

**REVIEW ON *CHANDANADI LAUH* - A HERBOMINERAL FORMULATION FOR
JWARA (FEVER)**

[Shiwali Sharma¹](#), [Usha Sharma²](#), [Shuchi Mitra³](#), [Khem Chand Sharma⁴](#)

¹MD Scholar, P.G. Department of Rasa Shastra & Bhaishjya Kalpana, Uttarakhand Ayurved University, Rishikul Campus Haridwar, India.

²Professor, P.G. Department of Rasa Shastra & Bhaishjya Kalpana, Uttarakhand Ayurved University, Rishikul Campus Haridwar, India.

³Associate Professor, P.G. Department of Rasa Shastra & Bhaishjya Kalpana, Uttarakhand Ayurved University, Rishikul Campus Haridwar, India.

⁴Professor and H.O.D., P.G. Department of Rasa Shastra & Bhaishjya Kalpana, Uttarakhand Ayurved University, Rishikul Campus Haridwar, India

Corresponding Author: sharmashiwali25@gmail.com

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**ABSTRACT**

Chandanadi Lauh is a traditional *Ayurvedic* herbomineral formulation that is frequently prescribed for various disorders. *Chandanadi Lauh* is one such formulation being used extensively by *Ayurveda* physicians for *Jwara* (Fever). The description of the *Chandanadi Lauh* is given in the *Rasaender Sara Sangreh* [16th Cen.] for the management of *Jwara*. Acharya Charaka has described *Jwara* causes *Santap* in *Sharira* (body), *Indriya* (senses), and *Mana* (mind), and it is also known as the king of all diseases. In *Ayurveda* texts, the root cause of the *Jwara* is the *Ama* (Undigested Food Residue) formation which arises from the *Mandagnii* (depleted digestion strength). Drugs present in *Chanadanadi Lauh* are mainly *Tikta*, *Katu Rasa*, *Laghu*, *Tikshana*, *Ruksha Guna*, *Sheeta Virya*, *Katu Vipaka*, *Deepana*, *Pachana*, *Jwaraghna*, *Vishaghna Krimighna*, *Triptighna* properties and have *Kapha-Pitta hara* action. It improves the *Jatharagni* by relieving *Ama*. So *Chanadanadi Lauh* exhibits *Amahara* action (expels metabolites and detoxifies the system) which can cure diseases that are derived from the *Mandagni* (Digestive im-

pairment) like *Jwara*. The present study is intended to critically review the formulation's ingredients and probable mode of action of *Chanadanadi Lauh*, as the contents of this formulation, have antipyretic, anti-inflammatory, anti-microbial, and analgesic action.

Keywords: Antipyretic, Fever, *Jwara*, anti-inflammatory, *Lauh*

INTRODUCTION

In the present era due to the globalized and fast-moving world, life has become more hectic and materialistic. Population explosion produces the crowd everywhere resulting in increased contagious diseases. In this situation, Fever has become the most common health condition in our day-to-day life. [1] Fever is an unusually high body temperature that occurs because the hypothalamic thermostat is reset. It commonly occurs during infection and inflammation. Elevated body temperature intensifies the effect of interferon, inhibits the growth of some microbes, and speeds up body reactions that aid repair. [2] In Ayurveda, *Lauh* is the compound formulation, used in the management of various ailments. *Chandanadi Lauh*, *Dhatri Lauh*, *Pipplayadi Lauh*, *Pradarantak Lauh*, *Navayas Lauh*, etc are frequently advised *Lauh*. *Chandanadi Lauh* is one of the utmost *Lauh* formulations used for the management of *Jwara* (Fever). [3,4] It is an Ayurvedic formulation described in the *Rasaender Sara Sangreh* [16th Cen.] for the management of *Jwara*. [5] It is also quoted by Govind Das in *Bhaishajya Ratnavali* [19th Cen.] in *Jwara rogadhikara*. [4] *Chandanadi Lauh* consists of 13 ingredients, as per the Ayurvedic Formulary of India (AFI). [3,4] It contains 12 herbs namely *Raktachandana* (*Pterocarpus santalinus* Linn.), *Hriversa* (*Pavonia odorata* Willd), *Patha* (*Cissampelos pareira* Linn.), *Usheera* (*Vetiveria zizanioides* Linn.), *Kana* (*Piper longum* Linn.), *Shiva* (*Terminalia chebula* Retz.), *Nagara* (*Zingiber officinale* Rosc.), *Utpala* (*Nymphaea nouchali* Burm.), *Dhatri* (*Emblica officinalis*

