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A Conceptual Study on the Effect of Palasha Gudavarti in Post-Operative Pain Management of Anorectal Surgeries

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ABSTRACT

Post-operative pain management is a crucial component of recovery, particularly following anorectal surgeries, where pain can significantly hinder healing. The prevalence of postoperative pain after 24 hours of surgery is 55.3%, after 48 hours is 34.7 % and of moderate to severe post-operative pain is 13 % after 24 hours, and 11.7% after 48 hours[1] .Ano rectal pathology amenable to ambulatory surgery includes anal fissures, warts, fistulas, hemorrhoids,abscess and small neoplasms. Quick recovery after ano rectal surgery can be successful only with effective post-operative pain control. Acharya Sushruta recommends the use of Yashtimadhu siddha ghritha application over the operated area[2]. Additionally , he advocates the application of shoolahara dravyas and vatahara dravyas processed with ghritha to the surgical site for effective pain relief. Planning a cost effective, reliable, time tested and technically simple management is the need of this modem era. The present study explores the possible analgesic, anti-inflammatory, and wound-healing properties of *Palasha Gudavarti*, offering an alternative approach to conventional pain management techniques.

Keywords: Palasha, Gudavarti, Anal Fissures, Fistula, Warts, Fistulas, Hemorrhoids, Abscess

INTRODUCTION

Anorectal surgeries are commonly performed to address conditions such as hemorrhoids, fissures, fistulas, warts, and abscesses. While these surgeries offer significant relief from symptoms, they are often accompanied by post-operative pain, discomfort, and inflammation. Effective pain management is essential for patient recovery and the prevention of complications such as wound infection or delayed healing. In modern medicine, pain management typically involves the use of non-steroidal anti-inflammatory drugs (NSAIDs) and opioids. However, these can have side effects, including gastrointestinal distress,Rectal irritation,, and Drowsiness[3]. Ayurveda, with its holistic approach, offers potential solutions for managing post-operative pain. This article focuses on *Palasha Gudavarti*, a medicated suppository derived from *Palasha*, which has been used for its Analgesic, anti-inflammatory and wound-healing properties[4]. This conceptual study aims to explore the role of *Palasha Gudavarti* in post-operative pain management after anorectal surgeries.

GUDAVARTI IN PAIN MANAGEMENT:

In Ayurveda, the concept of *Gudavarti* refers to a type of medicated suppository used primarily for local

treatments in the rectal region. Suppositories prepared with medicinal herbs are believed to provide localized effects, including pain relief, reduction of inflammation, and support for tissue healing. The concept of "*Varti"* or suppository finds mention in ancient Ayurvedic texts such as *Sushruta Samhita*, where they are recommended for treating various anorectal conditions.

Palasha (Butea monosperma), commonly known as the Flame of the Forest, is a medicinal plant well known in Ayurveda. It is classified under the "*Shoolaghna"* (analgesic) and "*Shothahara*" (anti-inflammatory) categories. The plant contains bioactive compounds such as flavonoids, tannins, and triterpenoids, which contribute to its medicinal properties. When formulated into a *Gudavarti*, it is introduced directly into the rectal area,where it dissolves and releases its active compounds at the site of pain and inflammation.

PALASHA GUDAVARTI:

INGREDIENTS:

A)Ghritha processed with PALASHA[5,6,7]:

Botanical Name: Butea monosperma

Family:Fabaceae

Phytochemistry: Barks contains Kino-Tannic acid,Butrin,Butolic acid,

Gallic acid,pyrocatechin,Allophanic acid,Histidine etc Pharmacodynamics:

Rasa: Kashaya, Katu-Tikta.

Fig 1: Palasha

Guna: Ushna, Sara, Laghu, Rooksha.

Veerya: Ushna.

Vipaka: Katu..

Karma:, Shulahara, Dahahara, Gudarogahara and Vranahara

Part used: , Bark , Leaves.Gum, Seeds, Flowers

Indications: Vrana, Gulma, Arsha, Bhagna, Grahani, Krimi, Vatarakta, Kushta.

B)SIKTHA(BEE WAX)[8] :

It exists in the pollens and surface of leaves of many plants, chiefly the wax myrtte. It is extracted by the honey bees and used in the construction of honey comb.

Constituents : Bees wax contains hydrocarbons in 12- 15%, Cerolein, Cerinor, Cerotic acid which crystallizes in boiling alcohol, myricin or myrcil and melissyl palmitate , ceryl alcohol etc.

Myricin is a principle constituent which is crystalline, soluble in hot water, almost insoluble in boiling alcohol. By the action of potash it is converted into palmitic acid and myricil alcohol.

