



Review Article

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A SOLICITOUS INSIGHT ON CONTINUATION DISARRAY OF DUSHI VISHA AS A CONTRIBUTORY FACTOR IN GERIATRIC CANCER: A REVIEW

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ABSTRACT

As the global population ages, cancer and lifestyle-related disorders in the elderly are rising, presenting significant management challenges. Ayurveda offers valuable insights into cancer through the concept of Dushi visha, which describes the gradual accumulation of toxins that disrupt bodily functions and contribute to chronic diseases. The objectives of the review are to collect, evaluate, elaborate and discuss the Ayurvedic concepts of Dushi visha and their relevance to geriatric cancer as a lifestyle disorder and to explore the Dushi visha and evaluate effectiveness of ayurvedic treatments in cancer as a lifestyle disorder and to assess how these Ayurvedic approaches can be integrated into modern geriatric cancer care. A literature review was conducted across various databases, including PubMed and Ayurvedic research journals, to gather insights on the effectiveness of Ayurvedic treatments. Cancer, a syndrome characterized by uncontrolled cell proliferation, is significantly influenced by lifestyle and environmental factors, which contribute to the accumulation of Dushi visha. Aging exacerbates this issue due to the decline in organ function and increased risk of cancer. Ayurvedic treatments, including detoxification therapies and Agada formulations, offer potential benefits in managing toxicities and supporting the body's natural healing processes. These approaches can complement conventional therapies by alleviating side effects and improving overall quality of life. Ayurveda offers effective tools for managing cancer by addressing cumulative toxicity and toxin elimination. Integrating these practices into modern cancer care could improve treatment outcomes and patient well-being, showcasing the value of traditional medicine in oncology.

Keywords: Dushi visha, Cancer, Lifestyle Disorder, Geriatrics

INTRODUCTION

The prevalence of cancer and other lifestyle-related illnesses among the elderly has increased significantly as the world's population ages.¹ Numerous lifestyle factors are frequently associated with cancer, which presents considerable management issues, especially in older persons who may have several comorbidities. Toxin build-up and metabolic imbalance, concepts essential to Ayurvedic medicine's indulgent and management of similar ailments—are often brought up in discussions of cancer and related chronic illnesses.²

Ayurveda, an ancient system of medicine, provides a holistic approach to health by emphasizing the balance between body, mind, and spirit. Its notions unique insights into the pathophysiology of cancer and lifestyle disorders through the concept of Dushi visha.

Dushi visha refers to the slow accumulation of toxins over time that can disrupt bodily functions³ and contribute to chronic diseases. This concept is helpful in understanding how long-term exposure to environmental and internal toxins can impact health, particularly in the context of aging.

The incorporation of Ayurvedic principles into contemporary geriatric care may prove advantageous in the management of cancer as a lifestyle disorder. Ayurvedic treatments, which target both acute and chronic toxicities, are designed to improve overall well-being and restore balance. The detoxification therapies,

herbal remedies, and rejuvenation practices are utilized to manage the toxicity and facilitate the body's inherent healing processes. This review delves into the application of the Ayurvedic concept of Dushi visha to the treatment of cancer in elderly patients. It assesses the applicability of these age-old customs in modern healthcare settings, assesses the efficaciousness of Ayurvedic treatments, and talks about the possibility of incorporating these methods into mainstream care.

Reviewing the Ayurvedic concepts of Dushi visha and their relevance to geriatric cancer as a lifestyle disorder, evaluating the efficacy of Ayurvedic treatments for managing acute and chronic toxicities in cancer patients, and determining how these Ayurvedic approaches can be incorporated into contemporary geriatric cancer care are the goals of this review.

AN ETHERAL REVIEW

A review was conducted, focusing on studies related to Dushi visha, and cancer management in geriatric care. Databases such as PubMed, Scopus, and Ayurvedic research journals were searched using keywords including "Dushi visha," "cancer," "lifestyle disorders," "geriatric care," and "Ayurvedic treatment."

