Āyurveda Āhāra Regulations: Integrating Traditional Āyurvedic Dietary Principles with Modern Food Safety Frameworks

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Abstract

Traditional dietary systems have gained renewed attention in global health discourse due to increasing inclination towards preventive healthcare and functional foods. Āyurveda emphasizes Āhāra (diet) as a central determinant of health and disease prevention. Recognizing the growing market for herbal and functional foods derived from Āyurvedic principles, the Food Safety and Standards Authority of India (FSSAI) introduced the Food Safety and Standards (Āyurveda Āhāra) Regulations, 2022. These regulations aim to establish a formal framework for the production, labelling, safety evaluation, and commercialization of Āyurvedic food products.

This review critically examines the conceptual foundations of Āyurveda Āhāra, evaluates the regulatory framework introduced by FSSAI, and explores its implications for the nutraceutical industry, public health, and global food markets. The article synthesizes evidence from regulatory documents, academic literature, and nutraceutical research to identify opportunities and challenges associated with implementing Āyurveda-based food regulations. Major challenges include scientific validation of traditional claims, regulatory overlaps between food and medicine, standardization of traditional formulations, and industry compliance barriers.

Despite these challenges, Āyurveda Āhāra regulations represent a significant step toward integrating traditional knowledge systems with contemporary food governance. The study concludes that interdisciplinary research combining Āyurveda, nutritional science, and regulatory policy is necessary to ensure the successful implementation and global acceptance of Āyurvedic dietary products.

Keywords: Āyurveda Āhāra, FSSAI regulation, nutraceuticals, functional foods, traditional medicine, regulatory policy

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Introduction

The integration of traditional knowledge systems with modern regulatory and scientific frameworks has become an increasingly important area of research in food science, nutrition, and public health. Traditional dietary systems developed over centuries often embody empirical knowledge regarding nutrition, health maintenance, and disease prevention. Many of these systems are now receiving renewed scientific attention as contemporary societies seek sustainable, holistic, and preventive approaches to health management (Srikanth, Haripriya, & Tewari, 2015). In recent decades, the growing burden of lifestyle-related disorders such as obesity, diabetes, cardiovascular diseases, and metabolic syndrome has prompted researchers and policymakers to explore traditional dietary wisdom as a complementary resource for modern healthcare strategies (Kaur & Chakraborty, 2025).

Traditional diets across different cultures—such as the Mediterranean diet, traditional Chinese dietary therapy, and the Indian Ayurvedic dietary system—have demonstrated significant potential in promoting health and preventing disease. These dietary systems emphasize balance, seasonal food consumption, and individualized nutrition approaches that align with the body's physiological needs (Pramanik, Maheshwari, Acharya, & Pathak, 2026). Among these traditions, Ayurveda represents one of the most sophisticated and comprehensive medical systems that integrates dietary practices with preventive medicine and lifestyle management. Originating in ancient India more than 3000 years ago, Ayurveda places significant emphasis on diet (*Āhāra*) as a central determinant of health and wellbeing (Sharma, 2014).

In Ayurvedic philosophy, diet is regarded as one of the three fundamental pillars of life (*Trayopastambha*), alongside sleep (*Nidra*) and regulated lifestyle

(*Brahmacharya*). According to classical Ayurvedic literature, proper nutrition plays a vital role in sustaining bodily tissues (*Dhātu*), maintaining digestive metabolism (*Agni*), and ensuring overall physiological harmony (Sharma, 2014). The classical Ayurvedic texts—the *Caraka Saṃhitā*, *Suśruta Saṃhitā*, and *Aṣṭāṅga Hṛdaya*—provide detailed discussions regarding the classification of foods, dietary guidelines, seasonal dietary practices, and the therapeutic use of food in disease management (Bhishagratna, 2017; Murthy, 2012; Sharma, 2016). These texts collectively present an elaborate framework that recognizes diet not only as a source of nourishment but also as a preventive and therapeutic intervention.

Central to the Ayurvedic understanding of human physiology is the concept of the three biological principles known as *Doṣas*: Vāta, Pitta, and Kapha. These principles represent functional entities that govern various physiological and biochemical processes within the body. According to Ayurvedic theory, health is maintained when the three *Doṣas* remain in a state of dynamic equilibrium, while imbalance among them results in disease (Sharma, 2014). Dietary habits play a critical role in maintaining this balance. Different foods possess specific attributes such as taste (*Rasa*), potency (*Vīrya*), post-digestive effect (*Vipāka*), and pharmacological action (*Prabhāva*), which influence the *Doṣas* in different ways (Murthy, 2012).

Ayurvedic texts emphasize individualized nutrition, recognizing that dietary requirements vary according to an individual's constitutional type (*Prakriti*), digestive capacity (*Agni*), age, climate, and seasonal variations. The concept of *Āhāra Vidhi* (rules of dietary consumption) provides guidelines on how food should be prepared, consumed, and combined in order to optimize digestion and metabolism (Srikanth et al., 2015). For instance, Ayurveda recommends consuming freshly prepared foods, maintaining appropriate meal timings, and avoiding incompatible food combinations (*Viruddha Āhāra*). Such principles reflect a sophisticated understanding of nutrition that aligns closely with modern scientific insights regarding digestive physiology and metabolic regulation (Kaur & Chakraborty, 2025).

In recent years, modern nutrition science has increasingly recognized parallels between traditional dietary practices and contemporary preventive healthcare strategies. Scientific research has shown that many foods traditionally recommended in Ayurveda—such as turmeric, ginger, garlic, and various medicinal herbs—possess bioactive compounds with antioxidant, anti-inflammatory, and immunomodulatory properties (Ujjaliya, Dash, & Jain, 2018). These findings have contributed to growing global interest in functional foods and nutraceutical products derived from traditional medicinal systems.

