Review Article

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A REVIEW OF ANALGESIC ACTION OF PATHADI YOG IN TREATMENT OF PILES

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ABSTRACT

Piles are very embarrassing to talk about; anyone can get piles and suffer pain on defecation. Ayurveda compares this disease to an enemy as it gives suffering. External and internal uses of (allopathic) analgesic medicines produce adverse effects. Hence herbal drugs treatment have created interest among physicians due to clinically proven effects and lack of adverse effects. Pathadi yog is specifically prescribed for pain in anus due to piles. We use this Pathadi yog in our daily practice and it is found that it subside pain in anus. The current review focus on Pathadi yog and its potential in the treatment of pain in anus due to piles, a major complaint. About 86 % of people reported to have piles at some time in their life. The review describes, various aspects of Pathadi yog viz. active phytoconstituents having analgesic action, pharmacological properties and mechanism of action of its ingredients. This review also focus on the traditional therapeutic action of the Pathadi yog mentioned in Ayurvedic medicine. In various pharmacological studies done in last few decades on the constituents of Pathadi yog, it has been proved that they possess analgesic, anti-inflammatory, thrombolytic, and other therapeutic properties.

Keywords: Pathadi yog, piles, analgesic, anti-inflammatory, thrombolytic property.

INTRODUCTION

Piles also known as "hemorrhoids" are swollen tissues that contain veins. It is described as Arsha or Durnam, in Ayurvedic samhitas. It affects millions of people around the world and represents an important medical and socioeconomic problem. Piles are located in the wall of the rectum and anus and may cause minor bleeding or develop small blood clots. Piles occur when the tissues enlarge, weaken and become free of their supporting structure. This results in a sac-like bulge that extends into the anal area. Piles are unique to humans, no other animal develops them. They are very common and up to 86 % of people report they have had hemorrhoids at some time in their life[1]. They can occur at any age but are more common as people get older. Among younger people they are most common in women who are pregnant. Although it can be embarrassing to talk about, anyone can get piles, even healthy young people in good shape. Multiple factors have been claimed to be the etiologies of hemorrhoid development including constipation and prolonged straining. They can be painful and annoying. Pain is not usually caused by the hemorrhoids themselves unless thrombosis has occurred, particularly in an external hemorrhoid or if a fourth-degree internal hemorrhoid becomes strangulated. Anal fissure and perianal abscess are more common causes of anal pain in the patients of hemorrhoid. Hemorrhoids differ depending on their location and the amount of pain, discomfort or aggravation they cause. The exact pathophysiology of development of piles is not completely understood. It was assumed that piles were caused by varicose veins in the anal canal but now it is clear that piles and anorectal varices are different. Today the theory of sliding anal canal lining is widely accepted. The dilatation and distortion of the vascular channel together with destructive changes in the supporting connective tissue within the anal cushion is a paramount finding of hemorrhoid[2]. An inflammatory reaction[3] and vascular hyperplasia[4,5] may be evident in hemorrhoid. In addition to the above findings a severe inflammatory reaction involving the vascular wall and surrounding connective tissue has been demonstrated in hemorrhoid specimen with associated mucosal ulceration, ischemia and thrombosis.[6,7] Currently available treatment for piles is oral flavonoids. These venotonic agents were first described in the treatment of chronic venous insufficiency and edema. They appeared to be capable of increasing vascular tone, reducing venous capacity, decreasing capillary permeability, and facilitating lymphatic drainage as well as having anti-inflammatory effects[8]. There are many other treatments for piles available like creams, ointments and suppositories which can relieve swelling, inflammation and symptoms in the short term. Some

recommend corticosteroid cream for severe inflammation. Warm (but not hot) Sitz bath is a traditional therapy for piles. Sit in about 8 cm of warm water for 15 minutes, several times a day especially after a bowel movement. Analgesics viz. paracetamol can help relieve pain caused by piles. Products with local anesthetic agents may be prescribed to treat painful hemorrhoids. Laxatives may be recommended if constipation is present. These drugs have many adverse effects therefore the search for more effective and safer analgesic, anti-inflammatory agents are needed. Various researches are conducted in last few decades on plants which are mentioned in ancient literature. Among which some are used traditionally for piles like *Fagonia arabica, Aegle marmelos, Apium graveolens, Zingiber officinalis* Roscoe and *Cissampelos pareira* Linn. These are specifically prescribed for pain in anus due to piles[9]. The combination of these drugs is better known as Pathadi Yog. This drug is regularly prescribed in our clinic to give relief from pain in anus due to piles.

Pathadi yog

Pathadi yog is a group of five drugs which has been mentioned in Ashtang Hridaya under Arsha chikitsa adhyaya[9]. The botanical name, family and therapeutic uses of Pathadi Yog mentioned in Ayurvedic literature are described in Table 1.

Pharmacological studies Pathadi Yog

To establish the traditional therapeutic effects on modern scientific parameters, various pharmacological studies have been done in last few decades on the drugs of Pathadi Yog. Among these only the scientific researches for studying its analgesic, anti-inflammatory action of individual drugs of Pathadi Yog are reviewed here.

