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Cancer Biology from an Ayurvedic Perspective: A Conceptual Review

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ABSTRACT:

Introduction

Cancer, a multifactorial and progressive disorder, is increasingly recognized as a manifestation of chronic inflammation, metabolic imbalance, and immune dysregulation. While modern medicine primarily conceptualizes it as a disease driven by genetic mutations and molecular alterations, Ayurveda provides a distinct lens, viewing cancer as a systemic derangement rather than a localized pathology. According to Ayurvedic principles, the imbalance of Tridoṣa, accumulation of Āma (metabolic waste), and dysfunction of Dhatvagni (tissue metabolism) collectively contribute to the pathogenesis of malignant conditions.

Objectives

The primary objective of this review is to elucidate cancer pathogenesis from an Ayurvedic perspective and to highlight the scope of integrative therapeutic strategies for its prevention and holistic management.

Methods

This review synthesizes classical Ayurvedic concepts with contemporary scientific insights. Traditional texts were analysed for references to pathological processes resembling cancer, including Doṣa vitiation, Āma accumulation, Agnimandya (impaired metabolism), and disease progression described through the framework of Śatkriyakāla. These concepts were then compared with modern biomedical understandings of subclinical inflammation, immune evasion, epigenetic changes, and tumour evolution. In addition, Ayurvedic therapeutic approaches such as Ritucarya (seasonal detoxification), Āhāra-Vihāra (individualized diet and lifestyle), and Rasāyana (rejuvenative therapies) were evaluated for their potential relevance in integrative oncology.

Results

The analysis suggests that Ayurvedic descriptions of chronic doṣa imbalance and āma accumulation parallel modern concepts of systemic inflammation and metabolic dysfunction underlying carcinogenesis. The progression of disease through stages of śatkriyakāla resonates with current models of tumour initiation, promotion, and progression. Early manifestations, comparable to vraṇasopha (inflammatory swelling), represent critical stages where preventive interventions may be most effective. Ayurvedic modalities, including lifestyle regulation, dietary interventions, detoxification practices, and

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rasāyana therapy, aim to restore metabolic harmony, enhance immune surveillance, and maintain tissue integrity. These approaches, when integrated with modern diagnostics and systems biology, offer a patient-centred, holistic model for cancer management.

Conclusions

Ayurveda provides a coherent conceptual framework to interpret cancer not as an isolated lesion but as a systemic imbalance. Integrative approaches that combine Ayurvedic principles with scientific validation hold promise for advancing both preventive strategies and long-term management of cancer. Such a holistic perspective underscores the importance of personalized care, aiming not only to reduce disease burden but also to promote overall well-being

1. Introduction

Cancer, as defined by the World Health Organization (WHO), is a group of diseases characterized by uncontrolled proliferation and spread of abnormal cells, which can invade tissues and metastasize to distant organs if not detected and treated early.[1] According to the latest GLOBOCAN 2020 report, an estimated 19.3 million new cancer cases and 9.96 million cancer-related deaths occurred globally, with these numbers projected to rise substantially due to demographic shifts and lifestyle factors.[2]

Modern oncology defines cancer in terms of genetic mutations, epigenetic dysregulation, and altered cellular signalling, leading to hallmark capabilities such as sustained proliferation, angiogenesis, immune evasion, and resistance to cell death. [3] in parallel, Ayurveda offers a holistic, systems-based understanding. Central to Ayurvedic pathophysiology is the imbalance in Tridosha (Vata, Pitta, Kapha), impairment of Agni (digestive/metabolic fire), accumulation of Ama (metabolic toxins), and Dhātvāgni Mandya (tissue-level inefficiency), which disrupt tissue integrity and immune functions. [4]

Classical Ayurvedic texts describe neoplastic or tumour-like conditions under terms such as Arbuda (malignant tumours), Granthi (benign swellings), and Asadhya vrana (non-healing ulcers). The Charaka Samhita refers to Arbuda as a firm, immovable, deep-seated mass caused by aggravated Doshas obstructing channels and nourishing themselves at the expense of tissue vitality.[5] Sushruta Samhita elaborates Arbuda as a tridoshic disorder arising from chronic tissue irritation and presenting without suppuration, resembling modern solid tumours.[6] Vagbhata, in the Ashtanga Hridaya, similarly characterizes Arbuda as a severe pathological swelling, often asadhya (incurable), and rooted in long-standing Dosha vitiation.[7]