The concept of nutraceuticals refers to foods or food components that provide health benefits beyond basic nutrition, including disease prevention and therapeutic effects. Although the term "nutraceutical" is relatively modern, the underlying concept has been deeply embedded in Ayurvedic medical philosophy for centuries. Ayurvedic literature describes numerous food substances that possess medicinal properties and are used both as dietary components and therapeutic agents (Sunitha, 2024). Examples include herbal preparations, medicated foods, and dietary supplements formulated to support immunity, enhance digestion, or restore physiological balance.

The growing popularity of nutraceuticals has contributed to the rapid expansion of the global nutraceutical market. According to industry analyses, the global nutraceutical sector has experienced significant growth over the past decade, driven by increasing consumer awareness regarding preventive healthcare and natural products (Pramanik et al., 2026). India, with its vast biodiversity and long-standing tradition of herbal medicine, holds considerable potential in this expanding market. The country possesses a rich repository of medicinal plants, traditional food formulations, and indigenous knowledge systems that can contribute to the development of innovative functional foods and nutraceutical products (Silpi, 2025).

Despite these opportunities, the commercialization of Ayurvedic food products historically faced several regulatory challenges. One of the primary issues was the lack of clear regulatory categorization for products that fell between the boundaries of food and medicine. Many traditional Ayurvedic formulations intended for dietary use were regulated either as herbal medicines under the Ministry of AYUSH or as food products under food safety regulations, depending on their composition and intended use (Silpi, 2025). This regulatory ambiguity created uncertainty for manufacturers, researchers, and policymakers, often hindering innovation and market expansion.

To address these challenges and provide regulatory clarity, the Food Safety and Standards Authority of India (FSSAI) introduced the *Food Safety and Standards (Ayurveda Aahara) Regulations* in 2022. These regulations were designed to establish a

dedicated category for Ayurvedic food products within India's food safety regulatory framework (FSSAI, 2022). The introduction of this regulatory category marked a significant milestone in the recognition and standardization of traditional Ayurvedic dietary products.

The *Ayurveda Aahara* regulations define Ayurvedic food products as food preparations that are derived from ingredients described in authoritative Ayurvedic texts and are intended to promote health, prevent disease, or support physiological balance. These regulations specify permissible ingredients, manufacturing standards, labeling requirements, and safety guidelines for Ayurvedic food products (FSSAI, 2022). By providing clear regulatory guidelines, the framework aims to ensure consumer safety while simultaneously encouraging the development of scientifically validated Ayurvedic food products.

Another key objective of the *Ayurveda Aahara* regulations is to promote the integration of traditional knowledge with modern food safety standards. The regulatory framework emphasizes quality control, good manufacturing practices, and standardized ingredient lists derived from classical Ayurvedic literature (Rananavare & Kamble, 2025). This approach ensures that Ayurvedic food products maintain authenticity while meeting contemporary regulatory and safety requirements.

Furthermore, the introduction of these regulations has important implications for the future of the nutraceutical and functional food industries in India. By establishing a dedicated regulatory category for Ayurvedic foods, policymakers aim to facilitate research, innovation, and commercialization in this emerging sector. The regulations also provide opportunities for collaboration between traditional medicine experts, nutrition scientists, food technologists, and regulatory authorities (Rananavare & Kamble, 2025).

From a public health perspective, the integration of Ayurvedic dietary principles into modern food systems may contribute to the development of preventive health strategies. Functional foods inspired by Ayurvedic concepts could potentially address growing health concerns related to lifestyle diseases and nutritional deficiencies. Moreover, the recognition of traditional dietary knowledge within formal regulatory systems may help preserve and promote indigenous knowledge systems while supporting sustainable economic development (Pramanik et al., 2026).

In this context, the *Ayurveda Aahara* notification represents a significant step toward bridging the gap between traditional medicine and modern regulatory frameworks. By formalizing standards for Ayurvedic food products, the regulations provide a foundation for scientific validation, regulatory clarity, and market expansion. Consequently, the present article aims to examine the conceptual foundations, regulatory framework, and potential implications of the *Ayurveda Aahara* regulations. Through an analysis of the historical, scientific, and regulatory dimensions of Ayurvedic dietary practices, this study seeks to contribute to the ongoing discourse on integrating traditional knowledge with modern food safety governance.

2. Philosophical and Scientific Foundations of Āyurveda Āhāra

2.1 Concept of Āhāra in Āyurvedic Health Theory

In the Ayurvedic system of medicine, health is conceptualized as a state of dynamic equilibrium among the body, mind, and environment. This equilibrium is maintained through the harmonious functioning of physiological processes, mental stability, and proper interaction with external environmental factors. Ayurveda defines health not merely as the absence of disease but as a balanced state of *Doṣa* (biological regulatory principles), *Dhātu* (body tissues), *Mala* (waste products), and proper functioning of *Agni* (digestive and metabolic processes), accompanied by a state of mental, sensory, and spiritual wellbeing (Sharma, 2014). Within this holistic framework, diet (*Āhāra*) plays a central role in maintaining health and preventing disease.

Ayurveda places considerable emphasis on the relationship between food and health. Classical Ayurvedic texts describe food as one of the most fundamental determinants of physiological balance. According to the *Caraka Saṃhitā*, food is the primary source responsible for sustaining life and maintaining the integrity of bodily tissues. The text states that the proper consumption of food supports the nourishment of *Dhātu* and contributes to the generation of *Ojas*, which represents the essence of vitality, immunity, and overall wellbeing (Sharma, 2014). Thus, diet is considered a foundational element in sustaining life and promoting longevity.

