2026, Volume 3, Issue 10, Page N: 18-20. Impact Factor 5.381 ISSN (O): 3050-9491
ISSN (P): 3050-9483
World Journal of
Advance Multidisciplinary Research
www.wjamr.org CODEN: WJAMA3
Review Article

THERAPEUTIC POTENTIAL OF *PITTA-SAMANA* INTERVENTIONS AND *VIRECHANA* IN MITIGATING LONG-TERM PROTON PUMP INHIBITOR DEPENDENCE: A SYSTEMATIC REVIEW

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Article Info
Article Received: 05 Sept. 2026,
Article Revised: 25 Sept. 2026,
Published on: 01 NOV. 2026

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https://doi.org/10.5281/zenodo.23850424

How to cite this Article: [1]*Dr. Shital Balaji Patil, [2]Dr. Sandip Dilip Bansode, [3]Dr. Syed Meer Faisal Ali. (2026). Therapeutic Potential Of Pitta-Samana Interventions And Virechana In Mitigating Long-Term Proton Pump Inhibitor Dependence: A Systematic Review. World Journal of Advance Multidisciplinary Research, 3(10), 18-20.
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ABSTRACT

Background: Long-term administration of Proton Pump Inhibitors (PPIs) for acid-peptic disorders including Gastroesophageal Reflux Disease (GERD) and non-ulcer dyspepsia-frequently triggers hypergastrinemia, rebound acid hypersecretion, gut dysbiosis, and micronutrient malabsorption. Traditional Ayurvedic clinical theory frames these systemic manifestations within the paradigms of *Amlapitta* and *Pitta-Vriddhi*. **Objective:** To systematically evaluate the therapeutic efficacy of *Pitta-Samana (Pitta*-pacifying) internal preparations, Pitta-Hara dietary protocols (*Pathya*), and *Virechana Karma* (therapeutic purgation) in tapering chronic PPI dependence, restoring gastric physiological baseline, and counteracting rebound hyperacidity. **Methods:** Following PRISMA guidelines, we searched MEDLINE/PubMed, AYUSH Research Portal, DHARA, and Google Scholar for literature published through 2026. Studies assessing *Virechana* and *Pitta-Samana* modalities in chronic hyperacidity, acid-peptic conditions, or clinical cohorts undergoing active PPI withdrawal were selected for analysis. **Results:** Evidence demonstrates that *Virechana* Karma systematically clears excessive *Dravatva* (fluidity) and Ushnatva (heat) characteristic of vitiated Pitta, accelerating mucosal healing and normalizing basal gastric secretion. Concurrent *Pitta-Samana* formulations (*Avipattikara Churna, Kamadugha Rasa, Sutshekhar Rasa, Yashtimadhu, and Amalaki*) significantly attenuate rebound acidity during structured step-down tapering schedules. **Conclusion:** Integrated Ayurvedic strategies combining bio-purification (*Shodhana*) with palliative medication (*Shamana*) present a viable therapeutic path for weaning patients off chronic PPI therapy while addressing underlying physiological dysregulation (*Agni Mandya* and *Pitta-Dushti*).

KEYWORDS: Therapeutic Potential, *Pitta-Samana* Interventions, *Virechana*, Mitigating Long-Term Proton Pump Inhibitor Dependence, Systematic Review.

1. INTRODUCTION

Proton Pump Inhibitors (PPIs) are the primary pharmacological option for managing acid-peptic disorders such as Gastroesophageal Reflux Disease (GERD), erosive esophagitis, peptic ulcer disease (PUD), and functional dyspepsia. Mechanistically, PPIs yield profound acid suppression by binding irreversibly to the ATPase enzyme in gastric parietal cells. However, long-term clinical use (typically exceeding 8 weeks) carries well-documented risks:

- **Rebound Acid Hypersecretion (RAHS)[1]:** Prolonged acid suppression drives sustained hypergastrinemia, causing parietal cell hypertrophy and severe hyperacidity upon drug cessation.
- **Microbiome Alterations[1]):** Loss of the acidic gastric barrier lowers resistance to pathogenic enteric microorganisms (Clostridioides difficile, Salmonella, Campylobacter) and fosters Small Intestinal Bacterial Overgrowth (SIBO).
- **Nutritional Malabsorption**: Persistent hypochlorhydria impairs ionization and uptake of essential micronutrients, particularly Vitamin \text{B}_{12}, elemental iron, calcium, and magnesium.
- **Physiological Dependence**: Exaggerated rebound symptoms often exceed the patient's baseline severity, creating a cycle of continuous re-initiation.

