), similar quality (*Guna Samanya* such as *Snigdha Guru Guna* (oily heavy properties) like *Ghrta* (ghee), *Vasa* (fat), *Taila* (oil), milk etc) or similar in action (*Karma Samanya* such as sedentary life, day sleep, no exercise). *Sthoulya* is a *Dushya* (affecting factor) dominant disorder, so in the *Samprapti* (pathogenesis) all the three *Dosha* are vitiated, ie *Kledaka Kapha*, *Pachaka Pitta*, *Samana* and *Vyana Vayu*. The general line of management is *Nidana Parivarjana* (avoid causes of disease) such as *Kapha* provoking, *Medovaha Strotas* vitiating, *Medovrdhikara Ahara vihara* should be strictly prohibited. Dietic

abnormality will produce vitiation of *Kapha* and *Medo Dhatu* (fatty tissues) results in *Sthoulya* (obesity). **Conclusion:** In the management of obesity linked cancers, proper diet and exercise are needed. So through *Ayurveda* by proper *Pathya Ahara Vihara* (wholesome diet and exercise) along with the therapeutics, we can manage the obesity linked cancers in young adults.

**Keywords:** Obesity linked cancers, *Sthoulya*, *Pathya*, *Apathya*, *Dinacharya*, *Ritucharya*

## 66. Prevention and management of hyperuricemia induced tumorigenesis and tumour lysis syndrome with *Rasayana* drugs: An Ayurvedic review

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**Background:** During the past few years, the association between cancer and gout as well as hyperuricemia has drawn a lot of attention. Some of the studies show hyperuricemia contributes to tumorigenesis by promoting both transformation and tumor cell proliferation, migration, survival and it may be a risk factor for cancer incidence and mortality. Chemotherapy and radiotherapy are highly toxic and both break down the cancer cells and damage adjacent healthy cells. When cells break down, they release substances into the blood. If cancer cells break down so quickly that the kidneys can't remove these substances from the blood, it can lead to tumour lysis syndrome, characterized by group of problems with blood levels, including hyperuricemia, hyperkalemia and hyperphosphatemia. In addition, massive lysis of malignant cells in certain patients with tumor lysis syndrome can result in hyperuricemia, which can predispose patients to renal failure, coronary heart disease and gout. Abnormal levels of potassium and calcium can affect heart rhythm and lead to neurological changes.

**Aim:** The present study was performed to evaluate, the prevention and management of hyperuricemia induced tumorigenesis and tumour lysis syndrome with Ayurvedic drugs like *Triphala*, *Guduchi*, *Yashtimadhu* and *Pippali*. **Materials and Methods:** Various studies have revealed the observed mechanistic perceptions and discussions. **Results:** *Rasayana* (Ayurvedic Rejuvenation) therapy provides multidimensional benefits. The drugs like *Triphala* [a combination of three fruits- *Emblica officinalis* (*Amalaki*), *Terminalia bellerica* (*Bibhitaki*), and *Terminalia chebula* (*Haritaki*)], *Guduchi* (*Tinospora cordifolia*), *Yashtimadhu* (*Glycyrrhiza glabra*) and *Pippali* (*Piper longum*) have been extensively researched for their various rejuvenative properties. Preclinical studies using in vitro and in vivo models report that *Triphala*, an ayurvedic formulation may prevent and reverse DNA damage and mutagenesis and play a protective role against oxidation, even when administered after exposure and reversed the increased xanthine oxidoreductase and decreased the superoxide dismutase activity. Many scientific studies have reported *Triphala* feeding before gamma-radiation exposure reduced radiation sickness and mortality and useful in cancer as an anti-cancer, chemo-protective and radio-protective agent. Moreover, *Triphala* has anti-inflammatory and tissue regeneration activity. Herbal extract of *Tinospora cordifolia* has shown its potent radio protective effect in experiments. Clinical studies have reported aqueous extract of

*Glycyrrhizaglabra* showed results in minimizing the side effects of radiation and chemotherapy. *Piper longum* enhances digestion and nervous system disorders, detoxifies body, effective in anaemia and insomnia. **Conclusion:** These drugs are commonly available, safe and act as an important adjuvant to chemo-radiotherapy and enhance the quality of life of cancer patients. Additional research studies are still required to fully investigate the role of rejuvenative drugs in preventive and curative aspects of cancer.