This review attempts to conceptualize cancer through an Ayurvedic biological lens, integrating classical disease models (Arbuda, Granthi, Vranasopha, and Shadkriyakala) with the molecular and pathological frameworks of modern oncology. By proposing the perspective of "Ayurvedic Cancer Biology," the article seeks to identify overlaps that can inform integrative approaches to prevention, early diagnosis, and holistic management of cancer. [8]

2. Objectives

The primary objective of this review is to explore and elucidate the conceptual framework of cancer biology through the lens of Ayurveda, correlating traditional principles of *Doṣa*, *Dhātu*, *Agni*, *Āma*, and *Srotas* with contemporary molecular and cellular mechanisms of carcinogenesis. This study aims to establish theoretical linkages between classical Ayurvedic descriptions of *Arbuda*, *Granthi*, and *Vraṇasopha* and the modern "hallmarks of cancer," thereby providing an integrative understanding of cancer pathogenesis. Furthermore, the review seeks to highlight the potential scope of Ayurveda in cancer prevention, early diagnosis, and holistic management through multidimensional and evidence-based approaches

3. Methods

A literature search was conducted in PubMed, Web of Science, and Scopus using keywords such as "cancer," "Ayurveda," "Tridosha," "Āma," and "Dhātvāgni." Peer-reviewed original articles, reviews, and clinical

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studies on cancer pathogenesis or integrative management published in the last two decades were included, while non-English or irrelevant studies were excluded. Eligible articles were screened, and data on study design, objectives, and key findings were extracted. Information was categorised and synthesised narratively under molecular mechanisms, tridosha involvement, ama accumulation, dhātvāgni dysfunction, and integrative therapeutic strategies

Ayurvedic Principles in the Pathogenesis of Cancer

Ayurveda, the ancient science of life, offers a systemic and individualized approach to health and disease. It interprets human physiology and pathology through foundational concepts such as Tridosha, Prakriti, Agni, Ama, and Dhatvagni. These concepts not only define normal functioning but also explain disease progression when their equilibrium is disrupted[10]. In recent years, there has been a growing effort to align these Ayurvedic paradigms with contemporary models of chronic diseases, particularly cancer[11].

i. Tridosha and Its Role in Physiological Regulation

The three bioenergetic forces—Vata (principle of motion), Pitta (principle of transformation), and Kapha (principle of structure)—are collectively known as Tridosha. They govern all physiological, psychological, and pathological processes in the human body[12]. Vata regulates nerve impulses, circulation, and movement; Pitta governs digestion, metabolism, and transformation; and Kapha is responsible for structure, lubrication, and immunity.

A harmonious balance of these doshas maintains health, while any deviation leads to Vikruti, or the onset of disease. In cancer, aggravated Kapha may cause excessive cellular proliferation and cohesion, Pitta vitiation may drive hypermetabolism and inflammation, and deranged Vata may contribute to erratic cell division and metastatic spread.

ii. Prakriti and Disease Susceptibility

Prakriti is the unique doshic constitution of an individual formed at the time of conception. It determines one's physiological tendencies, metabolic responses, and disease predisposition[13]. For instance, individuals with Pitta-dominant Prakriti may be more susceptible to inflammatory disorders, while Kapha Prakriti individuals may have a higher risk for neoplastic conditions due to their anabolic and growth-promoting tendencies. When Prakriti is destabilized by environmental or internal factors, it results in Vikruti, an altered functional state that plays a critical role in disease pathogenesis, including malignancies [14].

iii. Agni: The Digestive and Metabolic Fire

Agni, or the biological fire, is central to the digestion of food and metabolism at the cellular and tissue levels. It has three major types:

Jatharagni – responsible for digesting food in the gastrointestinal tract

Bhutagni – governs elemental conversion of nutrients

Dhatwagni – regulates metabolic transformation within tissues[15]

