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Chronic Pain Management by Analgesic Effects of *Shoolprashman Mahakashaya* Herbal Drugs: A Conceptual Review

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ABSTRACT

Chronic pain can lead to physical limitations, emotional suffering, and social isolation, all of which can seriously impair a person's quality of life. In addition, poor chronic pain diagnosis and management can worsen opioid use disorders and increase the risk of morbidity and mortality among people who suffer from it. Consequently, healthcare professionals must understand chronic pain and implement appropriate treatment strategies. Due to the discovery of analgesic nephropathy and other systemic illnesses brought on by excessive and prolonged use of analgesics, *Shoolprashman Mahakashya*, an alternate method of managing chronic pain of unknown cause, is referenced in Ayurveda. This article focuses on *Shoolprashman Mahakashaya's* herbal drug phytoconstituent, which acts as an analgesic, and its mode of action on the pain and inflammatory markers.

Key words: *Chronic pain, Shoolprashman Mahakashaya, Herbal Drug*

INTRODUCTION

An individual's quality of life can be severely compromised by chronic pain, which can result in physical limits, emotional misery, and social isolation. Furthermore, inadequate diagnosis and treatment of chronic pain can exacerbate opioid use disorders and raise the rates of morbidity and death in those who experience it. As a result, medical practitioners need to comprehend chronic pain and use the right treatment plans.[1]

The majority of people who suffer from chronic pain report feeling several different kinds of pain at once.[2] For example, someone who suffers from persistent back discomfort may also have fibromyalgia. Furthermore, a sizable fraction of individuals with chronic pain also have major depressive disorder and generalized anxiety disorder, with more than 67% reporting concomitant mental health conditions.[3][4] There are many different classifications and types of pain, including neuropathic, nociceptive, musculoskeletal, inflammatory, mechanical, and psychogenic pain.

The commonly accessible medications with anti-inflammatory and analgesic effects are called nonsteroidal anti-inflammatory medicines (NSAIDs). Nephrotic proteinuria and decreased renal function could therefore happen.[5] The most probable painkillers to damage the kidneys are those that contain caffeine or codeine along with two or more medications (e.g., aspirin and acetaminophen combined). Codeine-containing painkillers need a prescription. Long-term chronic kidney problems may result from using one or more of these medications on a daily basis. We refer to this as analgesic nephropathy.

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Shoolprashman Mahakashya,[6] an alternative approach to treating chronic pain of unknown etiology, is mentioned in Ayurveda due to the discovery of analgesic nephropathy and other systemic disorders caused by excessive and continuous use of analgesics and their derivatives. The analgesic phytoconstituent, a herbal remedy developed by *Shoolprashman Mahakashaya*, and its mechanism of action on the pain and inflammatory markers are the main topics of this article.

Aim and Objective

To review *Shoolprashman Mahakashaya's* herbal drug phytoconstituent, which acts as an analgesic and anti-inflammatory, and its mode of action on the pain neurotransmitters and inflammatory markers.

Materials and Methods

Classical texts of Ayurveda with commentary and a variety of scientific search databases including Google Scholar, NCBI, PubMed, and Science Direct.

Observations and Results

Table 1: *Shoolprashman Mahakashaya's Rasapanchak* (Ayurvedic Analgesic Drugs)[7]

SN	Herbal Drug Name	Scientific name	Family	Part Used	*Rasa*	*Guna*	*Virya*	*Vipak*
1.	*Pippali*	*Piper longum*	Piperaceae	Fruit	*Katu*	*Laghu, Snigdha,Tikshna*	*Anushna Sheeta*	*Madhur*
2.	*Pippali Mool*	*Piper longum*	Piperaceae	Root	*Katu*	*Laghu, Ruksha*	*Ushna*	*Katu*
3.	*Chavya*	*Piper retrofractum*	Piperaceae	Fruit	*Katu*	*Laghu, Ruksha Tikshna*	*Ushna*	*Katu*
4.	*Chitrak*	*Plumbago zeylanica*	Plumbaginaceae	Root	*Katu*	*Laghu, Ruksha Tikshna*	*Ushna*	*Katu*
5.	*Shunthi*	*Zingiber officinale*	Zingiberaceae	Root	*Katu*	*Laghu, Snigdha*	*Ushna*	*Madhur*
6.	*Marich*	*Piper nigrum*	Piperaceae	Fruit	*Kat*	*Laghu, Ruksha Tikshna*	*Ushna*	*Katu*
7.	*Ajmoda*	*Cuminum cyminum*	Apiaceae	Seed	*Katu, Tikta*	*Laghu, Ruksha*	*Ushna*	*Katu*
8.	*Ajaji*	*Cuminum cyminum*	Apiaceae	Seed	*Katu*	*Laghu, Ruksha*	*Ushna*	*Katu*
9.	*Ajgandha*	*Cleome gynandra*	Capparaceae	Seed	*Katu*	*Laghu, Ruksha,Tikshna*	*Ushna*	*Katu*
10.	*Gandeer* - The group's 10th herb, i.e., *Gandeer* has been omitted in the study due to having controversial identification.							