In Ayurvedic clinical theory, chronic acid reflux matches the presentation of *Amlapitta* (specifically *Urdhwaga*

Amlapitta).[4] This condition stems from the pathological aggravation of *Pachaka Pitta*, marked by a qualitative increase in *Dravatva* (fluidity), *Amlatva* (acidity), and *Ushnatva* (heat). Synthetic antacids and PPIs offer temporary symptomatic relief without correcting the underlying metabolic dysfunction (*Jatharagni Mandya*[6]) or clearing accumulated metabolic toxins (*Ama*).[3]

Virechana Karma (controlled therapeutic purgation): the primary *Panchakarma* procedure for Pitta-dominant pathophysiology—works synergistically with palliative (*Pitta-Samana*) herbal therapy.[7] Together, they provide a systematic bio-cleansing and mucosal-restorative framework capable of breaking chronic PPI reliance.

2. MATERIALS AND METHODS

2.1 Search Strategy

A comprehensive search across PubMed, Scopus, DHARA, AYUSH Research Portal, and Google Scholar identified studies using key search terms:

- *Virechana* OR *Panchakarma*
- *Pitta Samana* OR *Amlapitta*
- Proton Pump Inhibitor dependency OR PPI withdrawal OR GERD
- *Avipattikara Churna OR Yashtimadhu OR Kamadugha Rasa.*

2.2 Selection Criteria

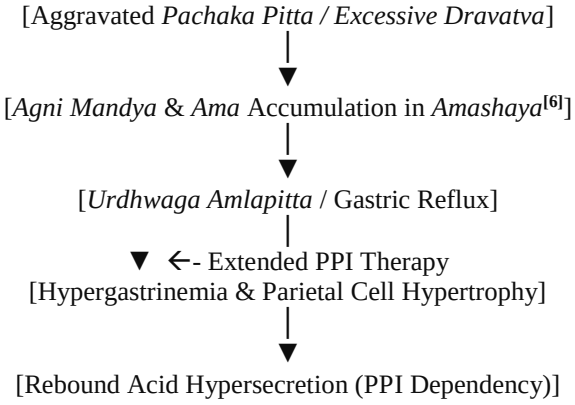
- **Inclusion Criteria:** Randomized controlled trials (RCTs), open-label clinical studies, and structured case series evaluating Ayurvedic modalities (*Virechana* and *Pitta-Samana* agents)[3] in acid-peptic disease management or active PPI step-down protocols, published up to 2026.
- **Exclusion Criteria:** Preclinical animal studies, incomplete trial reports, studies lacking defined outcome metrics, and trials evaluating non-Ayurvedic interventions exclusively.

3. Classical Pathophysiology vs. Modern Mechanism[3]

Comparing Ayurvedic concepts with modern gastrointestinal physiology highlights key clinical parallels:

Table 1: Comparing Ayurvedic concepts with modern gastrointestinal physiology.

CLINICAL FEATURE	CLASSICAL AYURVEDIC PARADIGM	MODERN GASTROINTESTINAL PHYSIOLOGY
Etiology	Aggravation of *Pachaka Pitta*, *Vidagdhajirna*, dietary indiscretions[5] (*Viruddhahara*)	Parietal cell hyperfunction, lower esophageal sphincter (LES) hypotonia, delayed gastric emptying
Pathophysiology	Escalation of *Dravatva* and *Amlatva* in *Pitta*, causing *Urdhwaga* (upward) movement	Rebound gastric hypersecretion driven by elevated serum gastrin levels
Tissue Impact	Irritation of the *Amashaya* (*Annavaha Srotas*) lining, depletion of *Kledaka Kapha*	Epithelial erosion, mucosal inflammation, compromised gastric mucin layer
Therapeutic Goal	Elimination of excess *Pitta* via *Virechana*; realignment of Agni using *Pitta-Samana* remedies	Normalization of luminal pH, restoration of parietal cell sensitivity, mucosal repair



4. Therapeutic Protocols[3]

4.1 Bio-Cleansing Protocol: *Virechana Karma*

Virechana directly targets the primary anatomical seat of *Pitta* (*Amashaya* and *Grahani*). By expelling excess Pitta through the lower gastrointestinal tract, it clears the circulating *Dravatva* and *Ama* responsible for acid hypersecretion.

