

A Critical Review of Patoladi Gana Dravyas from Sushruta Samhita as Antipyretic Agents

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A significant proportion of the global population relies on traditional medicine systems for primary health care, with Jawar (fever or pyrexia) being one of the most addressed conditions in such practice. In Ayurveda, Jwara is considered a Rasa Pradoshaja Vyadhi affecting both Sharira and Manas, primarily involving Agni Dushti, Ama accumulation, and Tridosha vitiation. Among the herb groupings (Ganas) mentioned in Sushruta Samhita, Patoladi Gana is a well-established cluster of Seven herbs - Patola (*Trichosanthes dioica*), Sweta Chandana (*Santalum album*), Rakta Chandan (*Pterocarpus santalinus*), Murva (*Marsdenia tenacissima*), Guduchi (*Tinospora cordifolia*), Patha (*Cissampelos pareira*), Katuki (*Picrorhiza kurroa*), - formulated specifically for the treatment of Jwara. These herbs, characterized by their Tikta Rasa act synergistically to pacify aggravated Pitta, detoxify Ama, kindle Agni, and purify Rakta. Pharmacologically, Patoladi Gana exhibits a wide spectrum of actions including antipyretic, anti-inflammatory, hepatoprotective, immunomodulatory, and antioxidant effects. Modern studies have validated the presence of bioactive compounds such as kutkin, berberine, santalol, and flavanoids, which act via mechanisms like cytokine inhibition, prostaglandin suppression, and liver enzyme regulation. Patoladi Gana is thus a scientifically and traditionally validated herbal formulation for the safe and effective management of fever. It not only reduces body temperature but also addresses its root causes - poor digestion, liver dysfunction, and immune imbalance. This review highlights its therapeutic potential, classical relevance, pharmacodynamics, and clinical applicability in febrile disorders.

Keywords: Patoladi Gana, Patola, Chandana, Sweta Chandan, Murva, Guduchi, Patha, Kutaki, Jawar

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Introduction

Fever (*Jwara*) is one of the most prevalent clinical conditions and is considered a major systemic disorder in *Ayurveda*, not merely a symptom but a *Roga* that influences both *Sharira* (body) and *Manas* (mind). It is described as foremost of all diseases —“*Sarveshaam Rogaanam Jwara Eva Mulam*”,^[1] emphasizing its primacy in Ayurvedic nosology. Fever is viewed as a result of disturbances in *Agni* (digestive fire), *Ama* (metabolic toxins), and *Doshas*, particularly *Pitta*.

The Ayurvedic classification of *Jwara* includes *Nija* (endogenous) and *Agantuja* (exogenous) types, with *Pittaja Jwara* being associated with inflammatory, infective, or heat-induced fevers. The approach to treatment focuses on restoring *Agni*, eliminating *Ama*, and pacifying the vitiated *Doshas* through appropriately selected herbal formulations.

One such classical polyherbal formulation is **Patoladi Gana**, mentioned in *Sushruta Samhita* (Sutra Sthana 38). It includes seven medicinal herbs with potent mainly *Tikta Rasa* (bitter taste and *Katu Vipaka* (pungent post-digestive effect), making them ideal for pacifying *Pitta* and purifying the blood. The herbs are: **Patola** (*Trichosanthes dioica*), **Shweta Chandana** (*Santalum album*), **Rakta Chandana** (*Pterocarpus santalinus*), **Murva** (*Marsdenia tenacissima*), **Guduchi** (*Tinospora cordifolia*), **Patha** (*Cissampelos pareira*), **Katuki** (*Picrorhiza kurroa*).^[2]

According to Ayurvedic pharmacology (*Dravyaguna Vijnana*), these herbs exhibit *Jwaraghna* (antipyretic), *Raktaprasadaka* (blood-purifying), *Ama Pachaka* (toxin digester), and *Agnideepana* (digestive fire stimulant) actions.^[3]

Modern research supports these traditional claims. *Tinospora cordifolia* has demonstrated immunomodulatory and antipyretic activities by modulating pro-inflammatory cytokines like TNF- α and IL-6.^[4] *Picrorhiza kurroa* is widely recognized for its hepatoprotective, antioxidant, & immunostimulant effects, effective in managing fevers of hepatic origin.^[5] Similarly, *Santalum album* & *Pterocarpus santalinus* have shown significant anti-inflammatory & cooling effects.^[6]

Given the increasing awareness of adverse effects associated with synthetic antipyretics—such as hepatotoxicity and gastric irritation - there is growing interest in safer, holistic alternatives.