When Agni becomes impaired (Agnimandya), it fails to adequately process food and metabolic inputs. This leads to the accumulation of Ama, a toxic, undigested residue. Ama is considered a pathological precursor to many diseases. It is heavy, sticky, and capable of obstructing channels (Srotas) and corrupting tissues[15]. In cancer, this accumulation may mirror chronic inflammation, oxidative stress, and immune dysfunction seen in tumour microenvironments.

iv. Ama: The Pathogenic Residue

Ama is not merely a digestive byproduct but a systemic toxic substance that arises when metabolism is faulty. It travels via Srotas and can localize in vulnerable tissues, setting the stage for inflammation, immune compromise, and degeneration[16].

In Ayurvedic oncology, Ama has been likened to circulating inflammatory markers and altered signalling molecules that disrupt tissue homeostasis and promote carcinogenesis. Its presence is associated with systemic malaise, digestive derangement, and heaviness—all potential harbingers of chronic disease.

v. Dhatwagni and Dhatu Dushti: Faulty Tissue Metabolism

Each bodily tissue (Dhatu)—such as Rasa (plasma), Rakta (blood), Mamsa (muscle), etc.—is sustained and regenerated by a specific metabolic principle called dhatwagni. When this tissue-specific Agni is impaired,

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Dhatu dushti occurs—meaning defective, improperly nourished, or toxic tissue formation.

In cancer, defective dhatvagni function results in the formation of structurally unstable, rapidly dividing cells that escape normal growth regulation. This Ayurvedic concept parallels modern ideas of genomic instability, dysplasia, and dedifferentiation seen in malignant cells[17].

vi. Srotas and Srotodushti: The Role of Channels

Srotas are intricate networks of bodily channels responsible for transporting nutrients, waste, and biological signals. Their normal function ensures physiological communication and purification. Srotodushti—vitiation of these channels—can happen in four primary ways:

Sanga (obstruction),

Atipravrutti (overactivity),

Vimarga gamana (diverted flow)

Siranam grandhi (abnormal growths)

In oncogenesis, Srotodushti may manifest as lymphatic or vascular blockages (Sanga), unregulated cell growth and angiogenesis (Atipravrutti), or metastasis (Vimarga gamana) which leads to formation of tumours (siranam grandhi) These conditions mirror the tissue remodelling, hypoxia, and immune evasion seen in cancers

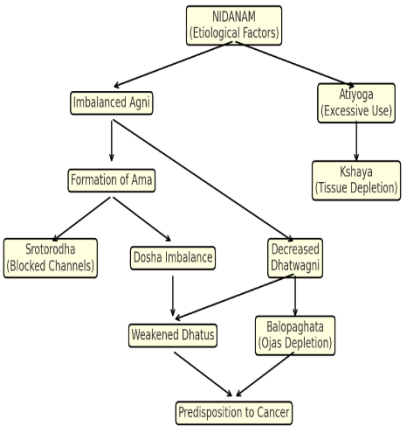

Figure 1: Schematic representation of Pathogenesis of Cancer

Genetic Basis of Cancer

Cancer is primarily a disease of genetic and epigenetic dysregulation, characterized by mutations in critical gene classes such as oncogenes, tumour suppressor genes (TSGs), and DNA repair genes[18]. These alterations disturb the cellular equilibrium, leading to unchecked proliferation, loss of growth inhibition, and genomic instability.

Although Ayurveda does not describe genes explicitly, it offers systemic principles that align with the regulation and disruption of cellular functions. Concepts such as Dosha balance, Agni (metabolic integrity), and Beeja dushti (defective reproductive factors) can be understood as conceptual analogues to genetic regulation and inheritance. This cross-paradigm interpretation provides insight into cancer pathogenesis through an Ayurvedic lens.

1. Oncogenes and Pitta Dushti

Proto-oncogenes regulate normal cell growth and differentiation. When mutated or overexpressed, they transform into oncogenes, promoting continuous cell proliferation and survival[19]. This mechanism resembles Pitta Dosha aggravation which governs metabolic transformation at the cellular level. Excessive Pitta activity results in altered dhātvāgni which results in in Mamsa Dhatu Vriddhi (tissue overgrowth), a classical description of Arbuda (tumor) in Ayurvedic literature[20].