Qualities of *Sikta:*

Rasa– *Madhura*

Guna– *Snigdha, Picchila*
Karma– *Sandhankar, Vrunaropaka*
Indications – *Bhagna, Vrana ropaka, Kandu, Vata rakta*

Fig 2:Siktha (Bee wax)

C) COCOA BUTTER[9]:

Cocoa butter or theobroma oil is an oleaginous base that softens at 30 degree celcius and melts at 34 degree Celsius. It is a mixture of liquid triglycerides entrapped in network of crystalline, solid triglycerides. Palmitic and stearic acid make up the saturated fatty acids. Cocoa butter contains four different forms, alpha, beta, and gamma ; the beta form is the most stable and is desired for suppositories.

TECHNIQUE ADOPTED: Fusion molding technique

Preparation:

Palasha Ghritha[10], Cocoa butter and Bee wax is taken in the ratio of 10:7:3. The cocoa butter and Bee wax is then separately liquified on a hot water bath. After liquefaction they are taken off from the hot water bath and filtered. Then the mixture of *Palsha ghitha* ,cocoa butter and bee wax will be added into a glass jar and stirred thoroughly for about 5-10 minutes so that the entire mixture becomes homogenous. The molds are made sterile using surgical spirit. A 10ml syringe is used to draw the mixture prepared and the mixture is instilled into the calibrated molds
carefully without letting air bubble occupy in between. This

Fig 3:Fusion molding procedure is carried out in a single stretch with every mold. Once the mold gets filled, the mold is then refrigerated for 60 minutes. After refrigeration, the molds are carefully opened, the suppositories collected and packed in sterile air lock covers. The entire procedure is carried out under necessary sterile conditions.

Action/Benefits:

- Flavonoids and Tannins present in *Palasha* exhibits significant analgesic properties.
- Anti-inflammatory action helps to minimize post-surgical tissue damage, which in turn reduces the intensity of pain.

- *Palasha* has been shown to support the production of collagen, a protein that is essential for tissue repair and wound healing. This enhances the recovery of the surgical site and reduces pain caused by surgery.
- By preventing infections in the post-surgical wound, *Palasha* reduces the risk of complications that can exacerbate pain and delay healing.
- The antioxidant properties of *Palasha* neutralizes free radicals and reduce oxidative stress at the site of surgery. This antioxidant activity helps protect the tissue from damage, leading to a faster recovery and reduced pain levels.

GUDAVARTI (RECTAL SUPPOSITORY)-ABSORPTION AND RELEASE MECHANISM [11]:

The rectal routes avoid hepatic first-pass effect. The rectum offers a relatively constant environment for drug delivery provided the drug is presented in a well absorbable form. The release rate of a drug dose from suppositories is affected by characteristics of the excipients (melting temperature and rate viscosity at rectal temperature hydro-lipophilic characteristics) hence with a difference in drug availability.

Insertion of a suppository into the rectum results in a chain of events leading to the absorption of the drug. Depending on the character of its vehicle , a suppository will melt on the mucous layer. Since the volume of rectal fluid is so small, dissolution of the complete vehicle will be difficult and requires extra water. Independent of the vehicle type, drugs dissolved in the suppository will diffuse out towards the rectal membranes through osmosis. Suspended drugs will first need to leave the vehicle (if it is water immiscible) under the influence of either gravity or motility movements and then begin to dissolve in the rectal fluid. Dissolved drug molecules will have to diffuse through the mucous layer and then into and through the epithelium forming the rectal wall. The process of absorption will be by passive diffusion, as it is throughout the whole gastrointestinal tract for almost all drugs.

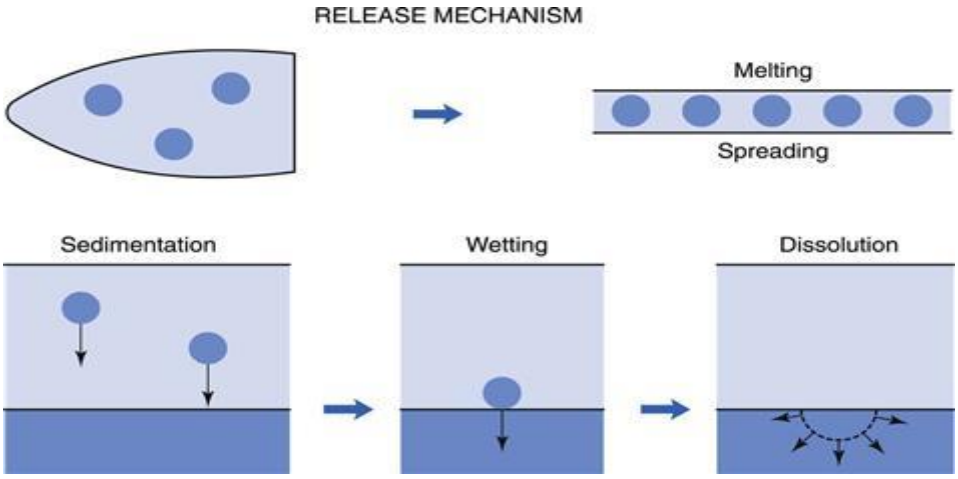
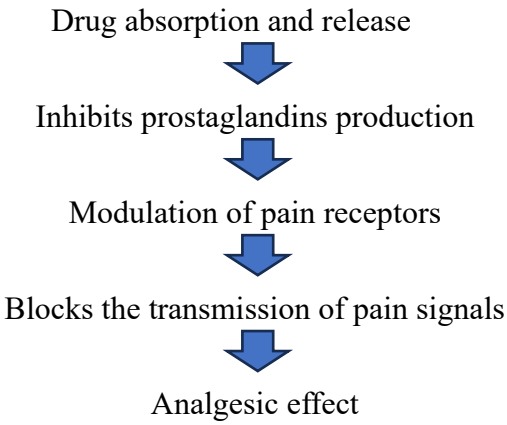