Gaertn.), *Musta* (*Cyperus rotundus* Linn.), *Chitraka* (*Plumbago zeylanica* Linn.), *Vidanga* (*Embelia ribes* Burm.), and 13th *Lauh Bhasma* (Ferrum). This formulation is indicated in all types of *Jwara* (fever). [4] Ingredients of this *Chandanadi Lauh* are also individually used in the treatment of *Jwara* as they possess Anti-pyretic, Anti-microbial, and Anti-inflammatory properties also.

MATERIAL AND METHODS:

A systematic review was done of various *Ayurvedic Samhitas*, textbooks of *Dravya Guna Vigyan*, *Ayurvedic Pharmacopeia of India* (API) and various research papers to compile all aspects of the *Chandanadi Lauh* formulation, pharmacological action, and its ingredients also.

Method of Preparation of Chandanadi lauh.[3]

Take 1-1 part of each of 12 herbal drugs i.e. *Raktachandana* (*Pterocarpus santalinus* Linn.), *Hriversa* (*Pavonia odorata* Willd), *Patha* (*Cissampelos pareira* Linn.), *Usheera* (*Vetiveria zizanioides* Linn.), *Kana* (*Piper longum* Linn.), *Shiva* (*Terminalia chebula* Retz.), *Nagara* (*Zingiber officinale* Rosc.), *Utpala* (*Nymphaea nouchali* Burm.), *Dhatri* (*Emblica officinalis* Gaertn.), *Musta* (*Cyperus rotundus* Linn.), *Chitraka* (*Plumbago zeylanica* Linn.), *Vidanga* (*Embelia ribes* Burm.) and the *Lauh Bhasma* is taken equal to the combined weight of rest of all the ingredients (i.e., 12 parts). Compound them together and mortar the compound into a fine powder.

Table 1: Description of ingredients

S.no	Ingredients	Botanical name	Family	Part used
1.	<i>Raktachandana</i> ^[6]	<i>Pterocarpus santalinus</i> Linn.	Santalaceae	Heartwood
2.	<i>Hriversa</i>	<i>Pavonia odorata</i> Willd	Malvaceae	Root
3.	<i>Patha</i> ^[7]	<i>Cissampelos pareira</i> Linn.	Menispermaceae	Root

4.	<i>Usheera</i> ^[8]	<i>Vetiveria zizanioides</i> Linn.	Graminae	Root
5.	<i>Kana</i> ^[9]	<i>Piper longum</i> Linn.	Piperaceae	Fruit
6.	<i>Shiva</i> ^[10]	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruit
7.	<i>Nagara</i> ^[11]	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Dried Rhizome
8.	<i>Utpala</i> ^[12]	<i>Nymphaea nouchali</i> Burm.	Nymphaeaceae	Leaves
9.	<i>Dhatri</i> ^[13]	<i>Embllica officinalis</i> Gaertn.	Euphorbiaceae	Fruit
10.	<i>Musta</i> ^[14]	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Tuber
11.	<i>Chitraka</i> ^[15]	<i>Plumbago zeylanica</i> Linn.	Plumbaginaceae	Root
12.	<i>Vidanga</i> ^[16]	<i>Embelia ribes</i> Burn.	Myrsinaceae	Seeds
13.	<i>Lauh</i>	Ferrum	-	<i>Bhasma</i>