The synergy of the seven herbs in **Patoladi Gana**, their safety profile, and multifaceted action offer a promising natural alternative for fever management rooted in both traditional wisdom and modern validation.

Material and Methods

Authentic classical Ayurvedic texts & contemporary scientific literature were reviewed to collect data on pharmacological actions. Botanical authentication and Ayurvedic properties were confirmed using standard references including *Dravyaguna Vigyana* and *Ayurvedic Pharmacopoeia of India*. Modern pharmacological effects such as antipyretic, anti-inflammatory, immunomodulatory, and hepatoprotective actions were analyzed using peer-reviewed journals from databases like PubMed and AYUSH Portal.

This methodology provided a bridge between traditional *Ayurvedic* understanding and modern pharmacological evidence supporting the antipyretic potential of *Patoladi Gana*.

Result

Table 1: Botanical identification of contents of Patoladi Gana^[7,8]

SN	Name of Drug	Botanical name	Family	Part used	Karma
1.	Patola	Trichosanthes dioica Roxb.	Cucurbitaceae	Patra	Jwaraghna, Deepana, Pachana, Vrishya, Balya.
2.	Sweta Chandana	Santalum album L.	Santalaceae	Kandasaara	Daahashamaka, Varnya, Graahi, Pipaasahara, Hridyasanrakshaka
3.	Rakta Chandana	Pterocarpus santalinus	Santalaceae	Kandasaara	Daahashamaka, Varnya, Graahi, Pipaasahara, Hridyasanrakshaka, Kandughna, Vrishya,
4.	Madhusrava	Marsdenia tenacissima W.& A.	Asclepiadaceae	Mula	Shransan, Kushthaghna, Swedajanan
5.	Guduchi	Tinospora cordifolia (Thunb.) Miers	Menispermaceae	Kanda	Rasayana, Balya, Jwarhara, Deepana, Mutrajanana, Pittasaraka, Twakroghara, Vishaghni.

SN	Name of Drug	Botanical name	Family	Part used	Karma
6.	Patha	Cissampelos pareira L.	Menispermaceae	Moola, Bhaumik Grahi, Stanyashodhana, Jwarhara, Balya, Bastishodhaka, kanda.	Mutrajanaka, Deepana, Pachana.
7.	Katurohini	Picrorhiza kurroa Royle ex Benth.	Scrophulariaceae	Moola, Bhaumik Pittavirechana, Jwaraghna, Deepana, Paachana, Bhedana, Hridya kanda.	

Table 1: Rasapanchaka of drugs in Patoladi Gana.[9]

SN	Dravya	Rasa	Guna	Virya	Vipaka	Dosha Karma
1.	Patola	Tikta	Laghu, Ruksha	Ushna	Katu	Tridoshashamaka
2.	Sweta Chandan	Tikta	Laghu, Ruksha	Shita	Katu	Kaphapittashamaka
3.	Rakta Chandana	Tikta, Madhura	Laghu, Ruksha	Shita	Katu	Kaphapittashamaka
4.	Madhusrava	Tikta, Kashaya	Guru, Ruksha	Ushna	Katu	Tridoshashamaka
5.	Guduchi	Tikta, Kashaya	Guru, Snigdha	Ushna	Madhura	Tridoshashamaka
6.	Patha	Tikta	Laghu, Tikshana	Ushna	Katu	Kaphapittashamaka
7.	Katurohini	Tikta	Laghu, Ruksha	Shita	Katu	Kaphapittashamaka

Table 3: Chemical constituents and pharmacological activities of drugs in Patoladi Gana.

