



# Biomedicine and Ayurvedic Modernity in Colonial India: Standardization, Commercialization, and Epistemic Negotiation

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## **Abstract**

*This article examines the transformation of Ayurveda in colonial India under the influence of biomedicine, nationalist reform, and market forces. It argues that colonial medical institutions, hospitals, and laboratories set new standards for evidence, reproducibility, and professional authority. This pushed reformist vaidyas to modernize their teaching, production, and practices. Industrial pharmacies, branded products, hybrid curricula, and professional associations arose as methods for standardization, commercialization, and knowledge negotiation. These reforms produced a selective concordance: Ayurveda adopted industrial and evidentiary forms while retaining classical ontologies and cultural legitimacy. The paper highlights the role of caste, regional variation, and nationalist discourse in shaping hybrid modernities, tracing how these developments structured postcolonial AYUSH systems. It sustains pluralism while embedding industrial, educational, and regulatory frameworks.*

**Keywords:** Ayurveda, Biomedicine, Marketization, Standardization

## **I. Introduction**

The nineteenth and early twentieth centuries marked a transformative period in India's healthcare landscape, as colonial administrations consolidated biomedical infrastructures that reshaped public health, hospital networks, and epidemic control (Arnold 1993). Laboratory-based biomedicine, with its emphasis on statistical values, reproducibility, and clinical documentation, established itself as the dominant epistemic and administrative regime whose legitimacy was established through state-sanctioned institutions and public visibility (Arnold 1993; Saini 2016). Ayurveda, which relied on Indian classical texts, household compounding, and *guru-sisya* pedagogy, faced challenges from biomedical scientific hegemony, which was based on standardization and institutionalization. Based on the biomedical procedures, reformers sought to modernize the system selectively by combining industrial methods, hybrid curricula, and professional associations while retaining classical legitimacy and indigenous

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ontologies (Sivaramakrishnan 2006; Ganeshan 2013). The consequent encounter of both biomedicine and Ayurveda resulted in what we now call “Ayurvedic modernity.”

Reformers such as P.S. Varrier played a prominent role in shaping Ayurvedic modernity when he established institutions like Arya Vaidya Sala at Kottakal, Kerala, in 1902. The Arya Vaidya Sala followed purely standard procedures similar to its biomedical counterpart in Colonial India, while having its medical trait completely rooted in classical texts like “Ashtanga Hridayam,” making it a pure example of Ayurvedic modernity. Hence, it was not just a simple replication of biomedicine but a negotiated hybrid containing the properties of the biomedical standard pharmaceutical and its scientific credentials without compromising its core values. (Sivaramakrishnan 2006; Ganeshan 2013).

The biomedical hegemony made it mandatory for Ayurvedic practitioners to find a selective concordance. Due to this, the amalgamation of biomedicine and Ayurveda created a form of hybrid modernity that played a very significant role in restating the Ayurvedic practitioners' credibility. Reformers adopted methods that enhanced its reliability and public credibility without giving up its core humoral ideological beliefs such as *doṣa*, *dhatu*, and *rasa-guṇa-vīrya-vipaka* (Ganeshan 2013; Arnold 1993; Sivaramakrishnan 2006).

## II. Precolonial Practice and Knowledge Systems

Before the consolidation of colonial medical institutions, Ayurvedic practice was embedded within practitioner households, where diagnosis, compounding, and retail occurred in an integrated setting. (Ganeshan 2013). The Ayurvedic practitioners mostly relied on indigenous herbs, following the methods inscribed in classical texts. The *churna* (powdered herbs) is mostly prepared, prescribed, and marketed by the Ayurvedic practitioners following local ecologies, unlike the standardized procedures documented and followed by biomedical practitioners.

Caste and purity codes profoundly shaped practice and pedagogy. Many classical compendia prohibited cadaveric dissection and restricted animal experimentation, limiting opportunities for experimental anatomy and physiology (Ganeshan 2013). Knowledge production was thus socially embedded: verification relied on textual fidelity, case observation, and guru-disciple authority rather than laboratory reproducibility (Ganeshan 2013). What later reformers considered inconsistency was, in fact, a reflection of epistemic diversity, prioritizing individualized therapeutics and local ecological adaptation over universalizable protocols (Ganeshan 2013).

## III. Biomedical Hegemony and Epistemic Pressures in Colonial India

Earlier, the Ayurvedic practitioner played the roles of physician, chemist, and pharmacist all in one, which was challenged later by biomedical institutions in colonial India. The biomedicinal system compelled Ayurvedic practitioners to perform separate roles by establishing new professional positions. Reformers worked to develop institutions based on modern scientific epistemology. (Arnold 1993; Saini 2016)

The administrative legibility and standardization of biomedicine through clinical records, batch manufacturing, and dispensary networks created pressures for Ayurveda to adapt its epistemic and material practices (Arnold 1993). Reformist *vaidyas* faced the dual challenge of demonstrating efficacy to both colonial administrators and a growing urban public while maintaining ontological distinctiveness (Sivaramakrishnan 2006). Institutional and public expectations now encompass reproducibility, mechanized production, and visible scientific authority, incentivizing the adoption of modern tools while provoking debates over orthodoxy and purity (Ganeshan 2013).