Cancer – More than a stipulation and ailment

Cancer encompasses a broad range of diseases marked by the uncontrolled proliferation of abnormal cells that invade and destroy normal tissue. These malignant cells can spread throughout the body, making cancer the second leading cause of

death globally, following cardiovascular diseases.⁴ The human body consists of trillions of cells that typically grow and divide in a regulated manner throughout an individual's life. Normally, when cells become damaged or old, they die off. Cancer originates when this process is disrupted, leading to the continued production of new cells while the old or defective ones fail to die. As cancer cells proliferate uncontrollably, they can replace and disrupt normal cells, impairing the body's functionality. Cancer can develop in any part of the body and is named based on its origin. For instance, breast cancer remains classified as breast cancer even if it spreads to other areas.⁵

Genetic diseases or defects account for only 5-10% of all cancer cases, while 90-95% are linked to environmental and lifestyle factors such as cigarette smoking, diet (including fried foods and red meat), alcohol consumption, sun exposure, environmental pollutants, infections, obesity, and a lack of physical exercise.⁶

Cancer-related deaths are approximately 25-30% due to tobacco, 30-35% related to diet, 15-20% caused by infections, and the remainder linked to inadequate lifestyle factors.⁷ These include a polluted diet, excessive pesticide use on crops (affecting fruits and vegetables), and other factors impacting body metabolism and contributing to chronic illnesses like cancer and heart disease. Additionally, the continued use of preservatives in food can contribute to long-term health issues. Avoiding direct sun exposure and consuming a whole, unprocessed diet can help prevent long-term defects or diseases. While some attribute chronic illnesses to genetics, recent studies suggest that genes account for only 20% of cancer risk, such as in breast cancer. Lifestyle and environmental factors are responsible for 90-95% of long-term illnesses.⁸ Cancer can be caused by both internal factors, such as inherited genetic and hormonal influences, and external factors, including environmental exposure and acquired influences like tobacco use, diet, and radiation from sunlight.⁹

Biology of Ageing and Cancer

Ageing certainly leads to a decline in organ function and significantly increases the risk of cancer, a major cause of morbidity and mortality. The US National Cancer Institute's SEER Database reports that 43% of men and 38% of women will develop invasive cancer during their lifetime, with 23% of men and 19% of women expected to die from it. Over half of all cancers are diagnosed in individuals over 70.¹⁰

The underlying mechanism in both cancer and aging is the time dependent accumulation of cellular damage. While cancer cells gain function and fitness, aging cells experience a loss of function and fitness.¹⁰ Chemotherapy is an important component of treatment for many cancers. The side effects of chemotherapy affect an individual's physical health, quality of life and emotional state.

Dushi visha - A Latent Poison

Chronic effects of toxins are often overshadowed by their acute impacts. The term Dushi visha refers to toxins that, when initially present in low concentrations, remain dormant in the body for extended periods. However, once their accumulation reaches a certain level, they can cause harmful effects. Dushi visha represents a transformed state of Visha (toxins) that persists if any poison is not fully eliminated from the body. Ancient texts describe it as poison from natural or artificial sources that remains after partial detoxification, often due to inadequate elimination by anti-poisonous drugs. Due to its low potency and the protective action of Kapha,³ Dushi visha does not cause immediate death but stays in the body for a long time without severe symptoms. Over time, it gradually disrupts the doshas and affects the Rasa-Rakta Dhatu (tissues).³ This slow progression is similar to cancer, where

prolonged exposure to carcinogens leads to the alteration of tissues and cellular mutations.

The concept of Dushi visha can be effectively explained through the idea of bioaccumulation. Bioaccumulation involves the buildup of substances, such as pesticides and other inorganic or organic toxins, within the human body over time.