Table 2: Rasapanchak of ingredients

S No.	Ingredients	Rasa (Taste)	Guna (Attribute)	Virya (Potency)	Vipaka
1	<i>Raktachandana</i> ^[6]	<i>Tikta, Madhura</i>	<i>Guru, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>
2	<i>Hrivera</i>	<i>Tikta</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>
3	<i>Patha</i> ^[7]	<i>Tikta</i>	<i>Laghu, Teekshna</i>	<i>Ushna</i>	<i>Katu</i>
4	<i>Usheera</i> ^[8]	<i>Tikta, Madhura</i>	<i>Ruksha, Laghu</i>	<i>Sheeta</i>	<i>Katu</i>
5	<i>Kana</i> ^[9]	<i>Katu</i>	<i>Laghu, Snighdha, Teekshna</i>	<i>Anushnasheeta</i>	<i>Madhura</i>
6	<i>Shiva</i> ^[10]	<i>Pancharasa (Kashaya pradhan, Lavan varjit)</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Madhura</i>
7	<i>Nagara</i> ^[11]	<i>Katu</i>	<i>Laghu, Snighdha</i>	<i>Ushna</i>	<i>Madhura</i>
8	<i>Utpala</i> ^[12]	<i>Madhura, Kashaya, Tikta</i>	<i>Laghu, Snighdha, Peechila</i>	<i>Sheeta</i>	<i>Madhura</i>
9	<i>Dhatri</i> ^[13]	<i>Pancharasa (Amla, Pradhan, Lavan Varjit)</i>	<i>Guru Ruksha Sheeta</i>	<i>Sheeta</i>	<i>Madhura</i>
10	<i>Musta</i> ^[14]	<i>Tikta Katu Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>
11	<i>Chitraka</i> ^[15]	<i>Katu</i>	<i>Laghu, Ruksha Teekshana</i>	<i>Ushna</i>	<i>Katu</i>
12	<i>Vidanga</i> ^[16]	<i>Katu Kashaya</i>	<i>Laghu, Ruksha Teekshana</i>	<i>Ushna</i>	<i>Katu</i>
13	<i>Lauh Bhasma</i>	<i>Tikta</i>	<i>Snighdha</i>	<i>Sheeta</i>	-

Table: 3 Karma of ingredients

S.no	Ingredients	Karma
1.	<i>Raktachandana</i>	<i>Pittakapha Shamak, Jwaraghna, jantughna, Dahashamaka</i>
2.	<i>Hrivera</i>	<i>Kaphapitta Shamak Deepana, Pachana, Jwaraghna,</i>
3.	<i>Patha</i>	<i>Tridosahara(Sp. Kaphapitta Shamak), Deepana, Pachana, Jwaraghna, ,</i>

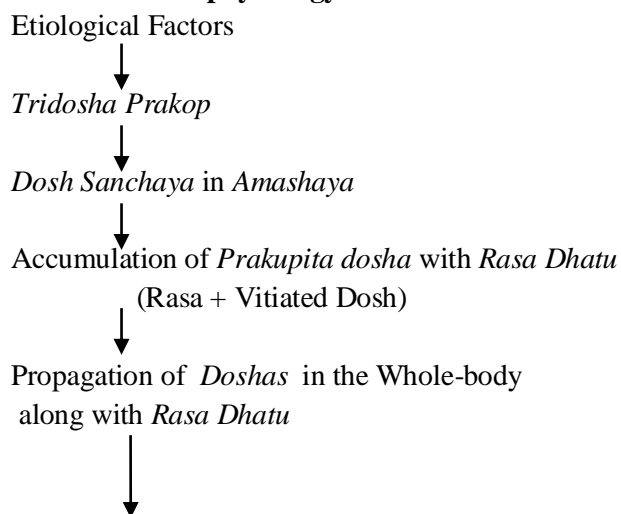
		<i>Krimighna</i> ,
4.	<i>Usheera</i>	Kaphapitta Shamak , <i>Pachana</i> , <i>Jwaraghna</i> ,
5.	<i>Kana</i>	Kapha Vata Shamak <i>Deepana</i> , <i>Pachana</i> , <i>Jwaraghna</i> , <i>Krimighna</i>
6.	<i>Shiva</i>	Tridoshahara <i>Deepana</i> , <i>Pachana</i> , <i>Jwaraghna</i> , <i>Krimighna</i> , <i>Shothahara</i>
7.	<i>Nagara</i>	Kapha Vata Shamak <i>Deepana</i> , <i>Pachana</i> , <i>Jwaraghna</i> , <i>Krimighna</i> , <i>Shothahara</i>
8.	<i>Utpala</i>	Tridoshahara (<i>Sp. VP Shamak</i>) <i>Jwaraghna</i> , <i>Krimighna</i> , <i>Dahashamaka</i>
9.	<i>Dhatri</i>	Tridoshahara (<i>Spec. Pitta Shamak</i>), <i>Deepana</i> , <i>Jwaraghna</i> , <i>Krimighna</i>
10.	<i>Musta</i>	Kaphapitta Shamak <i>Deepana</i> , <i>Pachana</i> , <i>Jwaraghna</i> , <i>Krimighna</i>
11.	<i>Chitraka</i>	Kapha Vata Shamak <i>Deepana</i> , <i>Pachana</i> , <i>Krimighna</i> , <i>Shothahara</i>
12.	<i>Vidanga</i>	Kapha Vata Shamak <i>Deepana</i> , <i>Krimighna</i> ,
13.	<i>Lauh Bhasma</i>	Tridoshahara , <i>Jwaraghna</i> , <i>Krimighna</i> , <i>Shothahara</i>