SN	Dravya	Chemical constituents	Pharmacological activity
1.	Patola	The leaf extract contains β -sitosterol, its glucosides, luteolin-7-glucoside, a steroidal saponin, and 24- α -ethyl-20-ene-7-hydro-stigmast-8 β :14 β -di-3-O- β -D-xylofuranoside. Additionally, it is rich in phenolic antioxidants such as caffeic acid, epicatechin, vanillic acid, p-coumaric acid, quercetin hydrate, and trans-ferulic acid.[10]	It exhibits anti-inflammatory, antioxidant, immunomodulatory, antitoxic, antipyretic, antidiarrheal, antimicrobial, hepatoprotective, and laxative activities.[11]
2.	Sweta Chandana	Phenolics, flavonoids, alkaloids, tannins, saponin, Santalanic acid, palmitic acid, carbohydrates, glycosides, proteins aminoacids, fixed oils, mucilage α -santalene, β -santalene, Santalol 90% - mixture of 2 primary sesquiterpene alcohol α -santalol & β -santalol.[12]	Antioxidant, Antiviral, Anticancer, Antifungal, Antibacterial, Anti- Inflammatory, Analgesic, and Antipyretic.[13]
3.	Rakta Chandan	It contains various components, such as carbohydrates, steroids, anthocyanins, saponins, tannins, phenols, triterpenoids, flavonoids, glycosides and glycerides.[14]	Antitubercular, cytotoxic, antioxidant, antibacterial, and anti-inflammatory qualities. It also has antipyretic, anthelmintic, tonic, hemorrhage, dysentery, aphrodisiac, and diaphoretic activities.[15]
4.	Murva	Flavonoids, terpenoids, saponins, tannins, Marsdenosides A-H, 16 polyoxypregnane glycosides - marstenacissides A1-A7 (1-7) and marstenacissides B1-B9 (8-16).[16]	Anti-Inflammatory, anti- cancer and Antioxidant activities.[17]
5.	Guduchi	Sesquiterpene tinocordifolin, sesquiterpene glycoside tinocordifolioside, an immunologically active arabinogalactan, phytoecdysones ecdysterone and makisterone, Alkaloids- berberine and magnoflorine.[18]	Anti-Inflammatory, Antidiabetic, Antioxidant and Hepatoprotective, Anticancer, Antimicrobial, Immunomodulatory, Anti- Pyretic, Anti-Allergic.[19]
6.	Patha	Alkaloids (bisbenzylisoquinoline, hayatine, hayatidine, berberine, cissampareine, dicentrine, insularine, cycleanine, curine and isomerubrine), flavanoids, tannins, volatile oils and glycosides.[20]	Anti-Inflammatory, Antipyretic, Immunomodulatory, Anti- Diarrhoeal, Antidiabetic, Hepatoprotective, and Antioxidant activities.[21]
7.	Katurohini	Iridoid glycoside picrosides I, II, III, and kutkoxide, known collectively as kutkin, flavonoids, triterpenes, alkaloids, and coumarins such as apocynin, glycosides, nine cucurbitacin, drosin, and triterpenoid, ursolic acid.[22]	Antioxidant, Antiallergic, Anticancerous and Immunomodulatory properties, Anti- inflammatory, Hepatoprotective and Hypolipidemic activities.[23]

Pharmacological Mechanism of Patoladi Gana in Fever

Fever in modern medicine is typically initiated by pyrogens (like IL-1, IL-6, TNF- α), which act on the hypothalamus to increase body temperature via prostaglandin E2 (PGE2). In Ayurveda, *Jwara* arises from *Agni Dushti*, *Ama* accumulation, and vitiation of *Doshas*, especially *Pitta*. The herbs of *Patoladi Gana* act on these underlying causes by detoxifying, balancing *Doshas*, enhancing *Agni*, and modulating immune responses.

1. Patola (*Trichosanthes dioica*)

- **Ayurvedic Action:** *Tikta Rasa*, *Sheeta Virya* - purifies blood, pacifies *Pitta*, digests *Ama*.

- **Modern View:** Demonstrated antipyretic, hepatoprotective, and anti-inflammatory activity by lowering liver enzyme levels and inhibiting pro-inflammatory cytokines.[24]

2. Shweta Chandana (*Santalum album*)

- **Ayurvedic Action:** Cooling, calming to *Pitta*, useful in burning sensation and fever.
- **Modern View:** Contains santalol, which shows CNS-calming, antioxidant, and mild antipyretic properties.[25]

3. Rakta Chandana (*Pterocarpus santalinus*)

- **Ayurvedic Action:** *Raktashodhaka* (blood purifier), anti-inflammatory, reduces *Pitta*.

