STM JOURNALS

Research & Reviews: A Journal of
Ayurvedic Science, Yoga & Naturopathy

ISSN: 2395-6682
Volume 13, Issue 1, 2026
January–April
DOI (Journal): 10.37591/RRJoASYN

https://journals.stmjournals.com/rrjoasyn

Review RRJOASYN

Pain Management Through Ayurvedic Tablets and Capsules

Nilesh Prakash Badgujar[1,*], Kaushil Mehta[2], Parth Patel[2], Sachin Prajapati[2], Bhargav Mori[2]

Abstract

Triphala Guggulu is a classical formulation widely used in Ayurveda for the management of metabolic and inflammatory disorders. It represents a synergistic combination of Triphala – composed of Emblica officinalis, Terminalia bellirica, and Terminalia chebula – along with the oleo-gum resin of Commiphora mukul. In traditional Ayurvedic practice, this formulation has been prescribed for conditions, such as arthritis, obesity, hyperlipidemia, and chronic constipation, primarily due to its reputed ability to enhance digestion, regulate lipid metabolism, and support systemic detoxification. The present review aims to compile and critically evaluate the available literature on the historical background, phytochemical composition, pharmacological activities, and therapeutic relevance of Triphala Guggulu. Phytochemical analyses indicate the presence of diverse bioactive constituents, including tannins, phenolic compounds, flavonoids, and guggulsterones, which collectively contribute to its biological activity. Experimental and preclinical studies have reported significant antioxidant, anti-inflammatory, anti-atherogenic, hypolipidemic, and hepatoprotective effects associated with this formulation. These findings provide preliminary scientific validation for its traditional therapeutic applications. Despite growing interest and increasing pharmacological evidence, several challenges remain in the scientific validation and clinical translation of Triphala Guggulu. Variability in raw materials, lack of standardized formulations, limited large-scale clinical trials, and insufficient long-term safety data restrict its broader acceptance within evidence-based healthcare systems. Therefore, further well-designed experimental studies, standardized quality control protocols, and rigorous clinical investigations are essential to substantiate its efficacy and safety. Strengthening the scientific evidence base will facilitate the rational integration of this traditional Ayurvedic formulation into contemporary integrative and complementary medicine frameworks.

Keywords: Anti-inflammatory, ayurveda, guggulsterones, polyherbal formulation, standardization, Triphala Guggulu

INTRODUCTION

The global resurgence of interest in traditional medicine systems has positioned Ayurveda as a rich source of potential therapeutic agents. Among its vast pharmacopeia, polyherbal formulations, like Triphala Guggulu, hold significant promise for managing complex, lifestyle-related disorders [1, 2]. This classical formulation, documented in authoritative texts, such as the Charaka Samhita and Bhavaprakasha, combines two foundational Ayurvedic remedies: Triphala and Guggulu [3].

Triphala, meaning "three fruits," is a revered blend renowned for its rejuvenating, digestive, and mild laxative properties [4]. Concurrently, Guggulu, the oleo-gum-resin from Commiphora mukul, is esteemed for its potent anti-inflammatory, hypolipidemic, and anti-obesity effects, attributed primarily to its bioactive guggulsterones [5, 6]. The synergistic combination in Triphala Guggulu is traditionally employed to address

***Author for Correspondence**
Nilesh Prakash Badgujar
E-mail: nilesh.badgujar@upluniversity.ac.in

[1]Professor and Head, Department of Chemical Technology, SRICT, UPL University of Sustainable Technology, Ankleshwar, Gujarat, India
[2]Students, Department of Chemical Technology, SRICT, UPL University of Sustainable Technology, Ankleshwar, Gujarat, India

Received Date: February 10, 2026
Accepted Date: March 03, 2026
Published Date: March 05, 2026

Citation: Nilesh Prakash Badgujar, Kaushil Mehta, Parth Patel, Sachin Prajapati, Bhargav Mori. Pain Management Through Ayurvedic Tablets and Capsules. Research & Reviews: A Journal of Ayurvedic Science, Yoga & Naturopathy. 2026; 13(1): 23–28p.

a range of ailments including Shotha (inflammation), Arsha (hemorrhoids), Gulma (abdominal tumors), Bhagandara (fistula-in-ano), and metabolic disturbances [2, 7].