In Ayurvedic philosophy, food is not merely regarded as a collection of nutrients but rather as a complex substance capable of influencing physiological, psychological, and metabolic processes. Foods possess intrinsic qualities that interact with the body's regulatory systems. These qualities are described through attributes such as *Rasa* (taste), *Guna* (physical qualities), *Virya* (potency), *Vipāka* (post-digestive

effect), and *Prabhāva* (specific action). The combined effect of these attributes determines how a particular food item influences the body's internal balance (Murthy, 2012).

Furthermore, Ayurveda recognizes that the impact of food varies among individuals depending on several factors. These include an individual's constitutional type (*Prakriti*), digestive capacity (*Agni*), age, lifestyle, seasonal changes, and environmental conditions. Consequently, Ayurvedic dietary recommendations emphasize individualized nutrition rather than universal dietary prescriptions. This individualized approach to nutrition has recently attracted attention in modern scientific fields such as personalized nutrition and nutrigenomics, which similarly recognize the importance of tailoring dietary recommendations to individual physiological characteristics (Srikanth, Haripriya, & Tewari, 2015).

Ayurvedic texts also emphasize that improper dietary habits constitute one of the major causes of disease. Inappropriate food choices, irregular eating patterns, excessive consumption, and incompatible food combinations may disturb the balance of the *Doṣas*, leading to the development of various disorders. Therefore, maintaining proper dietary practices is regarded as a primary strategy for disease prevention and health promotion (Ujjaliya, Dash, & Jain, 2018). This preventive orientation aligns closely with modern public health approaches that emphasize lifestyle modification and nutritional regulation as key tools for reducing the risk of chronic diseases.

2.2 The Three Pillars of Health

Ayurvedic philosophy identifies three fundamental supports of life known as the *Trayopastambha*, or the three pillars of health. These pillars include *Āhāra* (diet), *Nidrā* (sleep), and *Brahmacharya* (regulated lifestyle or disciplined conduct). According to classical Ayurvedic teachings, the stability of these three pillars determines the overall health and vitality of an individual (Sharma, 2014).

Among these three pillars, diet is often regarded as the most influential factor in maintaining physiological balance. While sleep and lifestyle regulation contribute significantly to health, diet directly influences metabolic processes, tissue formation, and energy production. The *Caraka Saṃhitā* emphasizes that appropriate dietary intake supports the nourishment and regeneration of bodily tissues, thereby sustaining the body's structural and functional integrity (Sharma, 2014).

Nidrā, or sleep, represents the second pillar of health in Ayurveda. Adequate sleep is essential for restoring physical strength, maintaining cognitive functions, and regulating metabolic processes. Ayurvedic texts describe sleep as a natural restorative process that supports tissue repair and mental stability. Sleep disturbances are believed to disrupt the equilibrium of the *Doṣas*, thereby contributing to various physical and psychological disorders (Murthy, 2012).

The third pillar, *Brahmacharya*, refers to disciplined lifestyle practices that promote physical and mental balance. Although the term traditionally implies moderation in sexual activity, it more broadly encompasses self-regulation, ethical conduct, and moderation in lifestyle behaviors. Balanced lifestyle practices help maintain physiological equilibrium and support overall wellbeing (Srikanth et al., 2015).

The interdependence of these three pillars highlights Ayurveda's holistic perspective on health. When diet, sleep, and lifestyle are properly regulated, the body maintains physiological balance and resilience against disease. Conversely, disturbances in any of these pillars may lead to metabolic imbalance and disease development.

2.3 Āhāra Vidhi Vidhan (Rules of Eating)

Ayurvedic dietary philosophy includes detailed guidelines regarding the proper manner of food consumption. These guidelines are collectively referred to as *Āhāra Vidhi Vidhan*, or the rules governing the intake of food. The purpose of these rules is to ensure that food is consumed in a manner that optimizes digestion, metabolism, and nutrient assimilation (Sharma, 2014).

One of the primary principles emphasized in Ayurvedic dietary guidelines is the consumption of freshly prepared and warm food. Freshly cooked meals are believed to retain their natural vitality and nutritional potency, whereas stale or processed foods may impair digestion and reduce metabolic efficiency. Warm foods are also considered beneficial for stimulating digestive processes and enhancing the functioning of *Agni* (Murthy, 2012).

Another important principle involves eating according to one's digestive capacity. Ayurveda stresses that food should be consumed only when the previous meal has been fully digested. Overeating or consuming food before the completion of digestion can lead to the formation of toxic metabolic residues known as *Ama*. The accumulation of *Ama* is believed to obstruct physiological pathways and contribute to the development of various diseases (Srikanth et al., 2015).

Ayurveda also warns against incompatible food combinations, referred to as *Viruddha Āhāra*. Certain combinations of foods may produce adverse

physiological effects due to conflicting qualities or digestive processes. Classical texts provide extensive lists of incompatible combinations, such as milk with sour fruits or fish with dairy products. These combinations are believed to disrupt metabolic processes and promote disease development (Ujjaliya et al., 2018).

In addition, Ayurveda encourages mindful eating practices. Food should be consumed in a calm environment with attention and gratitude, avoiding distractions or emotional disturbances. Mindful eating is believed to enhance digestive efficiency and promote psychological satisfaction with food consumption (Murthy, 2012).