**Keywords:** *Ayurveda*, cancer, hyperuricemia, tumour lysis syndrome, rejuvenation

## 67. Role of *Sattvavajaya Chikitsa* in cancer – An overview

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**Background:** Diagnosis with a life-threatening illness such as cancer is experienced as stressful condition. The influence of psychosocial factors on the development and progression of cancer has been in research for long. The epidemiological and clinical studies over the past 30 years have provided strong evidence for links between chronic stress, depression and social isolation and cancer progression. Thus the importance of mind in the progression of disease is indisputable. Along with various therapeutic measures, *Sattvavajaya Chikitsa* (mental consulting) plays a major role in progression of disease. *Sattvavajaya Chikitsa* in *Ayurveda* refers to one of the three broad based approaches to therapy. Charaka defines it as a method of restraining or withdrawal of the mind from unwholesome objects. The methods for improving *Prajna* (cognition) and its components like *Dhi* (intellect), *Dhrti* (controlling power) and *Smrti* (recollection and recall) are considered as a component of *Sattvavajaya Chikitsa*. **Aim:** The study is presented to the role of *Sattvavajaya Chikitsa*/ mental counselling in cancer patients. **Materials and methods:** The literary research was done through various data bases such as published journals, research articles, classical references etc. **Result:** In humans, tumorigenesis is a multistep process that requires many rate-limiting steps. Stress mediators from the sympathetic nervous system might directly regulate the growth and metastatic potential of tumor cells, independent of the effects on the immune system. Control of mind through *Sattvavajaya* helps in maintaining optimal levels of stress hormones. **Conclusion:** *Sattvavajaya Chikitsa* is a unique non-pharmacological approach, which should be employed monitoring the *Avastha* of *roga* along with pharmacological treatments to bring about tremendous effects.

**Keywords:** Cancer, *Sattvavajaya chikitsa*, stress

## 68. Prevention of hyperinsulinemia induced breast cancer by *Triphala Rasayana* – A review

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**Background:** Insulin is a major anabolic hormone that stimulates cell proliferation. The effect of insulin on cancer cell proliferation is suggested to be with IGF-1 stimulation. Hyperinsulinemia and elevated IGF-1 inhibit sex hormone binding globulin (SHBG) synthesis in liver. It results in increasing bioavailability of sex hormone (estrogen). It was shown that the pathways of the IGF-1R and the estrogen receptor (ER) synergize in the activation of the mitogen-activated protein kinase (MAPK). Estrogen was demonstrated to induce the expression of the IGF-1R as well as the insulin receptor substrates IRS-1 and IRS-2. These effects of estrogen led to an enhanced IRS-1 phosphorylation and hence an increased activation of MAPK after IGF-1 stimulation of MCF-7 breast tumor cells. Hyperinsulinemia also increases IGF-1 bioavailability by decreasing hepatic secretion of IGF-binding protein-1 and 2. IGF receptor is overexpressed in breast cancer and its activation activates the mitogen-activated protein kinase (MAPK) pathway for cell proliferation. **Aim:** The present study is focused on prevention of hyperinsulinemia induced breast cancer by *Triphala Rasayana*. **Materials and methods:** The literary research was done through various data bases such as published journals, research articles, classical references etc. **Results:** Numerous studies have shown that *Triphala* possess cytotoxic effect on cancer cell lines. Gallic acid, one of the major components present in the *Triphala Rasayana* helps in suppression of growth of cancer cells. **Conclusion:** It had concluded that viability of breast cancer cells (MCF-7) decreased when treated with *Triphala Rasayana*. Cytotoxicity of normal breast epithelial cells was not affected when treated with similar concentration of *Triphala*.