Table 4: Pharmacological activity of ingredients

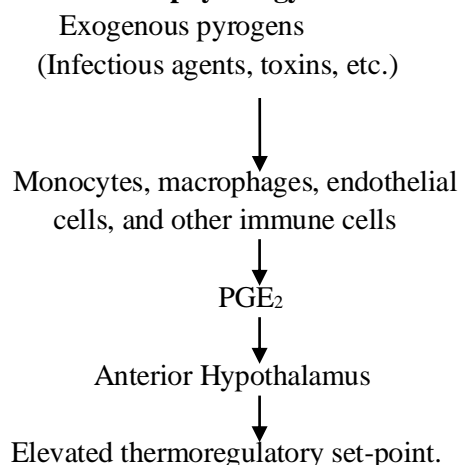
S.no	Ingredients	Pharmacological Activity
1.	<i>Raktachandana</i>	Antibacterial ^[17] , Anti-viral, Antioxidant ^[17]
2.	<i>Hrivera</i>	Antibacterial, Anti-fungal ^[18]
3.	<i>Patha</i>	Antibacterial ^[19] , Antipyretic ^[20]
4.	<i>Usheera</i>	Anti-fungal, ^[21] Anti-inflammatory ^[22]
5.	<i>Kana</i>	Anti-inflammatory ^[23] , Antipyretic ^[24]
6.	<i>Shiva</i>	Anti-bacterial, Anti-fungal, ^[25] Anti-microbial, Anti-pyretic ^[26] and Analgesic activity ^[27]
7.	<i>Nagara</i>	Anti-bacterial, Anti-fungal, Antioxidant, Anti-pyretic ^[28] , Anti-inflammatory, Antioxidant and Analgesics ^[29]
8.	<i>Utpala</i>	Antibacterial ^[30] , Anti-microbial ^[31] , Antioxidant ^[32] ,
9.	<i>Dhatri</i>	Anti-microbial, Anti-inflammatory ^[33] , Antipyretic ^[34]
10.	<i>Musta</i>	Antimicrobial ^[35] , Anti-inflammatory, Anti-pyretic,
11.	<i>Chitraka</i>	Analgesic activity ^[36]
12.	<i>Vidanga</i>	Antibacterial activity ^[37,38] , Antifungal activity ^[39] , Antioxidant ^[40] , Analgesic activity ^[41] ,
13.	<i>Lauh Bhasma</i>	Anti-bacterial ^[42]

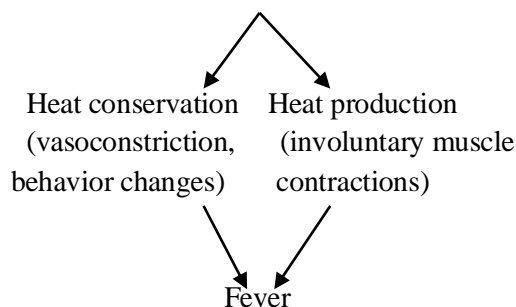
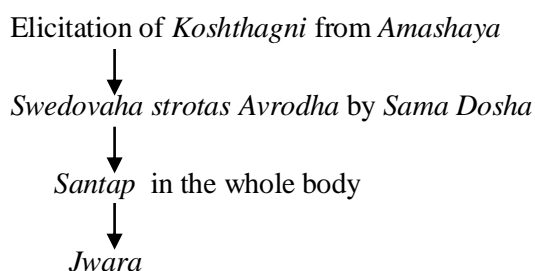
Pathophysiology:

Probable Pathophysiology of Jwara^[43]



Probable Pathophysiology of Fever^[44]