2. Tumour Suppressor Genes and Kapha Depletion

Tumour suppressor genes like TP53 and RB1 maintain cellular checkpoints and structural integrity. Their inactivation eliminates these regulatory controls, facilitating tumour development[21]. This loss mirrors Kapha Dosha depletion, which is responsible for cohesion, stability, and resistance. When Kapha is (weakened or corrupted), the organism loses its structural defence, predisposing it to Vyadhi-utpatti (disease onset) [22].

3. DNA Repair Mechanisms and Vata Vitiation

DNA repair genes such as BRCA1, MSH2, and ATM correct replication errors and prevent genomic instability. Deficiencies in these genes lead to mutation accumulation and cancer susceptibility. In Ayurveda, such failure in coordination and intracellular regulation reflects Vatadushti, especially in its Chala (movement)

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and Sukshma (subtle) aspects. Vitiated Vata disturbs intracellular signalling and promotes tissue degeneration, paralleling the effects of impaired DNA repair[23].

4.

4.Beeja Dushti and Hereditary Susceptibility

Ayurvedic texts also recognise hereditary influences on disease through concepts such as Beeja, Beejabhaga, and Beejabhagavayava dushti. These refer to defects in reproductive elements that affect the physical and psychological traits of the progeny[24]. This notion parallels the modern understanding of germline mutations and hereditary cancer syndromes, where defective genomic information is passed across generations.

Table :1 Gene Classes and Ayurvedic Correlation

Gene Class	Modern Role	Ayurvedic Dosha Parallel
Proto-oncogenes	Promote proliferation	Vata Pitta / Agni imbalance
Tumour Suppressor Genes	Inhibit cell growth	Kapha's structural stability
DNA Repair Genes	Maintain genomic integrity	Vata's dynamic repair capacity

HALLMARKS OF CANCER

The concept of the "hallmarks of cancer" was first introduced by Hanahan and Weinberg in their landmark[25] 2000 paper and later expanded in 2011. This framework identifies the essential biological capabilities acquired during the multistep development of human tumours. These hallmarks represent common phenotypic traits shared by most cancers, regardless of tissue origin, and provide a unifying model for understanding cancer pathogenesis and progression.

Core Hallmarks of Cancer

Sustaining Proliferative Signalling – Cancer cells generate their own growth signals or become hypersensitive to external ones.

Evading Growth Suppressors – Tumours disable negative regulatory pathways that restrain cell division (e.g., p53, RB1 pathways).

Resisting Cell Death – Apoptotic mechanisms are circumvented, allowing damaged cells to survive.

Enabling Replicative Immortality – Cancer cells maintain telomere length, enabling limitless replication.

Inducing Angiogenesis – Tumours stimulate new blood vessel formation to sustain growth.

Activating Invasion and Metastasis – Cancer cells acquire motility and breach tissue boundaries.

Emerging and Enabling Hallmarks

Deregulating Cellular Energetics – Altered metabolism supports growth in low-oxygen conditions (e.g., Warburg effect).

Avoiding Immune Destruction – Tumours develop strategies to escape immune surveillance.

Genome Instability and Mutation – Genetic errors accumulate due to impaired DNA repair mechanisms.

Tumour-Promoting Inflammation – Chronic inflammation fosters a microenvironment conducive to cancer.