Interestingly, many of these Ayurvedic dietary recommendations show strong parallels with contemporary nutritional science. Modern research on mindful eating, digestive physiology, and metabolic health emphasizes the importance of proper meal timing, moderate portion sizes, and attentive eating practices for maintaining metabolic balance and preventing chronic diseases.

2.4 Shadrasa (Six Taste Theory)

A distinctive feature of Ayurvedic nutrition is the concept of *Shadrasa*, or the six tastes. According to Ayurvedic dietary theory, all foods can be categorized according to six fundamental tastes: sweet (*Madhura*), sour (*Amla*), salty (*Lavana*), pungent (*Katu*), bitter (*Tikta*), and astringent (*Kashaya*) (Murthy, 2012).

Each taste possesses unique physiological effects and influences the balance of the three *Doṣas*. The sweet taste is considered nourishing and strengthening, supporting tissue growth and energy production. The sour taste stimulates appetite and enhances digestive activity, while the salty taste aids in electrolyte balance and digestive processes. The pungent taste promotes metabolism and circulation, whereas the bitter taste has detoxifying properties. The astringent taste is associated with tissue contraction and wound healing (Sharma, 2014).

According to Ayurvedic dietary principles, a balanced meal should incorporate all six tastes in appropriate proportions. Such balance helps maintain equilibrium among the *Doṣas* and supports proper digestive functioning. Excessive consumption of any single taste may disturb the body's internal balance and contribute to disease development (Srikanth et al., 2015).

The concept of *Shadrasa* also reflects a sophisticated understanding of nutritional diversity. By encouraging the inclusion of multiple tastes in daily meals, Ayurvedic dietary guidelines naturally promote dietary variety, which is widely recognized in modern nutrition science as an important factor for ensuring adequate nutrient intake.

2.5 Agni and Metabolic Regulation

One of the most fundamental concepts in Ayurvedic physiology is *Agni*, which refers to the digestive and metabolic processes responsible for transforming food into energy and bodily tissues. Agni governs the digestion, absorption, assimilation, and transformation of nutrients within the body. Proper functioning of *Agni* is therefore considered essential for maintaining health and vitality (Sharma, 2014).

Ayurvedic texts describe several types of *Agni*, including the primary digestive fire (*Jatharagni*) and tissue-specific metabolic processes known as *Dhatvagni*. These metabolic processes work together to convert food into successive layers of bodily tissues, including plasma, blood, muscle, fat, bone, marrow, and reproductive tissue (Murthy, 2012).

When *Agni* functions optimally, food is properly digested and converted into nourishing substances that sustain bodily tissues. However, impaired digestion leads to incomplete metabolic processing and the formation of toxic metabolic residues known as *Ama*. Ayurveda identifies *Ama* as a key pathological factor associated with many diseases. The accumulation of *Ama* may obstruct physiological channels, disrupt metabolic balance, and weaken immune function (Srikanth et al., 2015).

Modern scientific research has drawn parallels between the Ayurvedic concept of *Agni* and contemporary understanding of metabolic processes, digestive enzyme activity, and gut health. Proper digestive function is essential for nutrient absorption, metabolic regulation, and immune function. Disruptions in digestion can contribute to metabolic disorders, inflammation, and gastrointestinal diseases.

Thus, the concept of *Agni* provides a comprehensive framework for understanding the relationship between diet, digestion, and health in Ayurveda. By emphasizing the importance of digestive capacity and metabolic balance, Ayurvedic dietary principles offer valuable insights for contemporary nutritional science and preventive healthcare.

3. Emergence of Āyurveda Āhāra Regulations

3.1 Growth of the Nutraceutical Industry

The global nutraceutical industry has experienced significant expansion over the past two decades, driven by growing consumer awareness regarding preventive healthcare, healthy lifestyles, and the therapeutic potential of natural products. Nutraceuticals, which include functional foods, dietary supplements, herbal products, and fortified foods, are increasingly

recognized as an important component of modern health and wellness strategies. The term "nutraceutical," originally coined to describe foods or food-derived substances that provide health benefits beyond basic nutrition, has gained widespread acceptance in both scientific research and commercial markets (Pramanik, Maheshwari, Acharya, & Pathak, 2026).

Several factors have contributed to the rapid growth of the nutraceutical sector worldwide. One of the most significant drivers is the rising prevalence of lifestyle-related diseases such as obesity, diabetes, cardiovascular disorders, and metabolic syndrome. These conditions are often linked to dietary habits and sedentary lifestyles, prompting consumers to seek preventive health solutions that emphasize nutrition and natural therapies (Kaur & Chakraborty, 2025). Consequently, nutraceutical products have become increasingly popular among health-conscious consumers seeking to enhance immunity, improve metabolic health, and reduce the risk of chronic diseases.

Another major factor driving the expansion of the nutraceutical market is the growing interest in traditional medicine systems. Ancient medical traditions such as Ayurveda, Traditional Chinese Medicine (TCM), and herbal medicine have long recognized the therapeutic value of foods and medicinal plants. Many modern nutraceutical formulations are inspired by these traditional systems and incorporate plant-based ingredients with documented health benefits (Ujjaliya, Dash, & Jain, 2018). This convergence of traditional knowledge and modern nutritional science has created new opportunities for the development of innovative functional foods and dietary supplements.

Within this global context, Ayurveda has emerged as a particularly influential source of nutraceutical innovation. Ayurvedic literature contains extensive descriptions of food substances with medicinal properties, including herbs, spices, and plant-derived formulations used for health maintenance and disease prevention. Classical texts describe the therapeutic effects of numerous dietary substances such as turmeric (*Curcuma longa*), ginger (*Zingiber officinale*), amla (*Emblica officinalis*), and ashwagandha (*Withania somnifera*), which are now widely used in nutraceutical products worldwide (Srikanth, Haripriya, & Tewari, 2015).