DISCUSSION

PROBABLE PHARMACODYNAMICS OF *CHANDANADI LAUH*

Table: 5 STUDY OF RASA IN COMBINATION

Rasa	No of drugs	Percentage
<i>Madhura</i>	5/13	38.46 %
<i>Amla</i>	1/13	7.69 %
<i>Lavana</i>	0/13	0%
<i>Katu</i>	7/13	53.84 %
<i>Tikta</i>	9/13	69.23 %
<i>Kashaya</i>	5/13	38.46 %

Table: 6 STUDY OF GUNA IN COMBINATION

Guna	No of drugs	Percentage
<i>Guru</i>	3/13	23.07 %
<i>Ruksha</i>	8/13	61.53 %
<i>Laghu</i>	9/13	69.23 %
<i>Teekshna</i>	4/13	30.76 %
<i>Snighdha</i>	4/13	30.76 %
<i>Peechila</i>	1/13	7.69 %
<i>Sheeta</i>	1/13	7.69 %

Table: 7 STUDY OF VIRYA IN COMBINATION

Virya	No of drugs	Percentage
<i>Ushna</i>	5/13	38.46 %
<i>Sheeta</i>	7/13	53.84 %
<i>Anushnasheeta</i>	1/13	7.69 %

Table: 8 STUDY OF VIPAKA IN COMBINATION

Vipaka	No of drugs	Percentage
<i>Madhura</i>	5/13	38.46 %
<i>Amla</i>	0/13	0 %
<i>Katu</i>	7/13	53.84 %

Table: 9 STUDY OF DOSHAGNATA AND KARMA IN COMBINATION

Doshagnata/ Karma	No of drugs	Percentage
Kapha-vata hara	4/13	30.76 %
Kapha-pitta hara	4/13	53.84 %
Tridosahara	5/13	38.46 %
Deepana	8/13	61.53 %
Pachana	7/13	53.84 %
Jwaraghna	11/13	84.61%
Krimighna	10/13	76.92%
Shothahara	4/13	53.84 %

PROBABLE MODE OF THE ACTION OF CHANDANADI LAUH AT DIFFERENT LEVELS:

Acharya Charaka illustrated that certain drug act through *Rasa*; some through their *Gunas*; some through *Virya*; some through their *Vipaka* and some through their *Prabhava*. Based on the physiochemical properties of *Chandanadi Lauh*, the probable mode of action can be understood as follows,

1. At the level of Dosh:- In *Sannipataj Jwara*, *Samaana Vayu*, *Pachaka Pitta*, and *Kledaka Kapha*, these three are the main culprits.

- Because of its *Tikta* (69.23%) (dominant with *Agni*, *Vayu*, and *Akasha Mahabhuta*), *Katu Rasa* (53.84%), and *Laghu* (69.23%), *Ruksha* (61.53%), *Tikshna* (30.76%) *Gunas* and *katu vipaka* (53.84%) it subsides the aggravated *Kapha*
- While, *Madhura rasa* (38.46%) and *Tikshna* (30.76%), *Snigdha* (30.76%), and *Guru* (28.07%) *Guna* counteract *Vata*.
- Due to *Madhura* (38.46%), *Tikta Rasa* (69.23%), *sheeta virya* and *Madura vipaka* (38.46%) it balances the *Pitta*.

2. At the level of Dushya:- From the *Samprapti* (Pathogenesis) of *Roga* (Disease), it is clear that the main *Dushya* involved is *Rasa Dhatu*.

- The combination shows, about 69.23% of total drugs have a *Tikta Rasa* and 53.84% of *Katu Rasa* improves digestion and made first *Dhatu* in proper form, so the combinations will action on the *Rasa Dhatu*.

3. Probable action on Srotas:- • The disease exhibits *Sanga* type of *Sroto Dusti*.

- The combination by the virtue of *Deepana* (61.53%), *Pachanaa* (53.84%), *Laghu* (69.23%), *Tikshna* (63.63%) *guna*, *Tikta* (69.23%), *Katu* (53.84%) *Rasa* and *Ushna* (38.46%) *virya* relieves *Sanga* type of *Dusti*.

4. Probable action on the Agni level:- From the *Samprapti* of *Roga*, it is clear that there is an *Agnimandhya* in *Jwara*.

- By its *Deepana* (61.53%), *Pachana* (53.84%) properties, *Katu* (53.84%), *Tikta* (69.23%) *Rasa*, *Laghu* (69.23%), *Tikshna* (30.76%), *Ruksha* (61.53%) *guna*, *Ushna virya* (38.46%) it stimulates *Jatharagni* which turn by turn stimulates all other *Agnis*.