Despite its extensive traditional use and inclusion in the Ayurvedic Formulary of India [8], Triphala Guggulu's integration into mainstream medicine is hampered by a lack of robust scientific validation, standardized manufacturing processes, and comprehensive safety data. This review aims to provide a detailed overview of Triphala Guggulu, covering its historical context, phytochemical constituents, purported mechanisms, and documented pharmacological activities. Crucially, it identifies certain critical gaps in the current literature and proposes a roadmap for research to establish its efficacy, safety, and quality, thereby supporting its potential role in evidence-based, integrative therapeutics.

BACKGROUND AND COMPONENTS

Triphala Guggulu is a complex formulation where each ingredient contributes to its overall therapeutic profile.

Triphala: The Three-Fruit Synergy

Triphala is a cornerstone of Ayurvedic medicine, composed of equal parts of three dried fruits [9]:

- *Emblica Officinalis Gaertn. (Amalaki, Indian Gooseberry):* A potent rejuvenator and the richest natural source of Vitamin C. It exhibits strong antioxidants, immunomodulatory, and anti-aging properties [10, 11].
- *Terminalia Bellirica (Gaertn.) Roxb. (Bibhitaki):* Known for its detoxifying effects, particularly on respiratory and digestive systems. It possesses anti-inflammatory, antimicrobial, and laxative activities [12, 13].
- *Terminalia Chebula Retz. (Haritaki):* Revered as the "king of medicines," it is primarily used to promote digestive health, regularize bowel movements, and rejuvenate bodily tissues. It demonstrates broad-spectrum antimicrobial, antioxidant, and anti-inflammatory effects [14, 15].

Collectively, Triphala acts to balance all three doshas (Vata, Pitta, Kapha), enhance Agni (digestive fire), and eliminate Ama (metabolic toxins) [4].

Guggulu (Commiphora Mukul)

Guggulu is the gum resin exuded from the Commiphora mukul tree (syn. Commiphora wightii). Its therapeutic value is primarily attributed to guggulsterones (Z- and E-guggulsterone), which are plant steroids with demonstrated pharmacological activity [5, 6]. The resin is traditionally processed (shodhana) to reduce toxicity and enhance its therapeutic efficacy [16].

Key properties include:

- *Hypolipidemic:* Reduces serum cholesterol and triglycerides by antagonizing key nuclear receptors involved in lipid metabolism [5].
- *Anti-Inflammatory:* Inhibits inflammatory mediators, providing relief in conditions like arthritis [17].
- *Thyroid-Stimulating:* Shown to enhance thyroid function and promote metabolism [6].

Synergistic Formulation: Triphala Guggulu

The formulation, as specified in the Sharangadhar Samhita, typically includes Triphala, Guggulu, and Piper longum (Pippali/Long Pepper) [7, 8]. Pippali is added to enhance the bioavailability and therapeutic action of the other ingredients, a concept known as Yogavahi [18]. This combination is designed to synergistically target Meda dhatu (fat tissue), reduce inflammation, support detoxification, and improve digestive and metabolic functions [2].

MATERIALS AND METHODS: A CASE STUDY IN FORMULATION AND STANDARDIZATION

To illustrate the pharmaceutical aspects of Triphala Guggulu, laboratory-scale preparation and quality control analysis were undertaken, following principles adapted from classical texts and modern pharmacopeial standards [8, 19].

Raw Materials and Procurement

Authentic raw materials were procured from a certified local supplier. The details are presented in Table 1.

Table 1. Raw materials for Triphala Guggulu formulation.

S. N.	Common/botanical name	Ayurvedic name	Function in formulation	Weight (g/mL)
1	Triphala Powder (1:1:1 mix)	Harde, Beheda, Amla	Anti-inflammatory, Digestive, Antioxidant	20 g
2	*Commiphora mukul* (Gum Resin)	Guggulu	Hypolipidemic, Anti-inflammatory, Binder	60 g
3	*Piper nigrum* (Fruit Powder)	Kali Mirch	Bioavailability enhancer, Antioxidant	9 g
4	*Cinnamomum verum* (Bark Powder)	Taj	Digestive, Anti-inflammatory	1 g
5	*Ricinus communis* (Oil)	Divel oil	Lubricant	0.5 mL
6	Clarified Butter (Cow Ghee)	Ghee	Lubricant, Medium for fat-soluble compounds	0.5 mL
7	Purified Water	Jal	Extraction and Binding Medium	q.s.