***Cissampelos pareira* (Patha)**

Cissampelos pareira Linn. (Abuta) is a woody, climbing rainforest vine with leaves up to 30 cm long. It produces inedible, dark, grape-sized berries. It is used to stop bleeding, relieves pain, reduces spasm, increases urination, lowers blood pressure, reduces fever, protects convulsion. Studies reported the anti-inflammatory activity of the methanolic extract of *Cissampelos pareira* using the carragenin- induced paw edema method (acute inflammatory model) in male albino rats[10]. Another study also shows anti-inflammatory activity. In the present study, 50 % ethanolic extract of *Cissampelos pareira* roots (CPE) in acute, sub-acute and chronic models of inflammation was assessed in rats. Per os (p.o.) administration of CPE (200, 400 mg/kg) exhibited significant anti-inflammatory activity. In acute inflammation as produced by carrageenin 59.55 % and 64.04 %, by histamine 15.38 % and 30.77 %, by 5-hydroxytryptamine 17.78 % and 31.11 % and by prostaglandin E(2)-induced hind paw edema 19.23 % and 30.77 % protection was observed. While in sub-acute anti-inflammatory models using formaldehyde-induced hind paw edema (after 1.5 h) 38.36 % and 47.95 % and in chronic anti-inflammatory model using cotton pellet granuloma 15.02 % and 19.19 % protection from inflammation was observed. CPE did not show any sign of toxicity and mortality up to a dose level of 1000 mg/kg, p.o. in rats. Both acute as well as chronic administration of CPE (100, 200 and 400 mg/kg, p.o.) did not produce any gastric lesion in rats. These data indicate that CPE possesses significant anti-inflammatory activity without ulcerogenic activity suggesting its potential as an anti-inflammatory agent for use in the treatment of various inflammatory diseases.[11]

***Fagonia arabica* (Dhamasa)**

Fagonia arabica belongs to Zygophyllaceae family and is known as 'Kharasan' thorn in English and by a common name of "Dhamasa" in India. It is a green shrub of 1 to 3 feet height, found on calcareous rocks distributed throughout the Mediterranean region of South Africa, Afghanistan, India (Rajasthan, northwest Punjab and Western India) and Pakistan (Sindh, Punjab, North-West Frontier Province, NWFP). The whole plant is used for medical purpose; popularly known in hilly areas as a fever remedy source. Infusion is effective as cooling agent in stomatitis. It is known to purify blood and also acts as deobstruent. It is also used for skin diseases treated and small pox. *Fagonia arabica* is known to have antibacterial activity which was done against two strains of bacteria notably, *Escherichia coli* and *Staphylococcus aureus*. However, there are reports of bacterial contaminants of plants which have plasminogen receptors that bind plasminogen. Cell surface bound plasminogen is easily activated to plasmin, which could lead to fibrinolysis[12]. Bacterial plasminogen activator: staphylokinase, streptokinase, act as cofactor molecules that contribute to exosite formation and enhance the substrate presentation to the enzyme. Staphylokinase activates plasminogen to dissolve clots, also destroys the extracellular matrix (ECM) and fibrin fibers that hold cells together[13,14]. In conclusion, on the basis of beneficial effect of *Fagonia arabica* (Dhamasa) in the literature and our own results of the experiments in the extract of same herb, *Fagonia arabica* lyses blood clots *in vitro*; however, *in vivo* clot dissolving property and active component(s) of Dhamasa for clot lysis are yet to be found out. Once found Dhamasa may be incorporated as a thrombolytic agent for the improvement of the patients suffering from Atherothrombotic diseases[15]. *Fagonia arabicas* similar species, shows anti-inflammatory and wound healing activity of *Fagonia schweinfurthii* alcoholic extract herbal gel on albino rats[16].

***Aegle marmelos* (Bilva)**

Aegle marmelos is a native plant of India. *Aegle marmelos* belongs to Rutaceae family and commonly known as wood apple. In India, *Aegle marmelos* is grown as a temple garden plant and the leaves are used to pray Lord Shiva. *Aegle marmelos* is an important medicinal plant with several ethno medicinal applications in traditional and folk medicinal systems. Traditionally, *Aegle marmelos* is used in the treatment of diarrhea and

dysentery. Leaves of this plant used to cause infertility/abortion in women[17]. Recently, the plant is screened for its medicinal properties by scientific techniques and reported for various medicinal properties. *Aegle marmelos* is traditionally used to treat jaundice, constipation, chronic diarrhea, dysentery, stomachache, fever, asthma, inflammations, febrile delirium, acute bronchitis, snakebite, abdominal discomfort, acidity, burning sensation, epilepsy, indigestion, leprosy, myalgia, smallpox, spermatorrhoea, leucoderma, eye disorders, ulcers, mental illnesses, nausea, sores, swelling, thirst, thyroid disorders, tumors, ulcers and upper respiratory tract infections[17,18]. Different organic extracts of the leaves of *Aegle marmelos* have been reported to possess alkaloids, cardiac glycosides, terpenoids, saponins, tannins, flavonoids and steroids[19]. *Aegle marmelos* fruit pulp reported for the availability of steroids, terpenoids, flavonoids, phenolic compounds, lignin, fat and oil, inulin, proteins, carbohydrates, alkaloids, cardiac glycosides and flavonoids[19,20]. Leaves of *Aegle marmelos* were reported to possess analgesic activity. Methanol extract of leaves of *Aegle marmelos* was screened for analgesic activity by acetic acid-induced writhing test in Swiss mice. The results indicated that methanol extract significantly reduced the writhing induced by acetic acid. In tail flick test methanol extract (200 and 300 mg/kg body weight) showed significant analgesic activity[21]. Unripe fruit pulp of *Aegle marmelos* was reported to possess anti-inflammatory activity. Inflammation was induced by injecting 0.1 ml of 1 % λ-carrageenan into the subplaner side of left hind paw of Sprague Dawley rats. Extract treatment of the inflammated rats significantly reduced the λ carrageenan induced inflammation[22].