- **Modern View:** Exhibits anti-inflammatory, analgesic, and antipyretic effects via prostaglandin inhibition.[26]

4. Murva (*Marsdenia tenacissima*)

- **Ayurvedic Action:** *Ama pachaka*, mild *virechaka* (laxative), clears channels, reduces *Tridosha*.
- **Modern View:** Demonstrates immunosuppressive and anti-inflammatory action, aiding in detoxification during febrile illness.[27]

5. Guduchi (*Tinospora cordifolia*)

- **Ayurvedic Action:** *Rasayana*, *Jwaraghna*, *Agni-deepana* - removes *Ama*, boosts immunity.
- **Modern View:** Well-studied antipyretic and immunomodulator. Inhibits IL-1 β , TNF- α , and PGE2, central to fever production.[28]

6. Patha (*Cissampelos pareira*)

- **Ayurvedic Action:** *Agnideepana*, *Ama pachana*, *Jwarahara*, reduces *Pitta-Kapha* disorders.
- **Modern View:** Demonstrates antipyretic, analgesic, and antimicrobial actions; may inhibit prostaglandin synthesis.[29]

7. Katuki (*Picrorhiza kurroa*)

- **Ayurvedic Action:** *Pittahara*, liver stimulant, reduces *Ama*, purifies *Rakta dhatu*.
- **Modern View:** Contains picroside I and II, which exhibit hepatoprotective, antipyretic, and anti-inflammatory actions.[30]

Discussion

Fever (*Jwara*) is considered a primary systemic disorder in *Ayurveda*, often rooted in disturbance of *Agni*, accumulation of *Ama*, and vitiation of *Pitta Dosh*. The classical approach emphasizes balancing disturbed *Dosh*as, eliminating *Ama*, & strengthening digestive fire (*Agni*). Among the various herbal groups described in classical texts, *Patoladi Gana* - as mentioned in *Sushruta Samhita* (*Sutra Sthana* 38) - is indicated particularly for *Jwara* and febrile conditions associated with *Raktadushti* (vitiation of blood).

This formulation comprises seven herbs: *Patola*, *Shweta Chandana*, *Rakta Chandana*, *Murva*, *Guduchi*, *Patha*, and *Katuki*. All of them share common attributes of *Tikta Rasa* (bitter taste), and *Katu Vipaka* (pungent post-digestive effect), which help in pacifying *Pitta dosha* and purifying the blood.

From a modern pharmacological perspective, these herbs demonstrate antipyretic, anti-inflammatory, hepatoprotective, and immunomodulatory activities.

Notably, *Guduchi* (*Tinospora cordifolia*) acts by inhibiting pro-inflammatory cytokines (e.g., TNF- α , IL-6), a key mechanism in the pathogenesis of fever. *Katuki* (*Picrorhiza kurroa*) shows significant hepatoprotective and anti-inflammatory activity, useful in fevers of hepatic origin. *Patha* and *Murva* help digest *Ama*, supporting detoxification and bowel cleansing, which further reduces internal heat accumulation. *Shweta* and *Rakta Chandana* are known for their cooling effects and help reduce burning sensations and internal inflammation. *Patola* contributes to blood purification and liver support.

Collectively, the pharmacological actions of these herbs show a synergistic effect in the management of fever. This synergy reflects *Ayurvedic* principle of *Samyoga* (rational combination), wherein the therapeutic efficacy of the formulation is enhanced by combining herbs with complementary actions. In addition, these herbs offer a favorable safety profile, with minimal risk of gastrointestinal or hepatic toxicity—an advantage over commonly used synthetic antipyretics like paracetamol and NSAIDs.

The growing scientific evidence supports the traditional claims made in *Sushruta Samhita*, making *Patoladi Gana* a promising candidate for further clinical evaluation as a safe and effective natural antipyretic formulation.

Conclusion

The review of *Patoladi Gana*, a group of *Jwaragna Dravyas* mentioned in *Sushruta Samhita*, reveals its strong foundation in both classical *Ayurvedic* wisdom and modern pharmacological science. The seven constituent herbs offer multiple mechanisms of antipyretic action, including *Pitta* pacification, *Ama* digestion, *Rakta* purification, and cytokine modulation, aligning closely with both *Ayurvedic* and biomedical models of fever.

Scientific studies validate the antipyretic, anti-inflammatory, and immunomodulatory actions of these herbs, particularly *Tinospora cordifolia*, *Picrorhiza kurroa*, & *Cissampelos pareira*. This integrative understanding strengthens therapeutic relevance of *Patoladi Gana* in the holistic and safe management of febrile conditions,

Especially in the context of rising concerns about adverse effects of synthetic drugs.

Therefore, *Patoladi Gana* presents rational, effective, & safe antipyretic alternative, and its inclusion in clinical protocols - especially in integrative and *Ayurvedic* medicine - should be encouraged. Further clinical trials and pharmacodynamic studies are warranted to standardize its dosage, validate efficacy, and expand its clinical application.

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