Correlating Hallmarks of Cancer with Ayurvedic Principles

Ayurveda, interprets disease as a disruption in the balance of key physiological elements—Doshas, Dhatus, Agni, Ama, and Srotas. By aligning these foundational concepts with the molecular hallmarks of cancer, the following table offers an integrative perspective on cancer biology

Table :2 Cancer hallmarks correlation with ayurvedic principle

Hallmark of Cancer	Ayurvedic Correlation	Explanation

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Sustaining proliferative signalling	Vata-Pitta imbalance, Raktadhatu dushti	Aggravated Vata-Pitta leads to excessive cell division, especially in Rakta and Mamsa dhatus.
Evading growth suppressors	Dhatvagni mandya, Ojakshaya	Impaired Dhātvāgni weakens tissue regulation, mirroring the loss of tumour suppressor function.
Resisting cell death	Ama accumulation	Accumulated Ama can block normal apoptotic pathways, leading to uncontrolled cell survival.
Enabling replicative immortality	Kapha-Vata dushti; Rasadhatu vriddhi	Vitiated Kapha and excess Rasa support continuous cell replication.
Inducing angiogenesis	Raktavaha srotodushti, Pitta vriddhi	Pitta aggravation and disturbed blood channels promote abnormal vascular proliferation.
Activating invasion and metastasis	Vyana Vata vitiation, Srotorodha	Disrupted Vyana Vata and blocked Srotas lead to cell migration and metastasis.
Reprogramming energy metabolism	Agnimandya (Jatharagni + Dhatvagni)	Altered metabolism corresponds to impaired Agni at systemic and tissue levels.
Evading immune destruction	Ojakshaya, Srotodushti	Reduced Ojas and obstructed channels lower immune resistance to tumour cells.
Genome instability and mutation	Beeja dushti	Mutations align with the concept of Beeja-bhava dushti – defective genetic material.
Tumour-promoting inflammation	Sama Pitta, Ama-Rakta dushti	Chronic inflammation parallels Sama Pitta and toxic Ama accumulation in Rakta.

This correlation underscores the potential of Ayurvedic principles to complement modern oncology by providing systemic insights into cancer development and guiding individualized, holistic interventions.

Vranashopha and Tumour-Promoting Inflammation

Chronic inflammation is now well-established as a key enabler in the development and progression of cancer. The concept of tumour-promoting inflammation—a recognized hallmark of cancer—shares striking parallels with the Ayurvedic concept of Vranashopha[26] (inflammatory swelling), particularly in its pathogenesis, stages, and systemic effects. Vranashopha is classified as a Tridoshaja condition resulting from the vitiation of Vata, Pitta, and Kapha, acting upon susceptible dhatus and srotas in the presence of Ama (toxic undigested metabolites) and Agni dusti (metabolic derangement)[27].

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The evolution of Vranashopha follows three major stages—Ama (immature), Pachyamana (digestive), and Pakva (mature)—each representing a dynamic pathological milieu conducive to disease progression.

Pathophysiological Evolution of Vranashopha

The progression of Vranashopha, from the Ama (immature) to Pachyamana (digestive) and finally Pakva (suppurative) stage reflects a gradual transformation from localized immune disturbance to systemic pathological remodelling.

In the Ama stage, the swelling is typically cold, hard, and mildly painful, suggesting early doshic imbalance dominated by Kapha and ama accumulation. This corresponds to the phase of acute inflammation in cancer biology, where metabolic stasis, impaired Agni (digestive fire), and srotas obstruction activate the innate immune response. Modern parallels include reactive oxygen species (ROS) generation and the release of cytokines such as IL-1β and TNF-α[28].

During the Pachyamana stage, the inflammatory site becomes warm, red, and more painful, indicating intensified metabolic and immune activity. In biomedical terms, this reflects a chronic inflammatory milieu, driven by prolonged NF-κB activation, IL-6 secretion, macrophage infiltration, angiogenesis, and extracellular matrix remodelling[29].

Finally, in the Pakva stage, the swelling becomes soft, fluctuant, and may discharge pus suggestive of localized tissue breakdown and the presence of a dushta vrana (non-healing wound). This phase mimics the tumour microenvironment in advanced cancers, characterized by immune cell reprogramming, neovascularization, and tumour-associated macrophage (TAM) activity that facilitate immune evasion and metastasis[30].

Integrating Shatkriyakala with Cancer Pathogenesis

The classical Ayurvedic doctrine of Shatkriyakala, which outlines the six progressive stages of disease manifestation—Sanchaya (accumulation), Prakopa (aggravation), Prasara (spread), Sthanasamshraya (localization), Vyakti (clinical manifestation), and Bheda (complication)—provides a structured and temporal understanding of pathogenesis[31]. This framework is instrumental in enabling early diagnosis and preventive strategies, long before disease becomes clinically evident.