#### IV. Standardization, Industrialization, and Market Formation

The emergent market and regulatory environment catalyzed the industrialization of Ayurveda. Reformist pharmacies, including Arya Vaidya Sala, Kottakal (est. 1902), and early Ayurvedic enterprises such as Dabur (est. 1884), Shree Dhootapapeshwar Ltd. (est. 1872), Kerala Ayurveda Ltd. (est. 1945), Zhandu Pharma (est. 1910), Baidyanath (est. 1917), etc., revolutionized Ayurvedic medicines rooted in the traditional system by incorporating the standardized protocols established by biomedicine. The packaging and labeling of Ayurvedic medicines enhance their market reach, making it a scientific medicine rooted in classical textual knowledge. “*Kashayam*” was marketed by the prominent Ayurvedic companies, which increased its reach to each and every corner of the southern part of the country, particularly in Kerala. Due to the efforts of P.S. Varrier and institutions like Arya Vaidya Sala, Kerala became a key site of Ayurvedic products.

Institutions there integrated production, clinic networks, research, and philanthropy into coherent brands, simultaneously asserting scientific credibility and ethical tradition. These developments demonstrate selective concordance: classical knowledge was rendered legible to industrial and regulatory frameworks while retaining its cultural and ontological specificity. The *bazaars* became a site of marketable Ayurvedic products and biomedical drugs. This coexistence not only reflected practical market choices but also the subtle negotiation between traditional and modern medical knowledge (Menon 2019; Panikkar 1992).

#### V. Professionalization of Ayurveda

Educational modernization sought to bridge classical textual instruction with biomedical sciences. Newly established colleges and pathshalas incorporated anatomy, physiology, chemistry, and obstetrics into curricula while maintaining rigorous *shastrik* study. (Ganeshan 2013). The teachings of Ayurveda relied on print media such as manuals, journals, and case compendia to disseminate pharmacognostic knowledge and standardize preparation techniques.

The Professional Standards compelled the Ayurvedic practitioners to separate their identity from the quackery and follow the standard scientific methods advocated by biomedicine. The degree of professionalism in Ayurveda was granted by the Ayurvedic institutions with the provision of licensing to establish its legitimacy.

Internal hierarchies, often reflecting caste and class dynamics, influenced leadership in associations and colleges, even as nationalist rhetoric framed Ayurveda as an indigenous, egalitarian science (Rai 2019; Sivaramakrishnan 2006). These developments illustrate the tension between professionalization, social equity, and epistemic authority.

## VI. Nationalism, Swadeshi, and Modern Identity of Ayurveda

As opposed to the colonial biomedical hegemony, the nationalist leaders became proponents of indigenous medicine based on the scientific system, and the revival of Ayurveda became part of the mainstream nationalist struggle (Alok 2025).

Ayurveda emerged as a significant element in nationalist struggles, particularly during the Swadeshi Movement. The movement framed the practice and dissemination of Ayurveda as a form of political resistance, where using indigenous medicines became an act of defiance against colonial economic and cultural domination. In this context, Ayurveda was mobilized as a tool of protest, resonating with the movement's core values of resistance and self-reliance. Its legitimacy was further reinforced through the adoption of standardized practices and protocols, which allowed it to align with broader claims of scientific and cultural credibility.

By aligning traditional practices with contemporary notions of scientific rigor, reformers created a "Modern Identity of Ayurveda" that bridged indigenous knowledge and global scientific standards. Such an approach not only countered colonial critiques but also provided a framework through which Ayurveda could participate in the modern healthcare landscape.

## VII. Conclusion

Biomedicine's institutional ascendancy catalyzed Ayurveda's transformation from household compounding to standardized, branded, and professionally credentialed practice (Arnold 1993; Uma Ganeshan 2013). Reformers appropriated industrial, pedagogical, and evidentiary tools without relinquishing classical ontologies, producing a hybrid therapeutic modernity sustained into the postcolonial period. Markets, educational institutions, standard frameworks, and print culture collectively transformed the Ayurvedic Medicine System by creating persistent pluralism within India's medical landscape.

The standardization of Ayurveda was itself a revolutionary process in colonial India, which aligned its method with scientific medicine and established its legitimacy, which in turn helped Ayurveda regain its popularity and become a prominent element during the self-reliant Nationalist struggle.

The modern Ayurvedic pharmaceuticals, through their market reach, have established Ayurveda in Western countries, which is a soft power for countries like India. The holistic healthcare and patient-centric approach of Ayurveda makes it a unique system, separating it from its counterparts. The new age of Ayurveda gained prominence in the USA around the 1960s, which resulted in the formation of companies like Maharshi Ayurveda. In India, the Ministry of AYUSH promotes Ayurveda along with Yoga & Naturopathy, Unani, Siddha, and Homeopathy.



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