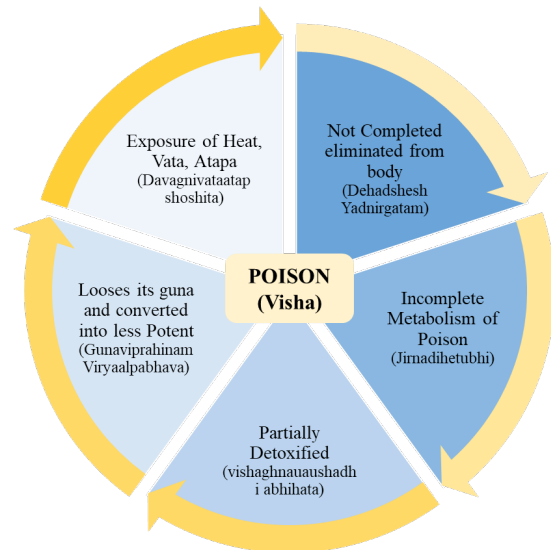


Figure 1: Bioaccumulations of Dushi visha (Cumulative Toxicity)³

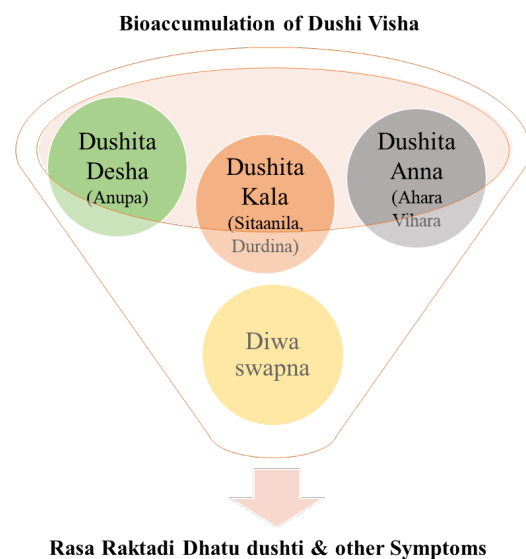


Figure 2: Influencing Factors of Bioaccumulation of Dushi visha

Influencing Factors of Bioaccumulations of Dushi visha^{3, 11}

Dushi visha will be aggravated further by the multiple influencing factors.

Acharya Sushruta mentioned various aggravating factors of Dushi visha, including:

- 1) Dushita Desha: Areas with excessive wind, cold, and rain.
- 2) Dushita Kaala: Cold, rainy, and windy seasons.
- 3) Dushita Anna: Foods like Sura, Teela (sesame), Kulattha, and
- 4) Viruddha Aahara.
- 5) Vihara: Excessive exercise, sexual activity, and anger.
- 6) Diwaswapna: Day sleep

Acharya Vagbhata also mentioned various factors like;

- 1) Pragvata: Eastern wind blow
- 2) Ajeerna: Indigestion
- 3) Adhika shita: Excessive coldness
- 4) Abhra: Cloudy sky
- 5) Diwaswapna: Day sleep
- 6) Ahitkarahara: Unwholesome diet

Similarities between Dushi visha and Ageing

Most bio accumulative chemicals are fat-soluble, meaning they tend to accumulate primarily in fat deposits or fatty substances in the blood. Biologically, aging is a gradual process resulting from the deterioration of tissues and cells.

Many symptoms associated with aging closely resemble those caused by the buildup of cumulative Toxicity (Dushi visha).

Age-related variations in sensitivity can vary qualitatively according on the endpoint being tested or the exposure settings, even when a single carcinogen are taken into account. Comparably, after repeated exposures, variations in the capacity to recuperate from cumulative toxicity may be far more significant than after single exposures.

Dushi visha and Cancer - Relevancy and extent

Dushi visha (Cumulative poison) has low potency and does not cause immediate death, often remaining in the body for years due to kapha. In contrast, cancer involves abnormal cell growth that can spread to other parts of the body and generally progresses slowly. Chronic factors such as continued tobacco use, obesity, poor diet, environmental pollution, lack of physical activity, and excessive alcohol consumption, all stemming from an unhealthy lifestyle, contribute to the development of cancer.

Dushi visha encompasses toxins that, when present in low potency, remain dormant in the body for extended periods. However, once their accumulation reaches a certain toxic level, they can produce harmful effects on the body. A carcinogen is any substance or agent that promotes cancer, and it is often, though not always, a mutagen or teratogen. Carcinogens can cause cancer by disrupting cellular metabolism or directly damaging DNA, which interferes with normal biological functions. For example, aflatoxin B1, produced by the fungus *Aspergillus flavus* on stored grains, nuts, and peanut butter, is a potent natural microbial carcinogen. Recent studies have also suggested that acrylamide, found in fried or overheated carbohydrate foods, might be a carcinogen. Co-carcinogens are chemicals that do not cause cancer on their own but can do so when combined with other substances. In studying the principles of Ayurveda, it is notable that only one substance is recognized for its unique ability to independently initiate a disease process, unlike the usual

beginning of diseases which starts with an imbalance in Dosha. This view is unanimously supported by all Acharyas and is crucial for both Nidana (diagnosis) and Chikitsa (treatment).

Drugs, food that has been chemically and biologically altered, and the world's poisonous environment are all areas where industries play a significant role and can be seen as Dushi visha. According to Ayurveda, all primary abdominal tumours as well as metastatic cancers with a primary focus elsewhere eventually result in Udara, and the majority of them also advance to Jalodara, or ascites.

Quantifiable characters of Dushi visha (Cumulative toxicity) in relation to Carcinogens

Ayurveda describes a disorder called Dushi visha, or cumulative poison, which might show symptoms over time. A few of Dushi visha's clinical characteristics include:³

Early signs and symptoms: Abrupt unconsciousness, slurred speech, hunger, changed complexion, poor breath, loose movements, and impaired sense of smell

Afterwards symptoms: Anorexia, indigestion, euphoria following meals, erythema, urticaria, facial and limb swelling, irregular fever, red spots on the body, fainting, and increased thirst,

Associated symptoms: Anguish, swollen abdomen, skin conditions, madness, oligospermia, and compromised reproductive tissue performance

Understanding of Ayurvedic Management Approach

A person affected by cumulative poisons should first undergo Ayurvedic principles such as Nidana Parivarjana (preventive measures), Detoxification Therapies, and the use of supplementary medicines like Agada as described in classical texts. Detoxification Therapies can effectively remove environmental toxins like polychlorinated biphenyls (PCBs) and pesticides from the body without harmful side effects. Combining Agada management with general treatments yields better results than using Agada alone.