The increasing popularity of natural health products has also been supported by scientific research demonstrating the bioactive properties of many plant-based ingredients. Studies have identified various phytochemicals, antioxidants, and anti-inflammatory compounds present in herbal foods and medicinal plants, which may contribute to their therapeutic effects (Ujjaliya et al., 2018). These findings have strengthened the scientific credibility of nutraceutical products derived from traditional medicine systems.

India represents one of the most promising markets for nutraceutical development due to its rich biodiversity and extensive tradition of herbal medicine. The country possesses a vast repository of medicinal plants and traditional food formulations that have been used for centuries in Ayurvedic healthcare practices. In addition, India's long-standing cultural acceptance of herbal remedies and natural foods has created a favorable environment for the growth of the nutraceutical industry (Silpi, 2025).

In recent years, the Indian nutraceutical market has experienced rapid expansion. Increasing public awareness regarding preventive healthcare, rising disposable incomes, urbanization, and the growing popularity of wellness-oriented lifestyles have contributed to the demand for functional foods and dietary supplements. Market projections suggest that India's nutraceutical industry is likely to witness substantial growth in the coming decade, positioning the country as an important global hub for nutraceutical innovation (Pramanik et al., 2026).

The COVID-19 pandemic further accelerated consumer interest in immunity-enhancing products, many of which are based on traditional Ayurvedic ingredients. Herbal teas, immunity boosters, dietary supplements, and Ayurvedic formulations gained widespread popularity during this period. As a result, both domestic and international markets have shown increasing interest in Ayurvedic food products and nutraceuticals.

However, despite the expanding market and growing scientific interest, the commercialization of Ayurvedic dietary products has historically faced several regulatory challenges. The absence of a clear regulatory framework specifically designed for Ayurvedic food products created uncertainty for manufacturers, researchers, and regulators. This situation highlighted the need for a dedicated regulatory category that could accommodate Ayurvedic dietary products while ensuring compliance with modern food safety standards.

3.2 Regulatory Background

Prior to the introduction of the *Āyurveda Āhāra Regulations* in 2022, Ayurvedic dietary products in India were regulated under broader food categories

established by the Food Safety and Standards Authority of India (FSSAI). These categories included nutraceuticals, health supplements, functional foods, and foods for special dietary use. While these regulatory frameworks provided general guidelines for food products with health benefits, they were not specifically designed to address the unique characteristics of Ayurvedic food formulations (Food Safety and Standards Authority of India [FSSAI], 2016).

Under the existing regulatory system, Ayurvedic products intended for therapeutic use were typically regulated as medicines under the Ministry of AYUSH. These products were governed by the *Drugs and Cosmetics Act* and related regulations concerning traditional medicines. In contrast, food-based formulations derived from Ayurvedic ingredients were often categorized as nutraceuticals or health supplements under food safety regulations. This dual regulatory structure created ambiguity regarding the classification of certain products (Silpi, 2025).

For example, many Ayurvedic formulations are traditionally consumed as food preparations rather than medicinal products. Herbal beverages, fortified foods, medicated ghee preparations, and herbal powders may be used as part of daily dietary practices in Ayurveda. However, under the earlier regulatory framework, these products did not always fit neatly into existing food categories. Manufacturers frequently faced challenges in determining whether their products should be registered as medicines or as food supplements.

This regulatory overlap created practical difficulties for product development and commercialization. Companies often encountered uncertainty regarding licensing procedures, labeling requirements, permissible ingredients, and safety standards. In some cases, similar products were regulated differently depending on their formulation or intended use, leading to inconsistencies in regulatory enforcement (Rananavare & Kamble, 2025).

Another challenge involved the absence of clear guidelines regarding the use of classical Ayurvedic ingredients in food products. Ayurvedic texts describe numerous herbs and plant-based substances with medicinal properties, but not all of these ingredients were included in existing food safety regulations. As a result, manufacturers faced limitations in developing innovative Ayurvedic food products within the existing regulatory framework.

Recognizing these challenges, regulatory authorities and policymakers began exploring ways to integrate traditional knowledge with modern food safety regulations. The objective was to create a regulatory framework that would both protect consumer safety and promote innovation in the nutraceutical and functional food sectors.

In response to these needs, the Food Safety and Standards Authority of India introduced the *Food Safety and Standards (Āyurveda Āhāra) Regulations* in May 2022. The introduction of these regulations marked an important milestone in the regulatory recognition of Ayurvedic dietary products (FSSAI, 2022).

The *Āyurveda Āhāra* regulations established a distinct category for food products derived from ingredients described in authoritative Ayurvedic texts. These regulations aim to facilitate the development and commercialization of Ayurvedic foods while ensuring adherence to modern food safety standards. The framework defines Ayurvedic food products as foods prepared using ingredients mentioned in classical Ayurvedic literature and intended for maintaining health or supporting physiological functions.

The regulations also specify permissible ingredients, labeling requirements, manufacturing standards, and safety guidelines for Ayurvedic food products. By establishing clear regulatory guidelines, the framework aims to reduce ambiguity in product classification and streamline regulatory processes for manufacturers.