Table 2: *Shoolprashman Mahakashaya's* Herbal Drug Chemical constitute or Extract and their respective effect on Pain neurotransmitters and inflammatory markers.

Scientific name	Chemical constitute or Extract	Effect on Pain and inflammatory markers
Piper longum Fruit	Piperine	1. Inhibit prostaglandin and leukotrienes COX-1
		effect and thus exhibit anti-inflammatory activity.[8]
Piper longum Root	Aqueous extract of Root	1. Three different doses (200, 400, and 800mg/kg) were given to mice & rats orally. Significant pain-relieving effect equivalent to NSAIDS drug in doses 400 & 800mg/kg was observed.[9]

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P. Retrofractum	Piperine Ethanol extract	Piperine was studied at concentrations of 10 to 100 µg/ml in a dose-dependent manner for Anti-inflammation activity, the expression of IL6 & MMP13 was inhibited & the production of PGE2 was reduced.[10] It was noted that the effect was weaker than acetosal. The analgesic activity was due to decreased prostaglandin synthesis.[11]
Plumbago zeylanica	Hydro-alcoholic extract	National Institute of Ayurveda, Jaipur where 4 mg of fine powder was given to 15 patients twice a day with lukewarm water as an adjuvant for 15 days resulting in significant improvement in the pain, swelling, tenderness, and dizziness caused due to inflammation of the body parts.[12]
Zingiber officinale	Gingerol, Shogaol, and other structurally related substances	1. Inhibit prostaglandin and leukotriene biosynthesis by suppressing 5 lipoxygenase or prostaglandin synthetase & also inhibit pro-inflammatory cytokines syntheses such as IL 1, TNF α, and IL 8.[13,14] 2. Another investigation in macrophages showed that shogaol can reduce inflammatory iNOS and COX 2 gene expression.[15]
Piper nigrum	Hexane and ethanol extract	Maximum analgesic effect by writhing method.[16]
Apium graveolens	Ethanolic extract	Ethanolic extract on the seed of A. graveolens Linn. by acetic acid-induced writhing and hot plate method showed significant analgesic activity. Some of its compounds show anti-inflammatory and analgesic effects.[17]
Cuminum cyminum	Ethanolic extracts	1. Marked effect on several inflammatory biomarkers, such as adiponectin, and high sensitivity C-reactive protein (hs-CRP), and TNF-α.[18] 2. Significantly suppresses the mRNA expressions of inducible nitric oxide synthase (iNOS), cyclooxygenase (COX-2), interleukin- IL-1, and IL-6.[19]
Cleome gynandra	Methanolic extract	Antinociceptive and anti-inflammatory activities, which are due to different flavonoids such as luteolin, rutin, hesperidin, and quercetin.[20]

DISCUSSION

1. One of the several analgesic herbal formulations used in Ayurveda medicine is *Shoolprashman Mahakashaya.* Chronic Pain is mostly caused by a vitiated *Vata Dosha*, according to Ayurveda. *Shoolprashaman Mahakashaya* has the following ingredients: *Katu* & *Tikta Rasa, Laghu, Tikshna, Ruksha* & *Snigdha guna, Ushna Virya, Katu Vipaka, Shothaghna*, and *Shoolghna*. These substances have a *Karma* in nature and have a clear soothing effect on all *Doshas*, particularly *Vata* and *Kapha*, which allows it to actively act on chronic pain.
2. Similarly, Z. officinale Roscoe, piperine, is present in all of *Shoolprashaman Mahakashaya's* constituents and their chemical compositions, including the fruit and root of P. longum Linn. and

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P. zeylanica Linn. has analgesic and anti-inflammatory properties due to the inhibition of prostaglandins and other inflammatory mediators by the ethanol extract, gingerol, and shogaol-containing fruit extract.

3. C. cyminum Linn. oil and aqueous and hydro-alcoholic extract have analgesic and anti-inflammatory properties.
4. C. gynandra Linn. leaf and methanolic extract have anti-inflammatory properties. Studies on the anti-inflammatory and analgesic properties of ginger oil, black pepper, C. gynandra Linn., and A. graveolens seeds have been conducted both in vitro and in vivo. Analgesic and anti-inflammatory effects have also been demonstrated in a clinical trial using Z Officinale Roscoe and P. zylanica Linn. fine powder supplementation.

CONCLUSION

After reviewing the ingredients in their hydro-alcoholic, ethanolic, and methanolic extracts, this article concludes that the ingredients of *Shoolprashman Mahakashaya* mentioned in Charak Samhita have anti-inflammatory and analgesic activities as already established by various research and studies. Hence it is concluded *Shoolprashman Mahakashya*, alternative method of managing chronic pain of unknown origin.

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