In the context of oncology, this model offers a valuable lens through which the sequential pathological transformations associated with cancer may be examined. Early stages such as Sanchaya and Prakopa correspond with subclinical changes like oxidative stress, DNA damage, and inflammatory triggers. Prasara and Sthanasamshraya align with the dissemination of oncogenic signals and tissue-specific mutation, resembling the initial neoplastic transformations. Vyakti reflects the stage at which malignancy is clinically diagnosed, while Bheda corresponds to metastasis, recurrence, or resistance to therapy.

By drawing parallels between Shatkriyakala and the well-established hallmarks of cancer as described by Hanahan and Weinberg, a conceptual bridge is formed between Ayurvedic pathophysiology and modern tumour biology. The following table summarizes these correlations to foster integrative insight.

Table :3 Shatkriyakala with Cancer Pathogenesis

Shadkriyakala Stage	**Ayurvedic Insight (Description + Modern Insight)**	**Modern Correlation in Cancer**
1.Sanchaya (Accumulation)	Initial accumulation of Doshas at their own sites due to improper diet/lifestyle. Imbalance begins silently; Dosha accumulation sets stage for molecular instability.	Genetic predisposition , environmental exposures begin affecting DNA (e.g., carcinogens, oxidative stress)
2.Prakopa (Aggravation)	Increased aggravation of Doshas, moving	Continued DNA damage, chronic inflammation,

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	toward overflow. Heightened Dosha activity mirrors genomic damage and epigenetic changes.	cellular stress responses increase
3.Prasara (Spread)	Spread of aggravated Doshas from original sites to other parts of the body. Early dissemination of rogue cells aligns with Dosha migration.	Mutated cells evade control and start spreading locally (pre-neoplastic lesions)
4.Sthanasamshraya (Localization)	Localization of Doshas at a weak/damaged Dhatu (tissue). Nidana (causative factors) and Khavaigunya (tissue vulnerability) cause tumour seed.	Malignant transformation begins at susceptible tissues (oncogenesis starts)
5.Vyakti (Manifestation)	Clear signs and symptoms of disease appear. Disease becomes apparent, diagnosis is possible; the Roga Rupa is visible.	Clinically detectable tumour, signs like lump, weight loss, organ dysfunction
6.Bheda (Complication)	Complications, differentiation into subtypes, metastasis, poor prognosis. Stage-wise classification, histological grading, terminal complications.	Cancer invades, metastasizes, shows resistance, systemic spread

Discussion

The pathogenesis of cancer, viewed through the Ayurvedic lens, integrates classical concepts such as Tridoṣa imbalance, Āma (toxic metabolic byproducts), Prakṛti (individual constitution), impaired dhātvāgni (tissue metabolism), and chronic inflammation, providing a multidimensional understanding of tumorigenesis. This approach not only underscores the systemic origins of cancer but also aligns with emerging molecular biology perspectives that consider chronic inflammation, immune dysregulation, and metabolic disturbances as foundational to malignant transformation[32].

Vraṇasopha, a classical description of inflammatory swellings, shows a compelling clinical and pathological analogy to the early stages of cancer. By interpreting cancer development through the six stages of Shatkriyakāla—Sanchaya (accumulation), Prakopa (aggravation), Prasara (spread), Sthānasamśraya (localization), Vyakti (manifestation), and Bheda (complication)—Ayurveda offers a temporal framework that enables early recognition and staged intervention. This is particularly relevant in pre-oncological or pre-malignant states where early Dosha vitiation may be reversible.

From a preventive standpoint, Ayurveda emphasizes homeostasis through Ritucarya (seasonal regimens), Āhāra–Vihāra (diet and conduct) suited to one's Prakṛti and seasonal variations, and Rasāyana therapies to rejuvenate Dhātus (tissues) and enhance Ojas (immunological Vigor). These practices are designed to

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prevent the formation of Āma, re-establish Agni, and interrupt the pathogenic cascade at its early stages[33].