Furthermore, the introduction of the *Āyurveda Āhāra* category reflects broader policy efforts to promote traditional knowledge systems within modern regulatory frameworks. The Indian government has increasingly emphasized the importance of integrating traditional medicine systems such as Ayurveda into mainstream healthcare and wellness industries. Regulatory initiatives such as the *Āyurveda Āhāra* regulations support this objective by creating opportunities for innovation while preserving the authenticity of traditional practices.

The establishment of a dedicated regulatory category for Ayurvedic food products also has important implications for the global nutraceutical market. As international demand for natural and plant-based health products continues to grow, the standardization and regulation of Ayurvedic foods may enhance their credibility and market acceptance. Clear regulatory frameworks can facilitate international trade, promote scientific research, and encourage investment in Ayurvedic nutraceutical development.

Overall, the emergence of the *Āyurveda Āhāra* regulations represents a significant step toward bridging the gap between traditional knowledge

systems and modern food safety governance. By providing regulatory clarity and supporting innovation, these regulations contribute to the sustainable growth of the Ayurvedic nutraceutical sector while ensuring consumer protection.

4. Critical Analysis of Āyurveda Āhāra Regulations

The introduction of the *Āyurveda Āhāra Regulations* by the Food Safety and Standards Authority of India (FSSAI) in 2022 represents a significant step toward integrating traditional dietary knowledge with modern food safety governance. By establishing a regulatory category specifically for Ayurvedic food products, the framework aims to promote innovation, ensure consumer safety, and facilitate the commercialization of traditional dietary formulations. However, despite these positive developments, several challenges remain regarding the scientific validation, standardization, regulatory clarity, and industry adaptation associated with the implementation of these regulations.

A critical examination of the *Āyurveda Āhāra* framework reveals both opportunities and limitations in the process of integrating traditional knowledge systems into contemporary regulatory structures. Addressing these challenges is essential for ensuring the effective implementation and long-term success of the regulatory framework.

4.1 Scientific Evidence and Validation

One of the primary challenges associated with the regulation of Ayurvedic dietary products is the limited availability of modern scientific evidence supporting many traditional dietary claims. Ayurvedic literature contains extensive descriptions of dietary substances, nutritional guidelines, and therapeutic food preparations. Classical texts such as the *Caraka Saṃhitā*, *Suśruta Saṃhitā*, and *Aṣṭāṅga Hṛdaya* provide detailed explanations of the effects of various foods on physiological balance and disease prevention (Sharma, 2014; Murthy, 2012). However, much of this knowledge is based on empirical observations and traditional clinical practices rather than modern experimental methodologies.

Modern regulatory frameworks typically require scientific validation through controlled laboratory studies, clinical trials, and standardized research methodologies. Such evidence is necessary to establish the safety, efficacy, and health claims associated with food products and nutraceuticals. The absence of comprehensive scientific validation for many Ayurvedic dietary formulations therefore presents a challenge for regulatory authorities responsible for evaluating these products (Ujjaliya, Dash, & Jain, 2018).

Although a growing body of research has begun to explore the pharmacological and nutritional properties of traditional Ayurvedic ingredients, many formulations remain insufficiently studied in modern scientific contexts. For example, numerous herbs and spices used in Ayurvedic foods—such as turmeric, ginger, and ashwagandha—have demonstrated promising therapeutic properties in laboratory and clinical studies. Nevertheless, further research is required to validate many of the broader dietary principles described in classical Ayurvedic literature (Srikanth, Haripriya, & Tewari, 2015).

Another challenge involves translating traditional Ayurvedic concepts into scientific terminology compatible with modern biomedical research. Concepts such as *Doṣa*, *Agni*, and *Ama* represent complex physiological frameworks that do not have direct equivalents in contemporary scientific models. As a result, researchers must develop interdisciplinary methodologies that bridge traditional Ayurvedic theory and modern nutritional science.

Interdisciplinary collaboration between Ayurvedic scholars, nutrition scientists, pharmacologists, and public health researchers may play an important role in addressing these challenges. Integrative research approaches can help generate evidence supporting the safety and efficacy of Ayurvedic dietary products while preserving the conceptual foundations of traditional knowledge systems (Silpi, 2025).

The development of standardized research protocols for evaluating Ayurvedic dietary interventions may also facilitate scientific validation. Such protocols could include observational studies, controlled clinical trials, and epidemiological research examining the health outcomes associated with Ayurvedic dietary practices. By strengthening the scientific evidence base for Ayurvedic nutrition, researchers can support the credibility and global acceptance of Ayurvedic food products.

4.2 Standardization Challenges

Another important challenge in the implementation of the *Āyurveda Āhāra Regulations* involves the standardization of traditional dietary formulations. Ayurvedic dietary practices have evolved over centuries and are deeply embedded in regional cultures and community traditions. As a result, many Ayurvedic food preparations vary significantly across different geographic regions and cultural contexts.

For example, traditional herbal beverages, medicated food preparations, and dietary formulations may differ in their ingredients, preparation methods, and dosage depending on local culinary traditions and regional

availability of medicinal plants. While such diversity reflects the adaptability and richness of Ayurvedic food culture, it also presents challenges for regulatory standardization (Pramanik, Maheshwari, Acharya, & Pathak, 2026).

Regulatory frameworks typically require clear definitions of product composition, ingredient lists, manufacturing procedures, and quality control standards. However, the variability of traditional formulations can make it difficult to establish standardized specifications for Ayurvedic food products without compromising their authenticity and cultural significance.

In addition, variations in plant species, cultivation conditions, harvesting practices, and processing techniques may influence the chemical composition and therapeutic properties of herbal ingredients. These variations can affect the quality and efficacy of Ayurvedic dietary products, highlighting the need for robust quality assurance mechanisms (Ujjaliya et al., 2018).