**Keywords:** Breast cancer, hyperinsulinemia, *Triphala Rasayana*

## 69. Effect of *Ashwagandha Rasayanam* in the management of breast cancer: A conceptual study

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**Background:** Breast cancer is the cancer that develops in breast cells. Typically, cancer forms in either the lobules or the ducts of the breast. *Ashwagandha* (*Withania somnifera* (L.) Dunal) inhibits the cell growth and prevents the cell attachment. It improves the body's defense against disease by improving the cell-mediated immunity. It also possesses potent antioxidant properties that help protect against cellular damage caused by free radicals. *Ashwagandha* is a real potent regenerative tonic (Rasayana), due to its multiple pharmacological actions like anti-stress, neuroprotective, antitumor, anti-arthritis, analgesic and anti-inflammatory etc. Regular consumption makes one strong and prevents from emaciation. *Ashwagandha Rasayana* is reported to possess chemo and radio-protective effects. Agents that can scavenge free radicals or reactive metabolites without affecting the outcome of the treatment would be beneficial to the host and can enhance the efficiency of the treatment. **Aim:** To evaluate the effect of *Ashwagandha Rasayana* in the management of breast cancer. **Materials and Methods:** Literary search was done from the texts, Ashtanga Hridaya, Harrison's Principles of Internal Medicine, PubMed were reviewed for the better understanding. **Result:** *Ashwagandha* exhibits anti-apoptotic, anti-metastatic, anti-invasive and anti-

inflammatory properties and gave the evidence that *Ashwagandha* has a capability for averting and treating breast cancer. **Conclusion:** *Ashwagandha* has its potential in refining quality of life in breast cancer patients. So, *Ashwagandha Rasayana* is found to be effective in the management of breast cancer

**Keywords:** *Ashwagandha Rasayana*, breast cancer, *Rasayana*

## 70. Post chemo and radiation therapy after-effect management with *Shilajatu Rasayana*: A review

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**Background:** Free radicals which are generated during cancer chemotherapy and radiation therapy can damage the normal cell around the tumour cell along with damage to the cellular DNA, which makes the cancer treatment painful and also affects the quality of life. *Shilajatu* (asphaltum) which possess adaptogenic, anti-inflammatory, free radical scavenging, antioxidant, anti-mutagenic, immunomodulator, antitumor and photo-protective properties serves as an effective option to tackle the severity of the side effects in post cancer management. **Aim:** To review on effects of *Shilajatu* on cancer. **Materials and methods:** Reviewed on effects of *Shilajatu* from Ayurveda classics and other relevant database. **Results:** The major physiological action of *Shilajitu* is found to be due to the presence of bioactive dibenzo- $\alpha$ -pyrones (DBP) along with humic and fulvic acids. The two DBPs ( 3-hydroxydibenzo- $\alpha$ -pyrone (3-OH-DBP) and 3,8- dihydroxydibenzo- $\alpha$ -pyrone [3,8-(OH)2-DBP ) isolated from *Shilajitu* and of CoQ10 found to show antioxidant defense and energy generation for restoring normal functions of mitochondria. It contains fulvic acid and humic acid (60-80%), minerals (20-40%) and up to 5% of trace elements (Fe, Ca, Cu, Zn, Mg, Mn, Mo, P). Humic and fulvic acid have cancer preventive properties. They can limit mutagenesis. Having free radicals scavenging, photo-protecting and anti-inflammatory properties they can prevent the cancer progression. Inflammation is considered as a measured for cancer progression, development and the metastasis. Studies have shown the anti-inflammatory action by reducing the level of pro-inflammatory cytokines like TNF- $\alpha$ , IL-1 $\beta$ , IL-6 and IL-10 produced by mononuclear cells. Humic acid have been found to exert anti-proliferative action and growth inhibition through induction of apoptosis by activating the caspase-3 and mitochondrial cytochrome-c in these cells. It also possess adaptogenic activity in which they stabilizes and improves our body's ability to adapt to stress. In classics *Shilajathu* is described as *Sarvarogajith* (cure from diseases), imparts *Dheergham AYU* (long life), *Sukha* (happyness), *Jaravyadi Prashamanam* (without diseases), *Deha Dhardikaram* (helthy body) which all points on its ability to control cellular aging and resist stress there by improving the quality of life. **Conclusion:** *Shilajatu* with its restorative properties could be used as post chemotherapy and radiotherapy management for inhibiting the toxic effects of the treatments as well as improving overall efficacy or wellbeing.