- ***Purvakarma* (Preparatory Phase)**
  - Duration: 3–7 Days
  - Administration of *Dipana-Pachana* agents (e.g., *Trikatu Churna or Chitrakadi Vati*) to digest *Ama*, followed by internal oleation (*Snehana*) using *Mahatiktaka Ghrita* or *Dadimadi Ghrita* in escalating daily doses until optimal oleation (*Samyak Snigdha)* is achieved. Concluded with 2–3 days of external oleation and sudation (*Abhyanga* and *Swedana*).
- ***Pradhana Karma*** (Primary Procedure):
  - Execution Day: Administration of Pitta-expelling agents, such as Trivrit Lehya (30–40 g) or *Trivrit Churna* combined with milk or warm water, adjusted according to the patient's bowel characteristics (*Koshtha*) and digestive capacity (*Bala*).[7]
- ***Paschat Karma*** (Post-Procedure Care):
  - Duration: 3–7 Days
  - A structured dietary escalation (*Samsarjana Krama*) transitioning from *Manda* (rice water) \rightarrow Peya \rightarrow Vilepi \rightarrow *Krita Yusha* to rebuild metabolic fire (*Jatharagni*) without provoking Pitta.

4.2 Targeted Interventions (Pitta-Samana Formulations)[2]
During PPI tapering, specific botanical and herbo-mineral preparations function as biological buffers, cytoprotectants, and prokinetics:

- ***Avipattikara Churna:*** Formulated with *Trivrit, Musta, Amalaki,* and Sarkara. Demonstrates mild laxative, antacid, and downward-motility (*Anulomana*) properties.
- ***Yashtimadhu* (Glycyrrhiza glabra)**: A demulcent rich in mucilage that promotes glycoprotein synthesis and protects eroded esophageal tissues.
- ***Amalaki* (Emblica officinalis)**: High in polyphenols and Vitamin C, exhibiting \text{H}_2-receptor antagonist-like activity alongside cooling (*Sita Virya*) and acid-neutralizing (*Amla* Rasa turning to *Madhura Vipaka*) traits.
- ***Kamadugha Rasa / Sutshekhar Rasa:*** Mineral-based preparations that act as rapid-acting antacids and gastric mucosal protectants.

5. Structured Clinical PPI Tapering Protocol[2]

- Weeks 1–2: Maintain baseline PPI dose (100%) + introduce baseline Pitta-Samana therapy (Avipattikara Churna + Yashtimadhu).
- Weeks 3–4: Execute Snehapana and Virechana Karma protocol; reduce PPI dose by 50%.
- Weeks 5–6: Completely discontinue PPI; transition to full Pitta-Samana and Pathya-Apathya (dietary/lifestyle) management.
- Weeks 7–12: Maintain palliative *Shamana* therapy, gradually weaning herbal formulations as Agni stabilizes.

6. DISCUSSION AND CLINICAL RELEVANCE

The major challenge when discontinuing chronic PPI therapy is the sudden surge in serum gastrin activity, which triggers severe rebound dyspepsia and heartburn within 4 to 14 days.

- Systemic Cleansing (*Shodhana*): *Virechana* eliminates stagnant biliary secretions, reduces excess fluid volume (*Pitta Dravatva)*, and restores normal intestinal transit. Clinical observations record significant reductions in retrosternal burning (Hrit-*Kanthadaha*) and acid eructation (*Amlaudgara*) following treatment.
- Mucosal Defense & Cytoprotection: Active phytoconstituents in *Yashtimadhu* and Amalaki stimulate endogenous mucin secretion without inhibiting basal physiological acid output needed for nutrient digestion.
- Microbiome Stabilization: Unlike long-term acid suppression, which can foster dysbiosis, these traditional formulations help preserve commensal intestinal microflora while maintaining native luminal pH.

7. CONCLUSION

Combining *Virechana* Karma with targeted *Pitta-Samana* formulations creates a viable therapeutic path for managing long-term PPI dependence. By resetting core metabolic capacity (*Jatharagni*) and eliminating corrupted Pitta, this protocol addresses both baseline acid-peptic pathology and withdrawal-induced hyperacidity. Multi-center trials incorporating objective clinical biomarkers—such as serum gastrin-17 levels, 24-hour ambulatory pH monitoring, and endoscopic mucosal grading—are encouraged to formalize standardized tapering protocols.

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