Preparation Method

The preparation followed a modified classical method involving aqueous extraction and mixing:

- *Triphala Extraction:* Triphala powder was soaked in water, boiled (40–50°C, 2 hours), and filtered. The marc was re-extracted to maximize yield. The combined filtration was concentrated.
- *Guggulu Purification and Extraction:* Guggulu resin was dissolved in hot water and filtered to remove insoluble impurities.
- *Mixing and Concentration:* The Triphala and Guggulu extracts were combined and gently heated to achieve a concentrated semi-solid mass.
- *Granulation and Tableting:* The concentrated mass were mixed with the fine powders of Piper nigrum and Cinnamomum verum, along with castor oil and ghee, to form a homogeneous dough. This was then manually shaped into tablets and dried.

Quality Control Parameters

The prepared tablets were subjected to standard pharmacopeial quality control tests [19]. The results for two representative batches are summarized in Table 2.

Table 2. Quality control parameters of prepared Triphala Guggulu tablets.

Parameter	Batch 1	Batch 2	Inference
Organoleptic			
Color	Black	Black	Consistent with ingredients.
Odor	Pungent	Pungent	Characteristic.
Taste	Slightly Bitter	Slightly Bitter	Acceptable.
Physical			
Shape	Round	Round	Uniform.
Average Diameter	7 mm	6 mm	Slight batch variation.
Average Thickness	3.16 mm	3.0 mm	Slight batch variation.
Avg. Weight Variation	±20 mg	±10 mg	Within acceptable limits for herbal tabs.
Disintegration Time	33 min	32 min	Meets herbal tablet criteria (<1 hr).

The results indicate that the formulated tablets possess acceptable pharmaceutical properties, though batch-to-batch consistency in size requires optimization. The disintegration time was well within the acceptable limit for uncoated herbal tablets, suggesting good bioavailability potential.

PHYTOCHEMISTRY AND PHARMACOLOGICAL PROFILE

The therapeutic actions of Triphala Guggulu are attributed to the diverse array of phytoconstituents present in its ingredients.

Major Phytoconstituents

- *Triphala:* Rich in tannins (chebulinic acid, chebulagic acid, gallic acid, ellagic acid), flavonoids, and Vitamin C, which are responsible for its potent antioxidant and astringent properties [4, 20, 21].
- *Guggulu:* Contains guggulsterones (Z and E), guggulsterols, lignans, and essential oils, which mediate their hypolipidemic and anti-inflammatory effects [5, 22].
- *Pippali:* The alkaloid piperine is the key bioactive compound, known to enhance the bioavailability of various drugs and nutrients by inhibiting metabolizing enzymes [18, 23].

Pharmacological Activities (Review of Literature)

Contemporary research has begun to elucidate the scientific basis for the traditional uses of Triphala Guggulu and its components:

- *Anti-Inflammatory and Analgesic:* Multiple studies have confirmed the anti-inflammatory activity of its constituents. Guggulsterones inhibit the NF-κB pathway, a key regulator of inflammation [17]. Triphala and its components have demonstrated significant inhibition of inflammatory mediators in various in-vitro and in-vivo models [12, 15, 24]. This validates its traditional use in Shotha (inflammation) and arthritis [25].
- *Antioxidant Activity:* Triphala and its constituent fruits, particularly Amla, are powerful antioxidants due to their high tannin and Vitamin C content. They effectively scavenge free radicals, inhibit lipid peroxidation, and protect cells from oxidative damage [11, 20, 21].
- *Hypolipidemic and Anti-Obesity Effects:* The guggulsterones in Guggulu are well-documented for their cholesterol-lowering properties, primarily through antagonism of the farnesoid X receptor (FXR), leading to increased LDL receptor expression [5]. Triphala also contributes to lipid metabolism regulation [4]. This supports the traditional use of Triphala Guggulu in managing obesity and hyperlipidemia [1].
- *Antimicrobial Activity:* Both Triphala and Guggulu exhibit antimicrobial properties. *T. chebula* has shown significant activity against a range of Gram-positive and Gram-negative bacteria, including pathogenic Salmonella and Shigella species [14]. E. officinalis and *T. bellirica* also demonstrate antibacterial and antifungal effects [13, 26]. This activity rationalizes its use in infected wounds, fistulas, and skin disorders [2, 27].
- *Wound Healing and Gastroprotective Effects:* The combined anti-inflammatory, antimicrobial, and antioxidant properties contribute to enhanced wound healing [28]. Triphala's regulatory effect on bowel function and its anti-ulcerogenic properties support its traditional use in digestive disorders and conditions like hemorrhoids and fistulas [3, 4, 29].

