Review on *Dhatryadi Churna*: An Ayurvedic Antipyretic Polyherbal Formulation

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Abstract

Introduction: In almost all Samhitas Jvara chikitsa is described with single or compound herbal drugs. Dhatryadi Churna is one such polyherbal churna formulation indicated in jvarachikitsa. But no data is available to know about its efficacy.

Aim and Objectives: To review *Dhatryadi Churna* w.s.r. to its antipyretic activity.

Material and Method: Relevant references were reviewed with respect to Dhatryadi Churna described in Samhitas and various Ayurveda texts such as Brihatrayee, Laghutrayee bhaishajyaratnavali etc. All the references were collected and reviewed thoroughly.

Observation and Results: Total 7 references with the name Dhatryadi Churna and Amalkyadi churna are recorded in various Samhitas and Ayurveda texts indicated in jvara chikitsa. Out of the total 5 ingredients, significant antipyretic activity in experimental animals in different dosages found in *Emblica officinalis, Terminalia chebula, Piper longum and Plumbago zeylenica.*

***Conclusion**:* Based onPharmacological properties and experimental studies conducted on individual drugs proved that Dhatryadi churna is a effective antipyretic formulation and can be used safely for treating Jvara.

Keywords: *Jvara, Dhatryadi Churna, Antipyretic activity.*

Introduction

In the Ayurvedic classics various forms of formulations are portrayed to achieve healthy and balanced life. *Panchavidha kashaya kalpana* represents the basic preparations upon which, in later period, many pharmaceutical method were developed for various medicine preparation to compete with need of all time availability, palatability, longer shelf life and efficacy. [1-2] There are more than 30 forms of formulations which are used by physicians in daily practice. Among them, herbal powder is one of the most accepted classical dosage form of Ayurvedic formulation advocated in various disease conditions. *Churna* in general is the fine powder of a completely dry drug, which is filtered through a clean cloth.[3]

In almost all Samhitas Jvara chikitsa is described with single or compound herbal drugs which includes various forms of formulations such as avaleha, arishta, vati etc. Dhatryadi Churna (DC) is one such compound powder formulation described in Ayurveda compendia. This formulation contains fine powders of *Amalaki*

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(*Emblica officinalis* Gaertn.), *Haritaki* (*Terminalia chebula* Retz.), Saindhav (Rock salt), *Pippali* (*Piper longum* Linn.) and *Chitraka* (*Plumbago zeylenica* Linn.) in equal proportion and indicated in the treatment of fever. There are many other references available where DC is described for treating fever and various other conditions such as loss of appetite,lack of digestive fire, eye diseases and constipation. Hence attempt is made in this paper to review DC described in various Samhitas and Ayurveda texts w.s.r. to its antipyretic activity.

Material and Method

Relevant references were reviewed with respect to DC described in Samhitas such as Brihatrayee and Laghutrayee andvarious Ayurveda texts such as Yoratnakar, Bhaishajya ratnavali etc. Published research papers related to pre clinical and clinical studies showing antipyretic activity of DC and individual drugs were searched. References were also searched for Amalkyadi churna and Amalkyadi gana as Amalki and Dhatri is synonymous.

Observation and Results

During the literary search total seven references were identified with the name DC and three were found as Amalkyadi churna (AC). The very first reference of Dhatryadi churna is found described in Sushruta Samhita in Dravyasangrahniya Adhyaya. Later it is described in other Samhitas and Ayurveda texts such as Sushruta samhita, Astanga Hridaya, Astanga Sangraha, Bhavprakash and. In Sushruta Samhita it is described with the name as *Amalakyadi gana*,in Sharangdhara Samhitait is described under the name *Amalakyadi churna* and in Bhaishajya Ratnavali as *Amalakyadi kwatha.* The ingredients and indications are compiled in Table 1.

Table 1: References of *Dhatryadi churna* in various Samhitas and Ayurveda Texts.

S.N.	Reference	Name	Ingredients	Indications
1.	Sushruta Samhita[4]	Amalkyadi Gana	Amalaki, Haritaki, Chitrak, Pippali	Jvara, Mandagni Netrya, Kaphanashak
2.	Ashtang Hriday[5]	Dhatryadi churna	Amalaki, Haritaki, Saindhav, Chitrak, Pippali	Jvara, Mandagni
3.	Ashtang samgraha[6]	Dhatryadi churna	Amalaki, Haritaki, Saindhav, Chitrak, Pippali	Jvara, Mandagni Vibandha
4.	Sharangdhar samhita[7]	Amalakyadi churna	Amalaki, Haritaki, Saindhav, Chitrak, Pippali	Jvara, Arochaka, Deepan, Pachana
5.	Yogartnakar[8]	Dhatryadi churna	Amalaki, Haritaki, Saindhav, Chitrak, Pippali	Jvara, Mandagni
6.	Bhavaprakash[9]	Dhatryadi churna	Amalaki, Haritaki, Saindhav, Chitrak, Pippali	Jvara, Mandagni Vibandha
7.	Bhaishajya ratnavali[10]	Amalakyadi kwatha	Amalaki, Haritaki, Chitraka, Pippali	Jvara, Deepan, Pachan, Kaphahar

