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EXPLORING THE PHARMACODYNAMICS OF *VIRECHANA KARMA*: AYURVEDIC PRINCIPLES AND MODERN SCIENCE

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Abstract

Virechana is a therapeutic measure in Ayurveda aimed at expelling *Doshas*, particularly *Pitta*, through the downward route. It is particularly beneficial in *Pittaja Vikara* since *Virechana* substances possess *Ushna, Tikshana, Sukshma, Vyavayi* and *Vikashi* properties. *Virechana* substances also offer predominance of the *Prithvi* and *Jala* elements. These substances showed *Adhobhaghara* effects which involve downward purgative action. *Virechana* drugs, due to their potency and inherent effect, reach the *Hridaya* and circulate throughout the channels. This action also facilitated by their *Sukshma* and *Vyavayi* properties. The *Ushna* quality of these drugs helps in *Vishyandana* of the accumulated *Doshas*. *Tikshana* and *Vikashi* properties cause *Chhedana* of the vitiated *Dosha*. These processes prepare *Pitta Dosha*, for expulsion and removes aggravated *Doshas* thus halts the progression of disease associated with *Pittaja Vikara*. *Virechana* as detoxifying procedure indicated in many conditions such as *Pandu, Kamala, Kustha, Visarpa* and *Raktapitta*, etc. This article explores the mode of action of *Virechan Karma* from both Ayurvedic and modern scientific perspectives.

Key-Words: *Ayurveda, Virechana, Panchakarma, Dosha, Pitta*

Introduction

Virechana Karma is the Ayurvedic measures which involves in the expulsion of *Doshas via* the *Guda-Marga*. Although the stomach is associated with *Pitta*, *Virechana* is primarily targeting aggravated *Pitta* and facilitates elimination of this vitiated *Pitta* from the stomach. It is indicated for a wide range of conditions as depicted in **Figure 1**.

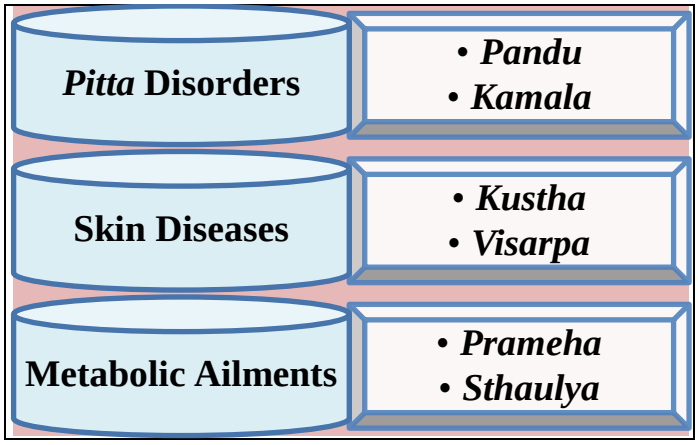

Figure 1: Various categories of diseases in which *Virechana* can be used

The various categories of *Virechan Dravyas* presented in **Table 1**. *Trivrut* and *Danti Haritaki* are the major formulations used for *Virechana Karma*, described in the *Charaka Samhita* [1-4].

Table 1: Various types of *Virechan Dravyas* based on their mode of action

Types of *Virechan Dravyas*	Description	Example
Anulomana	These drugs expel *Malas* by digesting it and breaking its bond.	*Haritaki*
Sramsana	These drugs eliminate partially digested, sticky *Malas* without fully digesting them.	*Aragvadha*
Bhedana	Drugs that break down both formed and unformed fecal masses.	*Katuki*
Rechana	Drugs that loosen and expel both digested and undigested *Malas* or *Doshas*.	*Trivrut*

Pharmacodynamics of *Virechana Karma* (*Virechan Karmukatva*):

The *Virechana dravyas* targets *Adhobhaga* to eliminate vitiated *Pitta Dosha*. *Virechana* drugs possess *Ushna, Teekshna, Sukshma, Vyavayi, Vikashi* and *Adhobhagahara* effect. *Virechana* drugs diffuse at the cellular level and impart biological actions by virtues of their inherent properties as mentioned below [4-6]:

- ✓ *Sukshma Guna* enables drugs to reach the micro-channels of body and promoting movement of *Doshas* toward the *Koshtha*.
- ✓ ***Ushna* property** of *Virechana* drugs enhances *Agni*, leading to *Vishyandana*, which facilitates the movement of *Doshas* toward the *Koshtha* region.
- ✓ ***Tikshna* properties** break down *Doshas*, this allows the liquefied *Doshas* to be drawn towards the *Koshtha*.
- ✓ ***Vyavayi* properties** enable drugs to spread throughout the body before digestion occurs.
- ✓ *Vikasi Guna* scorches various *Dhatus*, encouraging the expulsion of the *Doshas*.
- ✓ The predominance of *Prithvi* and *Jala* elements in *Virechana* drugs facilitates expulsion of vitiated *Doshas* through the *Guda*.
- ✓ *Adhobhagahara* effects, helps in the downward movement of toxins for their elimination from the lower GIT.

Virechana drugs, travel to the *Hridaya* due to their *Virya*, then follow the *Dhamani* and permeate the body through the *Srotas*. Their *Agneya* properties lead to *Vishyandana*, which facilitating oozing of morbid *Doshas*, while the *Tikshna Guna* allows for the breakdown of accumulated *Doshas*. Once absorbed, these drugs reaching both macro and micro-channels and this process facilitate their reach to the site of utilization. The Summary of pharmacodynamic of *Virechana Dravyas* is mentioned in **Table 2** [3-6].