5. Probable action on Ama level:- An *Ama* means unripe and undigested *Annarasa*. It needs proper *Paka*.

- By its *Deepana* (61.53%), *Pachana* (53.84%) properties, *Katu* (53.84%), *Tikta* (69.23%) *Rasa*, *Laghu* (69.23%), *Tikshna* (30.76%), *Ruksha* (61.53%) *guna*, *Ushna virya* (38.46%), it will stop the further *Ama* production and help into the break the basic pathology. This *Ama Pachanaa* causes *Srotomukha Vishodhana*. Drugs like *Musta*, *Pippali*, *Shunthi*, *Vidanga*, etc. are proven as the best *Ama Pachaka*. So, this formulation will act as *Ama Pachana* and *Agni Deepana*.

6. Probable mode of action from a modern point of view:

Fever is a complex physiologic reaction to disease involving a cytokine-mediated rise in body temperature, generation of acute-phase reactants, and activation of numerous physiologic, endocrinologic, and immunologic systems.^[45] It is clear that most antipyretics work by inhibiting the enzyme cyclooxygenase

and reducing the levels of PGE2 within the hypothalamus. Recently, other mechanisms of action for antipyretic drugs have been suggested, including their ability to reduce pro-inflammatory mediators, enhance anti-inflammatory signals at sites of injury, or boost antipyretic messages within the brain.^[46] *Amalaki* has inhibitory activity on PMNs and platelets, which confirms the anti-inflammatory and antipyretic properties of this plant.^[47] The inhibitory effects of gallic acid on both 5-lipoxygenase (leukotriene production) and cyclooxygenase (thromboxane production) have been reported.^[48] In *Haritaki* it appears that the flavonoid content may also be responsible for its antipyretic activity by inhibiting prostaglandin synthesis in the hypothalamus. A study concludes that the ethanolic extract of *Terminalia chebula* has analgesic and antipyretic activities.^[26] *Patha* has moderate antipyretic activity due to inhibition of the synthesis and/or release of local PGE2 into the preoptic area of the anterior hypothalamus.^[20] The case of *Kana* Piperine has shown inhibitory activity against 5-lipoxygenases and cyclooxygenase-1 in in-vitro studies.^[24] The aqueous extract of *Zingiber officinale* also shows a significant reduction in PGE2 either taken orally or IP.^[28]

CONCLUSION

This review has exhibited a collective understanding of the therapeutic potential, pharmacological and probable mechanism of action of *Chandanadi Lauh*, and its ingredients. This formulation contains mostly those drugs which have *Deepana*, *Pachana*, *Jwaraghna*, *Krimighna*, and *Vishaghna* properties which are prominent with *Tikta*, *Katu*, *Madhura Rasa*, *Laghu*, *Tikshna*, *Ruksha Guna*, *Sheeta virya* and *Katu vipaka*. This compound herbo-mineral formulation manifests actions at multiple levels. The research studies regarding the ingredients of *Chandanadi Lauh* also show results on diseases that arise due to *Ama* and *Rasa dushti*. So, this formulation is to be prescribed in *Jwara*. From the ingredients of *Chandanadi Lauh- Amalaki*, *Usheera*, *Kana*, and *Nagara* are proven to be anti-inflammatory and *Amalaki*, *Haritaki*, *Patha*, *Pippali*, *Nagara*, and *Musta* are an-

tipyretic by experimental studies while *Haritaki*, *Nagara*, and *Vidanga* are proven to be analgesics. In addition to these activities, almost all the drugs have Anti- microbial activity too. *Jwarahara* drugs are considered antipyretics in modern medical science. All the antipyretic drugs, which reduce the elevated body temperature by inhibiting prostaglandin synthesis are also reducing the pain sensation by the same mode of action. Non-steroidal anti-inflammatory drugs (NSAIDs) are most frequently used as antipyretic and analgesic agents in the current scenario but they are associated with many side effects. Indigenous drugs possessing fewer side effects and good therapeutic effects should be looked for as a better alternative for the treatment of pain, inflammation, and pyrexia. Thus with the aforesaid facts and considering the wide therapeutic usage of *Chandanadi Lauh*, it can be concluded that this formulation has Antipyretic, Anti-inflammatory, Anti-microbial and Analgesic properties.

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