Table 2: Pharmacological properties of Ingredients of *DC*

S.N	Ingredient	Rasa	Guna	Veerya	Vipak	Karma
1.	Amalaki [11] (Emblica officinalis.Burm.)	Pancharasatmak except lavan rasa	Laghu, Ruksha	Sheeta	Madhura	Vayahsthapana (C.S) Dahaprashaman Rasayan (B.P)[12]
2.	Haritaki[13] (Terminalia chebula. Retz)	Pancharasatmak except lavan rasa	Laghu, Ruksha	Ushna	Madhura	Shothahara, Kushthaghna Vishamjwaraghna (B.P)[14]
3.	Saindhav[15] (Sodii chloridum)	Lavan, Madhura	Snigdha, Sukshma Laghu	Sheeta	Madhura	Sukshma, Avidahi[16]
4.	Chitrak[17] (Plumbago zeylanica Linn.)	Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Deepaniya, Shulaprashaman Padushan[18]
5.	Pippali[19] (Piper longum Linn.)	Katu	Laghu, Snigdha, Tikshna	Anushna	Madhura	Deepaniya viryavardhak, pittashamak [20]

Researches on ingredients of DC.

Table 3: Experimental studies conducted on individual drugs of DC.

S.N	Drug Name	Part used	Type of Study	Reference
1.	*Emblica officinalis.*Burm.	Fruit powder	Experimental study- anti-pyretic and analgesic activities	Perianayagam, J.B et al[21]
2.	*Terminalia chebula.* Retz.	Fruit powder	Experimental study -*antipyretic activity*	Shukla P. et al [22]
3.	*Plumbago zeylanica* Linn.	Leaf extract	Experimental study *analgesicanti-pyretic activity*	Mittal V et al [23]
4.	*Piper longum* Linn.	Fruit powder	Experimental study -*anti-pyretic activity*	Evan Prince Sabina et al[24]

Pharmacologicalstudies:

Emblica officinalis. **Burm (Amalaki):** Study conducted by Perianayagam *et al*., on extracts of *Emblica officinalis* fruits observed potent anti-pyretic and analgesic activities. An ethanolic extract and aqueous extract (500 mg/kg) administered in a single dosedemonstrated considerable reduction in temperature in rats induced by brewer's yeast. Both the extracts brought outprominent inhibitory outcome on acetic acid-induced writhing response in mice in the analgesic test. The contents likephenolic compounds, tannins, alkaloids, carbohydrates and amino acids are established to be having antipyretic effect.[21]

Terminalia chebula. **Retz (Haritaki):** The flavonoids content of Terminalia chebula may also be responsible for its antipyretic activity by inhibiting prostaglandin synthesis in hypothalamus.

Shukla P*et al*., assessed the antipyretic activity of ethanolic extract of *Terminalia chebula* (EETC). The antipyretic activity was assessed by Brewer's yeast-induced pyrexia in Albino rats (120-130 g) of either sex. Single dose administration of 400 mg/kg and 600 mg/kg EETC showed substantial antipyretic activity, as compared to the standard paracetamol group. Thus this study proved significant antipyretic activity with ethanolic extract of *Terminalia chebula* Retz.[22]

Plumbago zeylanica **Linn*. (Chitrak):*** Mittal et al studied the antipyretic activity of ethanol extracted from dried callus and roots of *Plumbago zylenica*. Both the extracts were administered in mice at doses of 100,200 and 400 mg/kg to evaluate the peripheral and central analgesic activity by glacial acetic acid induced writhing and tailimmersion model respectively. Root extract significantly (P<0.01) reduced the writhing count at a dose 200 mg/kg whereas callus extract modified the pain threshold appreciably at 400 mg/kg. Root extract enhanced the reaction time significantly (P<0.01) in tail immersion model at 400 mg/kg. while callus extract failed to change the reaction time significantly during the observation period.[23]

Piper longum **Linn. (*Pippali*):** Extracts of *Piper longum* fruits possess potent anti-pyretic activities. The pyrexia was induced in experimental animal Mice by yeast injection. Piperine (20 and 30 mg/kg) and indomethacin (10mg/kg) were administered in single dose showed a significant (p<0.05) reduction in rectal pyrexia, similar to standard drug indomethacin without any adverse effects.[24]

Discussion

Total seven references were found with the name Dhatryadi churna or Amalakyadi churna. As Dhatri and Amalaki is synonymous. All the reviewed Samhitas described DC or AC with five ingredients as *Amalaki* (*Emblica officinalis* Gaertn.), *Haritaki* (*Terminalia chebula* Retz.), Saindhav (Rock salt), *Pippali* (*Piper longum* Linn.) and *Chitraka* (*Plumbago zeylenica* Linn.) in the treatment of fever and associated symptoms such as loss of appetite, lack of digestive fire and constipation.