Fig 4 :Process of drug release from a suppository in which drug is in suspension.

PROBABLE MODE OF ACTION :

The effectiveness of *Palasha Gudavarti* in post-operative pain management, especially after anorectal surgeries, can be explained through its probable mode of action based on its pharmacological properties. This involves the combined effects of its chemical constituents, its localized delivery mechanism, and its influence on pain pathways, inflammation, and tissue healing.

1. Analgesic Action:Flavonoids and Tannins present in *Palasha* exhibit significant analgesic properties. These compounds may act by:



2. **Anti-inflammatory Effect:** In anorectal surgeries, post-operative pain is often closely associated with tissue inflammation. *Palasha Gudavarti* reduces this inflammation through its:

- Cyclo-oxygenase (COX) Inhibition: Like NSAIDs, the active compounds in *Palasha* inhibit COX enzymes, particularly COX-2, which are responsible for producing pro-inflammatory prostaglandins. This results in reduced swelling, redness, and local irritation.
- Suppression of Pro-inflammatory Cytokines: The anti-inflammatory agents in *Palasha* reduce the secretion of cytokines like TNF-α, IL-1, and IL-6, which are involved in the inflammation process following tissue injury. This anti-inflammatory action helps to minimize post-surgical tissue damage, which in turn reduces the intensity of pain.

3. **Wound Healing and Tissue Repair:** *Palasha* is known for its ability to promote tissue regeneration and wound healing. In the context of anorectal surgeries, where there is significant tissue disruption, the wound-healing properties of *Palasha Gudavarti* plays a crucial role in:

- **Astringent Action:** The tannins in *Palasha* act as natural astringents, helping to contract the tissues and control bleeding, which aids in reducing discomfort and preventing infection.
- **Collagen Synthesis Promotion:** *Palasha* has been shown to support the production of collagen, a protein that is essential for tissue repair and wound healing. This enhances the recovery of the surgical site and reduces pain caused by tissue damage.
- **Antimicrobial Properties:** By preventing secondary infections in the post-surgical wound, *Palasha* reduces the risk of complications that can exacerbate pain and delay healing

4. **Antioxidant Action:** Post-operative inflammation and tissue damage can lead to oxidative stress, which contributes to prolonged healing and pain. The antioxidant properties of *Palasha* neutralize free radicals and reduce oxidative stress at the site of surgery. This antioxidant activity helps protect the tissue from further damage, leading to a faster recovery and reduced pain levels.

DISCUSSION:

This conceptual study explores the potential role of *Palasha Gudavarti* in post-operative pain management. *Palasha* recognized in Ayurveda for its anti-inflammatory, analgesic, and wound healing properties, offers a novel approach to address post-surgical pain. The use of *Gudavarti* allows for localized, sustained drug delivery, which may provide targeted pain relief and reduce systemic side effects commonly

associated with conventional analgesics such as opioids and NSAIDs.The theoretical basis for *Palasha Gudavarti's* efficacy lies in its bioactive compounds that exhibit anti-inflammatory and antimicrobial properties. These attributes suggest not only pain relief but also the potential to enhance post-operative healing and reduce the risk of infections.

CONCLUSION:

Palasha Gudavarti in post-operative pain management is multifaceted, involving analgesic, antiinflammatory, wound-healing, and antioxidant effects. Its targeted application in the anorectal region through a suppository form ensures localized relief from pain and inflammation, and thereby enhances wound healing. By reducing the need for systemic medications and minimizing complications, *Palasha Gudavarti* offers a holistic and effective approach for managing postoperative pain following anorectal surgeries while more clinical research is needed to fully validate its efficacy and safety.This holds the potential to complement and even replace conventional pain management strategies, leading to better patient outcomes.

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