CRITICAL GAPS IN LITERATURE AND THE NEED FOR FURTHER RESEARCH

Despite the promising therapeutic profile, significant gaps hinder the global acceptance of Triphala Guggulu:

- *Lack of Robust Clinical Evidence:* Most available evidence is derived from in-vitro studies, animal models, or small-scale, non-randomized human trials. There is a pressing need for large, double-blind, placebo-controlled randomized clinical trials (RCTs) to establish definitive efficacy in specific conditions like osteoarthritis, hyperlipidemia, and obesity [3, 27].
- *Standardization and Quality Control:* A major impediment is the lack of a universally accepted, chemically defined standard for formulation. Variations in raw material sourcing, extraction methods, and manufacturing processes lead to inconsistent phytochemical profiles and therapeutic outcomes. Developing validated markers (e.g., gallic acid, chebulinic acid, guggulsterones) and a robust HPTLC/HPLC fingerprint is crucial [19, 30].
- *Unclear Mechanism of Action:* While individual components have known mechanisms, the synergistic pharmacodynamics of the complete polyherbal formulation are poorly understood. Systems biology and network pharmacology approaches could help elucidate its multi-targeted effects.
- *Insufficient Safety and Pharmacokinetic Data:* Comprehensive toxicological studies, including acute, sub-chronic, and chronic toxicity, are lacking. Furthermore, data on the absorption, distribution, metabolism, and excretion (ADME) of its key bioactive compounds, as well as potential herb-drug interactions (especially with statins, anticoagulants, and anti-diabetic drugs), are critically needed to ensure patient safety [31].

- *Lack of Comparative Effectiveness Studies:* Well-designed studies comparing the efficacy and safety of Triphala Guggulu with standard modern therapies (e.g., NSAIDs for inflammation, statins for cholesterol) are absent, making it difficult to position its clinical utility.

CONCLUSION AND FUTURE PERSPECTIVES

Triphala Guggulu represents a classic example of the therapeutic wisdom embedded in Ayurveda. The synergistic combination of Triphala and Guggulu offers a multi-pronged approach to managing complex, chronic inflammatory and metabolic disorders. Preliminary scientific evidence supports its traditional claims of anti-inflammatory, antioxidant, hypolipidemic, and antimicrobial activities.

However, to transition from traditional remedy to evidence-based medicine, a concerted research effort is required. Future work must prioritize:

- *Clinical Validation:* Conducting rigorous, large-scale RCTs for specific, well-defined indications.
- *Phytochemical Standardization:* Developing and implementing validated analytical methods to ensure batch-to-batch consistency and quality.
- *Mechanistic and Safety Studies:* Employing modern omics technologies to understand its poly-pharmacology and conducting comprehensive preclinical and clinical safety evaluations, including drug interaction studies.
- *Pharmaceutical Development:* Optimizing the formulation and dosage form to enhance bioavailability and patient compliance. By addressing these gaps through a collaborative, interdisciplinary approach, the full therapeutic potential of Triphala Guggulu can be unlocked, paving the way for its safe and effective integration into global healthcare.

REFERENCES

1. Rawat N, Mitra S. An overview of Triphala Guggulu and its ingredients. J Ayurveda Integr Med. 2023;14(2):100687.
2. Yadav Y, Sharma U. Anti-inflammatory and anti-microbial action of Triphala Guggulu: A review. Int J Res Ayurveda Pharm. 2022;13(4):78–82.
3. George AT. Analgesic, anti-inflammatory, and wound healing efficacy of Triphala Guggulu. J Ayurveda Case Rep. 2025;8(1):15–20.
4. Vani T, Rajani M, Sarkar S, Shishoo CJ. Antioxidant properties of the Ayurvedic formulation Triphala and its constituents. Int J Pharmacogn. 1997;35(5):313–7.
5. Dev S. A modern look at an age-old Ayurvedic drug Guggul. Sci Age. 1987;5:13–8.
6. Hedaoo MM, Bhole TP. Narrative review of guggulu formulations of Ayurveda reflecting their percentage of guggulu, pharmaceutics, and pharmacology. IP Int J Compr Adv Pharmacol. 2020;5(4):151–7.
7. Shrivastava S. Sharangadhar Samhita, Madhyam Khand. Varanasi: Chaukhambha Orientalia; 2021. Chapter 7, p. 200.
8. Government of India. The Ayurvedic Pharmacopoeia of India. Part II, Vol. II. 1st ed. New Delhi: Ministry of Health and Family Welfare; 2008. p. 134–5.
9. Government of India. The Ayurvedic Pharmacopoeia of India. Part I, Vol. I. 1st ed. New Delhi: Ministry of Health and Family Welfare; 2001. p. 5, 26, 43, 47, 91–2.
10. Mathur R, Sharma A, Dixit VP, Varma M. Hypolipidaemic effect of fruit juice of Emblica officinalis in cholesterol-fed rabbits. J Ethnopharmacol. 1996;50(2):61–8.
11. Bhattacharya A, Chatterjee A, Ghosal S, Bhattacharya SK. Antioxidant activity of active tannoid principles of Emblica officinalis. Indian J Exp Biol. 1999;37(7):676–80.
12. Gupta R, Singh RL, Gupta A. Antioxidant, DNA protective and antibacterial activities of Terminalia bellerica extracts. J Med Plants Res. 2019;13(18):431–42.
13. Kumar N, Khurana SM. Phytochemistry and medicinal potential of Terminalia bellirica Roxb. (Bahera). Indian J Nat Prod Resour. 2018;9(2):97–107.
14. Phadke SA, Kulkarni SD. Screening of in vitro antibacterial activity of Terminalia chebula, Eclipta alba and Ocimum sanctum. Indian J Med Sci. 1989;43(5):113–7.