Detoxification Therapies: Sushruta has mentioned the treatment principle for Dushi visha with Swedana karma followed by Shodhana karma i.e., Vamana, Virechana Karma according to the priority of Dosha involvement.

Research Studies on different Agada preparations

- 1) Systemic efficacy of Anti-cancer activities

Agada formulations had been studied in different drug induced toxicities and proved as Nephroprotective, Hepatoprotective and Anticancer activities, because these drugs inducing toxicities are potential to produce Cancer.

No	Formulation (Agada)	Study	Activity	Remarks
1	Bilwadi Agada	Cypermethrin induced Nephrotoxicity ¹²	Nephroprotective	Cypermethrin causes Cumulative evidence indicates that acute and chronic exposure to CYM might cause lung cancer. ¹³
2		Methotrexate induced Hepatotoxicity ¹⁴	Hepatoprotective	Increased the risk of breast, ovarian, and lung cancers in MTX-treated patients with rheumatoid arthritis. ¹⁵
3		Paracetamol induced Hepatotoxicity ¹⁶	Hepatoprotective	The regular use of paracetamol was associated with a higher risk of liver cancer. ¹⁷
4	Visha Bilwadi Gutika	Aluminium chloride induced Neurotoxicity ¹⁷	Neuroprotective	By the experimental study, aluminium salts can be environmental breast carcinogen. ¹⁸
5	Dushivishari Agada	Paracetamol induced Hepatotoxicity ¹⁹	Hepatoprotective	The regular use of paracetamol was associated with a higher risk of liver cancer. ¹⁷
6		Mercuric Chloride induced Nephro-Hepatotoxicity ²⁰	Nephroprotective Hepatoprotective	Mercuric chloride is considered a possible human carcinogen. ²¹
7	Trimurti Agada	Paracetamol induced Hepatotoxicity ²²	Hepatoprotective	The regular use of paracetamol was associated with a higher risk of liver cancer. ¹⁷

8	Ajeya Ghrita	Cardioprotective Activity of Ajeya Ghritha	Cardioprotective	Cardio protective activity of Ajeya ghrita may also due to its ability to increase antioxidant parameters in the form of catalase activity and to reduce lipid peroxidation of myocardial cell membrane. ²³
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2) Safety and Efficacy of Single drugs having Anti-cancer activities similar to agada preparation
 Many single drugs are as effective as Agada formulations in treating cancer-related diseases.

	Drug	Latin name	Study
1	Haridra	<i>Curcuma longa</i>	Curcumin exhibits antioxidative, hepatoprotective and antitumor activities, against cancers of the liver, skin, pancreas, prostate, ovary, lung, head and neck. ²⁴
2	Manjishtha	<i>Rubia cordifolia</i>	Root extracts of <i>Rubia cordifolia</i> is cytotoxic against human larynx carcinoma and human cervical cancer. ²⁵
3	Rasna	<i>Pluchea lanceolata</i>	Study demonstrated as Chemo preventive agent and suppresses Ferric nitrilotriacetate induced renal carcinogenesis and oxidative damage response in Wistar rat. ²⁶
4	Ela	<i>Elettaria cardamomum</i>	Seed extracts and cardamomum nanoparticles of <i>E. cardamomum</i> demonstrated a potential cytotoxicity agent breast cancer (MCF-7) cell line by MTT assay. ²⁷
5	Trivruta	<i>Operculina turpethum</i>	Methanolic extract of <i>O. turpethum</i> stems exhibits protective role against DMBA induced breast cancer. ²⁸
6	Chandana	<i>Santalum album</i>	α -Santalol, an active component of <i>S. album</i> exhibits skin cancer preventive efficacy in murine models of skin carcinogenesis. ²⁹
7	Kataka	<i>Strychnos potatorum</i>	Polysaccharide isolated from the seeds of <i>S. potatorum</i> exhibiting cytotoxic activity with IC50 of 365 μ g/mL against human breast cancer cell line MCF-7. ³⁰
8	Shirish	<i>Albizia lebbek</i>	Saponin rich fraction of <i>A. lebbek</i> showed antiproliferative, antiangiogenic and apoptogenic potential using various <i>in-vitro</i> models. ³¹
9	Nirgundi	<i>Vitex nigundo</i>	Ethanol extract of <i>V. nigundo</i> exhibits cytotoxic to mouse lung fibroblast (L-929) cells in long term chemo-sensitive cytotoxic assay and significant antitumour activity in tested animal models. ³²
10	Shleshmataka	<i>Cordia dichotoma</i>	Methanolic extract of <i>C. dichotoma</i> leaves exhibits possesses anticancer activity and lead to PC3 cell death via induction of apoptosis mediated through excessive ROS generation. ³³
11	Ankola	<i>Alangium salviifolium</i>	Antiproliferative activity of <i>A. salviifolium</i> against melanoma and non-melanoma skin cancer cells. ³⁴
12	Neeli	<i>Indigofera tinctoria</i>	Ethanol extract of <i>I. tinctoria</i> showed antioxidant, cytotoxic activity on Lung human cancer cells. ³⁵