**Keywords:** Post chemotherapy, radiation therapy, *Rasayan*, *Shilajatu*

## 71. Clinical Application of *Pippali Rasayana* in Lynch Syndrome – A review

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**Background:** Hereditary nonpolyposis colon cancer (HNPCC) or Lynch syndrome runs in families in an autosomal dominant inheritance pattern that has a high risk of colon cancer, endometrial cancer and several other cancers like ovary, stomach, small intestine, hepatobiliary tract, upper urinary tract, brain and skin. In most cases, this disorder is caused by a defect in either the mismatch repair gene MLH1 or the gene MSH2. Women with this syndrome have a 40% to 60% risk of developing endometrial cancer at some point. Around 3 out of every 100 colon cancers or endometrial cancers are caused by Lynch syndrome. Lynch syndrome also causes cancers to occur at an earlier age in such families when compared to the general population. Modern sciences have surgeries and antibody therapy as a preventive measure. In such conditions *Ayurveda* can contribute in preventive aspects with *Rasayana* like *Pippali Rasayana* (*Piper Longum*) which is rich in antioxidant property and anticancer properties. **Aim:** To evaluate the clinical application of *Pippali Rasayana* as a preventive measure in Lynch Syndrome. **Materials and methods:** All classic text available, modern and literature, Database and Research Articles were reviewed. **Results:** *iperlongumine* (PL) is a natural product of *Piper longum* that inhibits multiple malignant phenotypes. Studies have shown elimination of the epithelial-mesenchymal transition by suppressing cell migration and invasion. *Piperlongumine* has shown activity against many cancers including prostate, breast, lung, colon, lymphoma, leukemia, primary brain tumours and gastric cancer. *Piper longum* is having a high antioxidant potential which helps to prevent cancer. *Piplartine* and *Piperine Alkaloidal Amides* isolated from *Piper longum* showed cytotoxic activity towards several tumor cell line. *Piperine* has the anti-oxidative, anti-apoptotic and restorative ability against cell proliferative mutagenic response suggesting its therapeutic usefulness in immunocompromised conditions. There is reference of *Gulma* in *Pippali Rasayana* context (*Charaka Samhita, Chikitsa Sthana*), which can be correlated to this. **Conclusion:** *Pippali Rasayana* with its anti-oxidant, anti-tumour properties can be effectively used as a preventive measure in lynch syndrome.

**Keywords:** Anti-oxidant, epithelial-mesenchymal transition, lynch syndrome, *Pippali Rasayana*, *Piperlongumine*, *Rasayana*

## 72. A conceptual review on the effect of *Tila* (*Sesamum indicum*) *Rasayana* in post chemotherapy and radotherapy oral ailments