Scientific validation of Ayurvedic pharmacopoeia has identified several Rasāyana drugs with demonstrated antineoplastic properties. Compounds such as Withaferin A (Withania somnifera), Curcumin (Curcuma longa), and Berberine (Berberis aristata) exhibit a range of actions including pro-apoptotic activity, inhibition of angiogenesis, modulation of immune checkpoints, and suppression of oncogenic transcription factors such as NF-κB and STAT[34]. These multi-targeted effects mirror the polyherbal, systems-based approach of Ayurveda. Furthermore, traditional Rasāyana drugs may act on critical nodes of the cancer hallmarks described by Hanahan and Weinberg—such as sustaining proliferative signalling, resisting cell death, and evading immune destruction.

Panchakarma, the quintet of bio-purificatory procedures in Ayurveda, holds promise in detoxification, gut microbiome modulation, and immune recalibration. Although clinical trials are limited, some pilot studies suggest improvements in inflammatory markers and oxidative stress after properly administered Pañcakarma[35]. A combined therapeutic model involving Rasāyana, herbo-mineral drugs, and detoxification may offer a holistic strategy for cancer prevention and adjunctive care.

The emerging fields of Ayur genomics and reverse pharmacology are instrumental in bridging traditional insights with modern oncology. Ayurgenomic mapping of Prakṛti against gene expression profiles may help identify populations at risk and customize preventive strategies. Additionally, mechanistic studies into classical formulations, using omics technologies, may uncover novel bioactive pathways and druggable targets[36].

CONCLUSION

The Ayurvedic perspective on cancer, when interpreted through contemporary scientific paradigms, presents a unique and integrative framework that complements modern oncology. The intersection of ancient doctrines like Tridoṣa, Shatkriyakāla, and Rasāyana with genomics, immunology, and systems biology offers exciting avenues for translational research. This integrative model, however, requires robust clinical trials, ethical pharmacological validation, and a collaborative dialogue between traditional and modern medicine to reach its full potential.

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References

1. World Health Organization. Cancer; 2024. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer
2. Sung, H.; Ferlay, J.; Siegel, R. L.; Laversanne, M.; Soerjomataram, I.; Jemal, A.; Bray, F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J. Clin. 2021, 71 (3), 209–249.
3. Hanahan, D.; Weinberg, R. A. Hallmarks of Cancer: The Next Generation. Cell 2011, 144 (5), 646–674.
4. Sinha, K.; Sinha, A.; Sharma, A.; Mishra, N. P. Conceptualizing Cancer Pathogenesis in Ayurveda: An Overview. AYU 2015, 36 (3), 243–248.
5. Charaka. Charaka Samhita, Sutrasthana 18/44–48; Sharma, R. K., Dash, B., Translators; Chaukhambha Sanskrit Series Office: Varanasi, 2014.
6. Sushruta. Sushruta Samhita, Nidana Sthana 11/3–10; Shastri, A. D., Ed.; Chaukhambha Sanskrit Sansthan: Varanasi, 2012.
7. Vagbhata. Astanga Hridayam (Text, English Translation, Notes, Appendices and Indices); Murthy, K. R. S., Translator; Krishnadas Academy: Varanasi, 2005.
8. Lad, V. Textbook of Ayurveda: Fundamental Principles; Vol. 1; The Ayurvedic Press: Albuquerque, 2002.
9. Dhiman KS. Cancer—an integrative approach by Ayurveda. ResGate [Internet] 2025 [cited 2025 Jul 10]. Available from: https://www.researchgate.net/publication/389918604

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JCHR (2025) 15(5), 2615-2624 | ISSN:2251-6727