Apium graveolens (Yavani)

Apium graveolens (celery) belongs to the Apiaceae family is native for Eurasia, but it is nowadays cultivated and consumed all over the world. The leaves, stalks and seeds of the plant are used for arthritis, rheumatism, gout, urinary tract inflammation and specifically for rheumatoid arthritis with mental depression. Celery is also used as a diuretic, for regulating the bowels, for glandular stimulation, gall and kidney stones, as a prophylactic for nervous agitation, for the loss of appetite and exhaustion and as antihelminthic and laxative, sedative, stimulant and has been in the relief of flatulence and griping pains. The preliminary phytochemical analysis revealed the presence of carbohydrates, flavonoids, alkaloids, steroids, glycosides and wide range of trace elements in the methanolic extract of seeds of *Apium graveolens*[23,24]. Celery also contained phenols, furocoumarins, volatile oils, sesquiterpene alcohols and fatty acids[25]. The previous pharmacologic studies showed that *Apium graveolens* exerted gastrointestinal, cardiovascular, cytotoxic, antimicrobial, antihelminthic, hypolipidemic, anti-inflammatory, central nervous and many other pharmacological effects. *Apium graveolens* exerted anti-inflammatory effects in the mouse ear test and against carageenan induced rat paw odema, therefore *Apium graveolens* was recommended in arthritis and back pain[26-29].

Zinziber officinalis (Shunthi)

Zingiber officinalis Roscoe, commonly known as ginger belongs to family Zingiberaceae is cultivated commercially in India, China, South East Asia, West Indies, Mexico and other parts of the world. The rhizomes of ginger are used as spice in food and beverages and in traditional medicine as carminative, antipyretic and treatment of waist pain rheumatism and bronchitis. It is used for the treatment of gastrointestinal disorders and piles. In Ayurveda, ginger is reported to be useful in treating inflammation and rheumatism. One of the mechanisms by which ginger exerts its ameliorative effect could be related to inhibition of prostaglandin and leukotriene biosynthesis. Many studies have been evaluated for the analgesic effect of ginger and its constituents. It has a strong analgesic action which in many cases acts by cyclo–oxygenase-1 (COX-1) inhibition. Gingerol and their derivatives, especially [8]-paradol, have been reported to be more potent anti-platelet and cyclo-oxygenase-1 (COX-1) inhibitors than aspirin[30,31].

Table 1: Details of Pathadi Yog

S. No.	Sanskrit name	Botanical name	Family	Therapeutic use
1	Patha	*Cissampelos pareira* Linn	Manispermaceae	Arshasam ruja. (Piles related pain)
2	Dhamasa	*Fagonia arabica*	Zygophyllaceae	
3	Bilva	*Aegle marmelos*	Rutaceae	
4	Yavani	*Apium graveolens*	Apiaceae	
5	Shunthi	*Zingiber officinalis* Roscoe	Zingiberaceae	

CONCLUSION

Piles are swollen tissues that contain veins. They are located in the wall of the rectum and anus. They differ depending on their location and the amount of pain. They can be painful and annoying after defecation. Pain is usually caused by the thrombosis. An inflammatory reaction may be evident in piles. Constipation is major cause. This review article has presented the analgesic action of Pathadi Yog which is described in Ashtang Hruday Chikitsasthan 8/63. It shows that these plants have varying degree of analgesic property. Some plants have anti-inflammatory as well as thrombolytic property. The potency of these drugs is significant and they have negligible side effects than the analgesics. The analgesic property of these plants are attributed to the studies which showed presence of phytochemicals in alcoholic extract of *Fagonia arabicas*, methanol extract of leaves of *Aegle*

marmelos, sesquiterpene alcohols of *Apium graveolens* and Gingerol and their derivatives, especially [8]-paradol of *Zinziber officinalis* and other active constituents which shows reduction in pain. Some herbal drugs have thrombolytic and anti platelet property like Staphylokinase activates plasminogen of *Agonia arabica* to dissolve clots. All these actions may be responsible for the reduction in pain of piles. Thus there is need for more research to evaluate the clear mechanism of action of these medicinal plants with analgesic, anti-inflammatory and thrombolytic effect. Further it is required to evaluate the analgesic, anti-inflammatory and thrombolytic effect of these drugs in clinical setting with appropriate materials and methods.

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