15. Tanaka M, Kishimoto Y, Sasaki M, et al. Terminalia bellirica (Gaertn.) Roxb. extract and gallic acid attenuate LPS-induced inflammation and oxidative stress via MAPK/NF-κB and Akt/AMPK/Nrf2 pathways. Oxid Med Cell Longev. 2018;2018:1–14.
16. Karan M, Sarup P, Suneja V, Vasisht K. Effect of traditional Ayurvedic purification processes (sodhanvidhi) of guggulu on carrageenan-induced paw oedema in rats. J Pharm Biomed Sci. 2012;21(5):1–5.
17. Patel MG, Pundarikakshudu K. Anti-arthritic activity of a classical Ayurvedic formulation Vatari Guggulu in rats. J Tradit Complement Med. 2016;6(4):389–94.
18. Manoj P, Soniya EV, Banerjee NS. Recent studies on well-known spice Piper longum. Nat Prod Radiance. 2004;3(4):222–7.
19. Ghatage S, Hadimur K. Pharmaceutical and analytical study on Triphala Guggulu. World J Pharm Res. 2022;11(6):1125–34.
20. Itankar P, Nagulwar DB, Bhatlawande B. Physical, phytochemical and chromatographic evaluation of Triphala Guggul tablets. Int J Pharm Phytopharmacol Res. 2015;4(6):306–9.
21. Singh SN, Moses A, David A. Antimicrobial activity of Emblica officinalis extracts against selected bacterial pathogens. Int J Basic Appl Res. 2019;9(1):325–30.
22. Masten SA. Gum guggul and some of its steroidal constituents: Review of toxicological literature. Durham (NC): National Toxicology Program, NIEHS; 2005.
23. Mujumdar AM, Dhuley JN, Deshmukh VK, Raman PH, Naik SR. Anti-inflammatory activity of piperine. Jpn J Med Sci Biol. 1990;43(3):95–100.
24. Wei LI, Hua-wei ZH, Yun-jiao CH, et al. Study on anti-inflammatory activity of different solvent extracts of Phyllanthus emblica. Nat Prod Res Dev. 2018;30(3):418.
25. Navneet D. Triphala Guggulu: A pharmaceutical and analytical study. J Ayurveda Integr Med Sci. 2024;9(1):55–60.
26. Dutta BK, Rahman I, Das TK. Antifungal activity of Indian plant extracts. Mycoses. 1998;41(11-12):535–6.
27. Pathak AV, Kawtikwar PS. Pharmacognostical and physico-chemical standardization of Triphala Guggulu Vati: An official Ayurvedic formulation. Res J Pharm Technol. 2015;8(7):845–50.
28. Srikumar R, Jeya PN, Sheela DR. Immunomodulatory activity of Triphala on neutrophil functions. Biol Pharm Bull. 2005;28(8):1398–403.
29. Ahmad I, Mehmood Z, Mohammad F. Screening of some Indian medicinal plants for their antibacterial properties. J Ethnopharmacol. 1998;62(2):183–93.
30. Bag A, Bhattacharyya SK, Pal NK, Chattopadhyay RR. Synergistic effect of Terminalia chebula and antibiotics against multidrug-resistant uropathogenic Escherichia coli. Med Aromat Plant Sci Biotechnol. 2010;5(1):70–3.
31. Shiyal AN, Chikurte S. A review on Guggulu Kalpana (Commiphora wightii) in Ayurveda. J Ayurveda Integr Med Sci. 2018;3(4):127–32.