Supportive Therapies

Rasayana significantly enhances a patient's tolerance to cancer treatments and alleviates the adverse effects of chemotherapy, radiotherapy, and other therapies. It does so without interfering with their effectiveness, acting instead as an adjuvant. This helps improve quality of life, slow cancer progression, and substantially increase overall survival.

Execution and Integration of Ayurveda treatment protocols with Modern Cancer Care Management

In order to advance global wellness, disease prevention, and control, particularly cancer prevention and control, Ayurveda must be incorporated into our existing health care research initiatives. For maximum immunity, resilience, and well-being, Ayurveda encourages the body's natural healing processes to be restored. Along with a wealth of products with a variety of pharmaco-active components and millennia of clinical knowledge, Ayurveda offers numerous health benefits.

Treatments from Ayurveda, such as Panchakarma, can help control the negative effects of radiation and chemotherapy. Minimizing discomfort associated with treatment also involves yoga, meditation, and dietary changes. A holistic approach is made possible by integrating Ayurveda with contemporary medicine. A multifaceted approach that takes care of mental, emotional, and physical needs is beneficial to patients. An integrated patient-centred approach to cancer care that aims to improve overall quality of life in addition to survival is made possible by the merging of Ayurveda and modern medicine.

DISCUSSION

In everyday life, several factors contribute to cancer, including environmental pollution and various products like shampoos, foundations, perfumes, hairsprays, lipsticks, and hair dyes. These

factors lead to the accumulation of toxins known as Dushi visha (cumulative poisons).

Typically, cancer cases are not reported to Ayurvedic physicians, with the exception of those who seek conventional treatments such as surgery, chemotherapy, and radiotherapy before turning to Ayurveda.

Chemotherapy and radiotherapy, while effective, can also cause significant toxic effects. Initially, chemotherapy may have therapeutic benefits, targeting neoplastic cells while causing minimal damage to healthy tissues. However, subsequent doses can severely harm healthy tissues. The body struggles to eliminate these excess chemicals, leading to their accumulation and long-term health issues. These chemicals become indigestible and in excretable, resulting in the formation of Ama, which exhibits symptoms similar to poisoning. Radiotherapy, on the other hand, ionizes cellular water content, creating peroxides and other toxins that adversely affect the body. Radiation also causes a vitiation of 'pita' (bile). Ayurveda offers various purification methods and Agada formulations to reduce or eliminate these toxic effects.

Therapeutics and treatment modalities including chemotherapeutic medications pragmatic by the elderly individuals can effectively treat the cancerous conditions, but they also have the potential to escalate and intensify the malignancy and exaggerate certain lifestyle-related ailments. For example, regular use of Antipyretics like paracetamol has been linked to an increased risk of liver toxic inducing cancer, prolong use of various Analgesics like Diclofenac, Ibuprofen etc. are proven kidney toxic inducing malignancies. Therefore, in such cases, Agada formulations play a crucial role. They have been shown to offer anticancer activity, declines radio activity and protective effects on the liver and kidneys.

CONCLUSION

With modern innovation and urbanization, individuals are increasingly exposed to numerous toxic substances, many of which are carcinogenic. Key factors contributing to cancer include lifestyle, physical activity levels, environmental pollution, personal hygiene, and diet. In chemotherapy, initial doses may be therapeutic, but subsequent doses can severely damage healthy tissues. The body struggles to eliminate these excess drugs, leading to their accumulation and causing long-term health issues. In contrast, ayurveda offers various purification methods and Agada formulations that can help reduce or eliminate toxicity. By applying the Ayurvedic approach to Dushi visha for cancer management, effective cancer treatment and prevention can be achieved. Thus, Ayurveda has significant potential in the field of oncology.

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