Table 2: *Karmukata* of *Virechana Dravyas*

Perspective	Action Description
Properties	*Virechana Dravyas* are characterized by *Ushna*, *Teekshna*, *Sukshma*, *Vyavayee* and *Vikashi* qualities. They exhibit *Adhobhagahara Prabhava* and act on *Pitta Dosha*.
Systemic Action	*Virechana* drugs pull morbid *Doshas*, particularly *Pitta*, from *Shakha* to the *Koshtha* for elimination.
Local Evacuation	These drugs assist in the removal of *Doshas* from the gut in the form of *Mala* through their *Adhobhagahara* effects.

Flow Chart of *Virechana Karmukatwa*:

- Action of *Veerya*:
  - ✓ Travel to the *Hridaya*
  - ✓ Move through the *Dhamani*
  - ✓ Reach the channels of the body
- Effects on Vitiated *Dosha*:
  - ✓ Liquefy them using the *Agneya* property.
  - ✓ Break them down into smaller particles through the *Teekshna* property.
- Movement of Liquefied Matter:
  - ✓ Glide through the channels toward the *Shakha* and then to the *Koshtha*. This facilitated by *Pravana bhava* of *Sukshma Guna*.
- Direction of Flow:
  - ✓ Liquefied toxins/*Dosha* move downward and expelled through the anal route.

MODERN VIEW:

These drugs operate through various mechanisms, including stimulation of the myenteric plexus, osmotic pressure, receptor activation and local irritation, etc [7-9].

1. Hydrophilic or Osmotic Action: This action retains water and electrolytes in the intestinal lumen, increasing the volume of colonic contents and facilitating easier propulsion.
2. Reduced Absorption: Purgatives decrease the net absorption of water and electrolytes by acting on the intestinal mucosa, indirectly enhancing intestinal transit due to the increased fluid bulk.
3. Enhanced Propulsive Activity: The primary effect is to increase motility, which allows less time for salt and water absorption as a secondary effect.
4. Stimulation of Mesenteric Plexus: Certain purgatives enhance motility by acting on the mesenteric plexuses.

Stimulant Purgatives

Stimulant purgatives irritate the intestinal mucosa, promoting motor activity. They stimulate mesenteric plexus and increase the accumulation of water and electrolytes in the lumen. Additionally, secretion is increased through the activation of cyclic AMP in crypt cells and enhanced prostaglandin synthesis.

Local Action

Virechana drugs also act as mild irritants to the stomach and intestinal mucosa, inducing inflammation. This irritation leads to hyperemia due to the dilation of arterioles and capillaries. The exudation of protein-rich fluid from the blood vessels into the intestinal tissue assists in diluting toxins.

Nervous System Action

The *Virechana* is regulated by a center located in the brain, *Virechana* drugs affect hormones and nerves, imparts irritating effect on this defecation center. The vagus nerve stimulates pancreas and liver to produce secretions, and bile is released due to gallbladder contraction, as a

response to vagal stimulation. Brunner's glands, which secrete mucus, are also stimulated. Additionally, the sacral plexus in the sacral region of the spinal cord plays a crucial role in managing the purgation process. During defecation, breathing is briefly halted as the diaphragm contracts, exerting pressure on the transverse colon. At the same time, the abdominal muscles are engaged to assist in moving fecal matter toward the anus. The stimulation of nerve plexuses promotes peristalsis, further facilitating the movement of intestinal contents toward the rectum and eventually to the anal canal.

As mentioned above there are various ways through which *Virechana* drugs exerts their action. The action of *Virechana* drugs occurs during the digestion phase, beginning in the stomach and small intestine. **Table 3** depicted summary of action of *Virechana* drugs according to modern science [8-10].

Table 3: Pharmacodynamic of *Virechana* drugs according to modern science

Mechanism	Description
Local Action	*Virechana* drugs act as mild irritants to the stomach and intestinal mucosa, causing inflammation, which leads to increased blood flow.
Nerve and Hormonal Action	These drugs impact nerves and hormones, causing stimulation of the defecation center, prompting bowel movement.
Intestinal Mucosal Secretion	These drugs irritate the intestinal mucosa, which increase intestinal secretions and further irritation.
Vagus Nerve Stimulation	Stimulation of the vagus nerve results in irritation of the pancreas and liver enhancing secretion in the small intestine, leading to more fluid secretion and movement of feces.
Large Intestine Secretion	When large intestine is irritated, it secretes water, which dilutes irritating factors and facilitates the rapid movement of feces.

Conclusion:

Virechana is regarded as therapeutic procedure, particularly for *Pittaja* disorders. *Virechana Karma* is induced using specific drugs to expel the *Doshas* through the lower route. The *Virechana karma* facilitated by *Teekshna, Ushna, Sukshma, Vikashi* and *Vyavayee* properties, as well as the *Adhobhagahar Prabhav* of drugs. *Sukshma Guna* allows them to penetrate micro-channels, *Ushna* property enhances *Agni*, promoting *Vishyandana*, *Tikshna* property breaks down and liquefies the *Doshas*, enabling their migration. *Vyavayi* properties allow the drugs to spread, while *Vikasi Guna* promoting *Dosha* expulsion. According to modern science *Virechana* drugs act by irritating stomach and intestinal mucosa, leading to inflammation and increased blood flow. They stimulate nerves and hormones, activating the defecation center to prompt bowel movements. This irritation of the intestinal mucosa also increases intestinal secretions, further enhancing the process. Additionally, vagus nerve stimulation affects the pancreas and liver, promoting fluid secretion in the small intestine, while irritation of the large intestine triggers water secretion to dilute irritants and facilitate the rapid expulsion of feces.

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