10. Sharma H, Dash B. Caraka Samhita: Agnivesa's Treatise Refined and Annotated by Caraka and Drdhabala; Vol. 1; Chaukhamba Sanskrit Series Office: Varanasi, 2012.
11. Rotti H, Raval R, Anchan S, et al. Determinants of prakriti, the human constitution types of Ayurveda: A tool for personalized medicine. J Ayurveda Integr Med 2014, 5(3), 167–175.
12. Mumbaraddi S, et al. A critical analysis on role of Agada in cancer. Afr J Biomed Res 2024, 27(4S), 9014–9017.
13. Rastogi S. Building bridges between Ayurveda and modern science. Int J Ayurveda Res 2010, 1(1), 41–46.
14. Narayan Reddy V, Gopal Reddy V. Role of Ama in cancer development: an Ayurvedic interpretation. Anc Sci Life 2025, 44(1), 14–21.
15. Patwardhan B, Warude D, Pushpangadan P, Bhatt N. Ayurveda and traditional Chinese medicine: a comparative overview. Evid Based Complement Alternat Med 2005, 2(4), 465–473.
16. Vogelstein B, Papadopoulos N, Velculescu VE, Zhou S, Diaz LA Jr, Kinzler KW. Cancer genome landscapes. Science 2013, 339(6127), 1546–1558.
17. Croce CM. Oncogenes and cancer. N Engl J Med 2008, 358(5), 502–511.
18. Sushruta. Sushruta Samhita, Nidana Sthana 11; Ed. Shastri AD; Chaukhambha Sanskrit Sansthan: Varanasi, 2012.
19. Vousden KH, Lane DP. p53 in health and disease. Nat Rev Mol Cell Biol 2007, 8(4), 275–283.
20. Sinha K, Sinha A, Sharma A, Mishra NP. Conceptualizing cancer pathogenesis in Ayurveda: An overview. AYU 2015, 36(3), 243–248.
21. Rastogi S. Building bridges between Ayurveda and modern science. Int J Ayurveda Res 2010, 1(1), 41–46.
22. Sharma H, Dash B. Charaka Samhita: Agnivesha's Treatise; Vol. 1; Chaukhambha Sanskrit Series Office: Varanasi, 2012.
23. Hanahan D. Hallmarks of cancer: new dimensions. Cancer Discov 2022, 12(1), 31–46.
24. Upadhyay SN, Jindal S. Vranashopha: A critical review of its pathogenesis and treatment modalities. AYU 2012, 33(3), 358–362.
25. Medzhitov R. Origin and physiological roles of inflammation. Nature 2008, 454(7203), 428–435.
26. Mantovani A, Allavena P, Sica A, Balkwill F. Cancer-related inflammation. Nature 2008, 454(7203), 436–444.
27. Coussens LM, Werb Z. Inflammation and cancer. Nature 2002, 420(6917), 860–867.
28. Sinha K, Sinha A, Sharma A, Mishra NP. Conceptualizing cancer pathogenesis in Ayurveda: An overview. AYU 2015, 36(3), 243–248.
29. Sinha K, Sinha A. Integrating Ayurveda with oncology: relevance of Shatkriyakala in cancer staging. J Ayurveda Integr Med 2017, 8(1), 50–56.
30. Aggarwal BB, Gehlot P. Inflammation and cancer: how friendly is the relationship for cancer patients? Curr Opin Pharmacol 2009, 9(4), 351–369.
31. Sharma H, Chandola HM. Prakriti-based medicine: a step towards personalized medicine. AYU 2011, 32(2), 141–146.
32. Kuttan G, Harikumar KB. Inhibition of tumor progression by naturally occurring products. Pharm Biol 2011, 49(9), 962–969.
33. Chopra A, Doiphode VV. Ayurvedic medicine: core concept, therapeutic principles, and current relevance. Med Clin North Am 2002, 86(1), 75–89.
34. Rotti H, Raval R, Anchan S, et al. Determinants of prakriti, the human constitution types of Indian traditional medicine and its correlation with contemporary science. J Ayurveda Integr Med 2014, 5(3), 167–175.
35. Chopra, A.; Doiphode, V. V. Ayurvedic Medicine: Core Concept, Therapeutic Principles, and Current Relevance. *Med. Clin. North Am.* **2002**, *86* (1), 75–89.
36. Rotti, H.; Raval, R.; Anchan, S.; et al. Determinants of Prakriti, the Human Constitution Types of Indian Traditional Medicine and Its Correlation with Contemporary Science. *J. Ayurveda Integr. Med.* **2014**, *5* (3), 167–175.