To address these challenges, regulatory authorities may need to develop flexible standardization approaches that accommodate the diversity of traditional practices while ensuring product safety and quality. For example, standardized ingredient lists based on authoritative Ayurvedic texts may provide a foundation for regulatory classification while allowing some variation in formulation methods.

Quality control measures such as good manufacturing practices (GMP), raw material authentication, and phytochemical analysis may also contribute to the standardization of Ayurvedic food products. These measures can help ensure consistency in product quality without imposing overly restrictive regulations that might undermine traditional culinary practices.

4.3 Regulatory Overlap

Regulatory overlap represents another significant challenge associated with the implementation of the *Āyurveda Āhāra Regulations*. In India, traditional health products are governed by multiple regulatory frameworks, including those related to food safety, nutraceuticals, and traditional medicines. This complex regulatory landscape can sometimes create ambiguity regarding the appropriate classification of Ayurvedic products.

For instance, Ayurvedic products may fall into several different regulatory categories depending on their formulation and intended use. Products intended for therapeutic purposes are typically regulated as medicines under the Ministry of AYUSH and governed by the *Drugs and Cosmetics Act*. In contrast, food-based formulations with health benefits may be classified as nutraceuticals or health supplements under FSSAI regulations (Food Safety and Standards Authority of India [FSSAI], 2016).

The introduction of the *Āyurveda Āhāra* category aims to address this regulatory gap by creating a dedicated classification for Ayurvedic food products. Nevertheless, overlaps may still occur between this category and existing regulatory frameworks. Certain products may possess characteristics of both food and medicine, making it difficult to determine the appropriate regulatory pathway (Rananavare & Kamble, 2025).

Such regulatory ambiguity may create challenges for manufacturers seeking product approval and market access. Companies may encounter difficulties in determining the appropriate licensing procedures, labeling requirements, and compliance standards for their products.

To minimize regulatory confusion, clear guidelines and coordination between regulatory agencies are necessary. Improved communication between FSSAI and the Ministry of AYUSH may help establish clearer boundaries between food products, nutraceuticals, and medicinal formulations. Such coordination would support regulatory consistency and facilitate smoother product approval processes.

4.4 Industry Adaptation

The successful implementation of the *Āyurveda Āhāra Regulations* also depends on the ability of the food industry to adapt to the new regulatory framework. While large nutraceutical companies may possess the technical and financial resources required to comply with regulatory requirements, smaller manufacturers and traditional food producers may face greater challenges.

Many Ayurvedic food products are traditionally prepared by small-scale manufacturers, local entrepreneurs, and community-based food producers. These producers may have limited access to technical expertise, laboratory facilities, and regulatory guidance necessary to comply with modern food safety regulations.

Regulatory requirements such as safety testing, quality certification, documentation, and product registration may impose additional financial and administrative burdens on small-scale producers. Compliance with these requirements may require investments in laboratory testing, product standardization, and regulatory documentation, which may not always be feasible for smaller businesses (Silpi, 2025).

Another challenge involves the need for capacity-building initiatives to educate manufacturers about regulatory compliance and quality assurance practices. Training programs, technical support, and government assistance may help small-scale producers adapt to the new regulatory environment.

Despite these challenges, the *Āyurveda Āhāra Regulations* also present opportunities for industry growth and innovation. By establishing clear regulatory standards, the framework can enhance consumer confidence in Ayurvedic food products and promote the development of new nutraceutical formulations. Standardized regulatory guidelines may also facilitate international trade and expand global market opportunities for Ayurvedic products.

Ultimately, the successful implementation of these regulations will require collaboration among policymakers, researchers, industry stakeholders, and traditional knowledge holders. Such collaborative efforts can help ensure that the regulatory framework promotes both consumer safety and the preservation of traditional dietary knowledge.

5. Future Research Directions

The introduction of the *Āyurveda Āhāra Regulations* represents an important step toward recognizing the role of traditional dietary systems within modern regulatory frameworks. However, the successful implementation and global acceptance of Ayurvedic dietary products depend on continued scientific research, policy refinement, and interdisciplinary collaboration. Future research should focus on several key areas, including clinical evaluation of Ayurvedic dietary products, nutritional analysis of traditional foods, development of standardized formulations, and the integration of Ayurvedic dietary principles with emerging approaches in personalized nutrition.

5.1 Clinical Evaluation of Ayurvedic Dietary Products

One of the most important research priorities involves the clinical evaluation of Ayurvedic dietary products. Although Ayurvedic texts provide extensive descriptions of the health benefits of various foods and herbal preparations, many of these claims have not yet been systematically evaluated using modern clinical research methodologies. Randomized controlled trials, observational studies, and epidemiological research can play a critical role in validating the therapeutic potential of Ayurvedic food products (Srikanth, Haripriya, & Tewari, 2015).

Clinical studies may focus on evaluating the effects of Ayurvedic dietary interventions on specific health conditions such as metabolic disorders, digestive diseases, and immune-related conditions. For example, dietary ingredients such as turmeric, ginger, amla, and other herbal substances commonly used in Ayurvedic cuisine have shown promising pharmacological properties, including antioxidant, anti-inflammatory, and immunomodulatory effects (Ujjaliya, Dash, & Jain, 2018). Systematic clinical investigations could help establish the efficacy and safety profiles of these ingredients when used as part of functional foods or nutraceutical formulations.

Furthermore, clinical research may also explore the role of Ayurvedic dietary practices in preventive healthcare. Ayurveda emphasizes the importance of maintaining physiological balance through appropriate diet and lifestyle. Evaluating the long-term health outcomes associated with such dietary practices may contribute valuable insights into preventive medicine and nutritional epidemiology.