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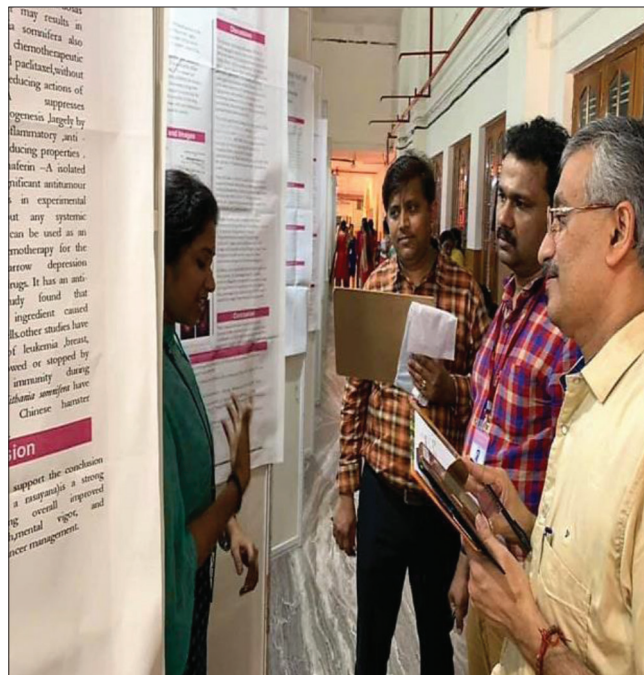
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**Background:** The prevalence of cancer has doubled in the past 26

years due to which the population seeking cancer therapies have also proportionally increased. The aim of radiation and chemotherapy is to destroy the cancer cells. But while doing so they cause many side effects. Researches show that over 400000 patients suffer from oral ailments due to radiation and chemotherapy. The effective treatment protocol is however limited. **Aim:** To review the effect of *Tila* (*Sesamum indicum* L.) in the decreasing the side effects post chemotherapy and post radiation therapy. **Materials and Methods:** *Brihatrayee* and databases as PubMed, Cochrane Library were reviewed. **Results:** Oral complications are common in cancer patients post chemo and radiation therapy, especially those with head and neck cancer. Radiation therapy and Chemotherapy affects the normally rapidly growing cells in the mouth and alters the normal nature of lining of the oral cavity and salivary gland thereby resulting in oral mucositis, infections, tooth decay, bleeding gums nerve damage. *Krishna Tila* when used in forms as *Taila Gandusha* (gargling), as *Tila Kashaya Gandoosha* & *Krishna Tila* as such (*Vatapatika Rasayana*) have tremendous result in these conditions. *Tila* is *Balya* (strength providing), *Dantya* (good for teeth), is *Twachya* & *Vrane Hita* (ulcers) & *Kapha-Pittahara* therefore can be used in oral mucositis, infections post chemo and radiation therapy. *Tila Kalkodakam* is mentioned as *Ropana Gandoosham*. Root of Sesame contains chlorosessamone

which has antifungal effect. Polyunsaturated fatty acids present in sesame oil curb the free radical injury occurring in mouth. Toxins and bacteria from the body are expelled through the tongue and trapped in the oil and expelled from the body. The benefits of sesame oil on oral health are because of saponification, emulsification and mechanical cleansing action. *Tila* can be taken as *Rasayana* on everyday basis (when taken with cold water.) thereby strengthening the teeth as well as delay the pace of oncogenesis. *Arbuda* occurs because of the increased *Chala Guna* of *Vata* along with *Kapha* & *Pitta*. *Tila* is *Kapha-Pitta Ahara* and doesn't vitiate *Vata*. Sesamin, the most important active ingredient possesses anti-cancerous property. The anti-cancer effects of sesamin is due to its anti-proliferative, pro-apoptotic, anti-inflammatory, anti-metastatic and pro-autophagocytic activities. **Conclusion:** *Tila* when taken as such with cold water, when used as *Taila* for *Gandoosha* and in *Kashayam* form to be also used as *Gandoosha* is effective in mucositis, infections, tooth decay, bleeding gums nerve damage which occurs post chemotherapy & radiation therapy.

**Keywords:** Mouth ailments, chemotherapy, radiation therapy, *Sesamum indicum*, *Tila*





A glimpse of the Round Table Discussion at the Conclav

Conclave on Cancer Care & Research in AYUSH



**Concluding Session of the AYUSH Cancer Conclave included the benedictory address by Swami Poornamritananda Puri**