Jvarahara drugs are known as antipyretics in medical science. Drugs which reduce the elvated body temperature by inhibition of prostaglandin synthesis are termed as antipyretic drugs[25]. In Ayurveda Samprapti (pathogenesis) of fever is described on the basis of state offactors responsible for digestion and metabolism/ transformation and dosas. According to Sushruta, Dosas aggravates due to consumption of causative factors and during respective time spreads to entire body and produces fever. Aggravated Dosas enters the Amasaya and combines with Agni, accompanying the Rasa, blocks the channels of Rasa and Sweda, impairs the function of Agni and expels out the Agni from the site of digestion and spread to all over body and gives rise to

Jvara. Dosas exhibit its exacerbated symptoms and signs and brings abnormality in the skin, nail, eyes, tongue, urine and faeces[26]. Acharya Charaka recommended *Langhana* (fasting therapy) as a first line of treatment for Jvara followed by digestive drugs[27].DC is such a polyherbal formulation with a perfect blending of *deepana, pachana* and *jvarahara* drugs. Antipyretic action of Dhatryadi Churna can be well understood by knowing the pharmacological properties and antipyretic experimental studies of its ingredients.(Table 2 and 3)

Probable mode of action of *Dhatryadi Churna* in *Jvara:* *Dhatryadi Churna*prominently consists of *Katu-Tikta-Lavan* rasa*, Madhura Vipaka*, *Sheeta Veerya* and *Laghu*, *Ruksha*, *Snigdha, Tikshnaguna*. Its *Katu-Tikta-Lavan*rasas digest and pacify Kaphapradhana doshas present in rasadhatu and correct aruchi (loss of appetite) and vishamagni (The state in which the action of Agni is rendered erratic either excessive or decreased, variable from time to time, due to the dominant influence of Vata). Due to its katu rasa and tikshna *Guna* it causes amapachana (substances having capacity to digest uncooked food material) and due to its laghu and tikshna property it causes srotoshodhana (purification of structural or functional channels meant for the transportation of Dhātus undergoing transformation) of rasagata doshas. Being ushna and tikshna, it acts as Svedajanana (substances that causes excessive sweating)[28]. Saidhava lavan commonly known as rock salt acts as a catalyst, help to enhance the action of other drugs in the formulation by deep penetration in the body after administration of drug. It also helps in developing the taste in the mouth[29]. Thus through all these properties of *DC*, Agni becomes normal leading to the subsidence of fever.

No clinical studies were found on DC regarding its antipyretic activity. Instead the individual ingredients of DC are reported to have antipyretic activities as depicted in table no 3. Hence combination of all these ingredients as DC may show synergistic effect and strong antipyretic activity. Various scientific studies conducted on individual ingredients of DC/AC showed that plants possess a range of phytochemicals such as alkaloids, flavonoids, glycosides, terpenoids, steroids, proteins and tannins which could lead to potential antipyretic activity[30]. Nabanita Roy et al conducted a study on phytochemical analysis of Amalkyadi churna revealed the presence of proteins, saponins, phenols, glycosides, tannins, alkaloids and fixed oil[31]. Mradu Gupta et al also confirmed in his research that flavonoids and its related compounds present in Jvarahar mahakashay preparation exhibit inhibition of archnoid acid Peroxidation which helps in decreasing prostaglandin levels thus reducing the fever. The results of the literary search of individual drugs of DC show antipyretic activity.However further studies are required on DC to elucidate the mechanism of inhibiting prostaglandin synthesis in hypothalamus which is responsible for reducing fever.

Conclusion

Literary review revealed that *Dhatryadichurna* is a compoundpolyherbal preparation containing *Katu tikta Lavan rasa, Madhura Vipaka*, *Sheeta Veerya* and *Laghu*, *Ruksha*, *Snigdha* and *Tikshnaguna*. Pharmacological properties and experimental studies conducted on individual drugs proved that *Dhatryadichurna* can be a potent antipyretic poly herbal formulation and useful for treating *jvara* safely.

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