5.2 Nutritional Analysis of Traditional Foods

Another important research area involves the comprehensive nutritional analysis of traditional Ayurvedic foods. Many traditional Indian dietary preparations contain complex combinations of grains, herbs, spices, and medicinal plants that may provide significant nutritional and therapeutic benefits. However, detailed scientific characterization of these foods remains limited.

Modern analytical techniques such as metabolomics, phytochemical profiling, and nutritional biochemistry can be used to identify the bioactive components present in traditional Ayurvedic foods. Such studies may help reveal the mechanisms through which these foods contribute to health and disease prevention (Silpi, 2025).

For instance, several commonly used Ayurvedic ingredients have been found to contain bioactive compounds with potential health benefits. Turmeric contains curcumin, a polyphenolic compound known for its anti-inflammatory and antioxidant properties. Similarly, amla is rich in vitamin C and polyphenols that contribute to its antioxidant effects. Scientific characterization of these components may provide a stronger evidence base for the use of Ayurvedic foods in functional nutrition.

Nutritional analysis may also contribute to the development of evidence-based dietary guidelines derived from Ayurvedic principles. By identifying the nutrient composition and physiological effects of traditional foods, researchers can bridge the gap between traditional knowledge and modern nutritional science.

5.3 Development of Standardized Formulations

Standardization represents another important research priority for the future development of Ayurvedic dietary products. As discussed earlier, traditional formulations often vary across regions and communities due to differences in local culinary practices, availability of ingredients, and traditional knowledge systems. While such diversity is an important aspect of cultural heritage, it may create challenges for regulatory compliance and product commercialization.

Future research should therefore focus on developing standardized formulations that maintain the authenticity of traditional preparations while ensuring consistency in quality, safety, and efficacy. Standardization may involve the identification of key active ingredients, optimization of preparation methods, and establishment of quality control parameters (Pramanik, Maheshwari, Acharya, & Pathak, 2026).

Modern quality control techniques such as chromatographic analysis, DNA barcoding of medicinal plants, and standardized extraction methods can help ensure the authenticity and consistency of herbal ingredients used in Ayurvedic food products. These approaches may also support regulatory compliance by providing scientifically validated quality standards.

Standardized formulations may further facilitate large-scale manufacturing and global market expansion of Ayurvedic food products. By ensuring consistent product quality, manufacturers can build consumer confidence and enhance the credibility of Ayurvedic nutraceuticals in international markets.

5.4 Integration with Personalized Nutrition

An emerging area of research involves the integration of Ayurvedic dietary principles with modern approaches to personalized nutrition. Ayurveda has long emphasized individualized dietary recommendations based on a person's constitutional type (*Prakriti*), digestive capacity (*Agni*), lifestyle, and environmental factors (Sharma, 2014). This individualized approach closely resembles the modern concept of personalized nutrition, which seeks to tailor dietary recommendations based on genetic, metabolic, and lifestyle factors.

Recent advances in fields such as nutrigenomics, metabolomics, and systems biology have created opportunities to explore the scientific basis of Ayurvedic constitutional types. Some researchers have suggested that Ayurvedic *Prakriti* classifications may correlate with genetic and metabolic variations among individuals (Srikanth et al., 2015).

Future interdisciplinary research combining Ayurvedic theory with modern nutritional genomics may lead to innovative dietary strategies that integrate traditional wisdom with contemporary scientific insights. Such approaches could contribute to the development of personalized dietary interventions aimed at improving metabolic health, preventing chronic diseases, and enhancing overall wellbeing.

6. Conclusion

The introduction of the *Āyurveda Āhāra Regulations* represents a significant milestone in the effort to integrate traditional dietary knowledge with modern regulatory frameworks. By establishing a dedicated regulatory category for Ayurvedic food products, these regulations provide a structured approach for ensuring product safety, quality, and consumer protection while encouraging innovation within the nutraceutical and functional food sectors (Food Safety and Standards Authority of India [FSSAI], 2022).

The recognition of Ayurvedic dietary products within a formal regulatory framework reflects broader global trends toward the integration of traditional knowledge systems with contemporary scientific and regulatory institutions. As consumers increasingly seek natural and preventive healthcare solutions, traditional dietary practices such as those described in Ayurveda may offer valuable insights for promoting health and wellbeing.

However, the long-term success of the *Āyurveda Āhāra* regulatory framework will depend on several factors. These include the generation of robust scientific evidence supporting Ayurvedic dietary principles, the development of standardized formulations, and the establishment of clear regulatory guidelines that minimize overlap with existing regulatory categories.

Collaboration among researchers, policymakers, industry stakeholders, and traditional knowledge holders will be essential for addressing these challenges. Interdisciplinary research integrating Ayurveda, nutrition science, pharmacology, and public health can help strengthen the scientific foundation of Ayurvedic dietary products while preserving the integrity of traditional knowledge systems.

Furthermore, continued policy refinement and regulatory harmonization will be necessary to support the growth of the Ayurvedic nutraceutical sector. Clear regulatory standards can enhance consumer trust, facilitate international trade, and promote the global recognition of Ayurvedic food products.

Ultimately, the integration of Ayurvedic dietary principles into modern food systems has the potential to contribute to preventive healthcare, sustainable nutrition, and the preservation of cultural heritage. By combining traditional wisdom with scientific validation and regulatory innovation, the *Āyurveda Āhāra Regulations* may play an important role in shaping the future of global health and nutrition.

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