

**EXPLORING THE IMPACT OF VIRECHAN THERAPY ON GUT MICROBIOTA:  
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**ABSTRACT**

*Virechana* therapy, a detoxification procedure in Ayurveda, has been practiced for centuries to restore health and balance in the body. Recent research has shown a growing interest in its potential effects on gut microbiota, which play a crucial role in maintaining overall well-being. Dysbiosis, which refers to an imbalance in the microbial community residing in the gut, disrupting its delicate harmony and potentially impacting overall health and can lead to a proliferation of harmful bacteria, a reduction in beneficial microbes, or alterations in microbial diversity. Such disruptions have been linked to various health conditions, including gastrointestinal disorders, metabolic syndrome, and immune dysregulation. *Virechan* therapy has proved to be effective in reducing colonization of *E.coli*, thereby correcting dysbiosis. This article explores the impact of *Virechana* therapy on gut microbiota, drawing insights from Ayurvedic principles and contemporary scientific studies. By examining the intricate relationship between *Virechana* therapy and gut microbiota, this article aims to provide valuable insights for both Ayurvedic practitioners and modern healthcare professionals.

**KEYWORDS:** Ayurveda, *Virechan*, Gut microbiota, dysbiosis.**INTRODUCTION**

Ayurveda, the ancient holistic system of medicine, emphasizes the interconnectedness of mind, body, and spirit in maintaining health. Central to Ayurvedic practice is the concept of maintaining equilibrium among bodily humors, achieved through therapies like *Panchakarma*. Among these, *Virechana* therapy focuses on purging excess *Pitta dosha* and toxins from the gastrointestinal tract. While traditionally viewed as a digestive cleansing technique, recent scientific interest has turned towards its potential impact on gut microbiota, recognizing their pivotal role in health and disease.

**MATERIAL AND METHODS**

Gut microbiota, also known as gut flora or gut microbiome, refers to the diverse community of microorganisms inhabiting the gastrointestinal tract. This ecosystem comprises bacteria, fungi, viruses, and other microorganisms, which play crucial roles in digestion, immune function, metabolism, and overall health.

The gut microbiota exists in a dynamic equilibrium, influenced by factors such as diet, genetics, age, and environmental exposures. Its composition can vary widely among individuals and can be shaped throughout

life by various factors, including diet, medications, and lifestyle habits.

Functions of the gut microbiota include

- **Digestion and Nutrient Absorption:** Gut bacteria aid in the breakdown of complex carbohydrates, proteins, and fats, facilitating nutrient absorption and energy production.
- **Immune Regulation:** Gut microbiota interact with the immune system, helping to train and modulate immune responses and defend against pathogens.
- **Metabolism and Energy Regulation:** Gut bacteria play a role in metabolizing dietary components, regulating energy balance, and influencing body weight and metabolism.
- **Synthesis of Vitamins and Short-Chain Fatty Acids:** Certain gut bacteria produce vitamins (e.g., B vitamins and vitamin K) and short-chain fatty acids (e.g., butyrate, propionate, acetate), which are essential for gut health and systemic metabolism.
- **Protection Against Pathogens:** Beneficial gut bacteria compete with pathogenic microorganisms for

resources and produce antimicrobial substances, helping to prevent the overgrowth of harmful bacteria and infections.

Imbalances in gut microbiota composition, known as dysbiosis, have been associated with various health conditions, including gastrointestinal disorders (e.g., inflammatory bowel disease, irritable bowel syndrome), metabolic disorders (e.g., obesity, diabetes), autoimmune diseases, and mental health disorders.

Exposure to different environmental factors, such as diet, toxins, medications, and pathogens, can lead to modifications in the microbiota.

### Dysbiosis in disease

1. GI tract related diseases: Crohn's disease (CD) and ulcerative colitis (UC) are prevalent inflammatory bowel diseases (IBD) characterized by chronic inflammation in the gut lining. Though their exact causes are unknown, there's increasing evidence implicating imbalances in gut microbes in their development.<sup>[1]</sup> Irritable bowel syndrome, Coeliac disease and colono rectal carcinoma (CRC) have also been associated with alterations in microbiota composition.<sup>[2,3,4]</sup>

2. Metabolic diseases: An alterations in the microbiota composition can cause insulin resistance, inflammation, vascular, and metabolic disorders like Obesity, type 2 DM etc.<sup>[5]</sup>

3. CNS related disorders: Intestinal microbial dysbiosis has also been noted in conditions beyond the gut, particularly in those that could influence the connection between the gut, brain, and behavior, affecting the central nervous system as well as cognitive function.

### Gut microbiota correlation in Ayurveda

In Ayurveda, the gut microbiota can be correlated with *Shashthi pittadhara kala*, which plays a crucial role in the digestion of all types of food consumed and the absorption of nutrients.<sup>[6]</sup> The *pittadhara kala*, often referred to as *grahani* in Ayurveda, is responsible for metabolism and the elimination of waste products that the body does not need.<sup>[7]</sup>

According to *Acharya Charak*, a major factor contributing to the deterioration of *grahani's* function is *mandagni* (diminished metabolic function). Therefore, enhancing the *Agni* (digestive fire) ultimately improves the function of *grahani*, leading to better metabolism and overall health.

### IMPACT OF VIRECHAN THERAPY ON GUT MICROBIOTA

*Panchakarma* is a specially designed set of five procedures aimed at internally purifying the body through the most direct routes. This purification process enables the biological system to return to homeostasis, rejuvenate quickly, and enhances the desired therapeutic

effects of medicines. The elimination of waste products, known as *Shodhana* (purification), is carried out in three phases: the preparatory phase, the main procedure, and the post-procedure phase.

The *poorva karma* involves *Deepana Pachana* (drugs to improve appetite and digestion) thereafter *snehapan* (internal oleation with increasing dose). followed by *Bahaya snehan* and *swedan* (External oleation and sudation).

The main procedure i.e *Pradhan karma* involves administration of purgative drugs.

The post procedure phase includes *Samsarjana Krama* (post-Virechana dietary regimen) done for 3–7 days depending on the *Shuddhi Lakshanas* (signs of purification).

Ayurvedic principles attribute the efficacy of *Virechana* therapy to its ability to expel *Ama* (toxins) accumulated in the gastrointestinal tract, restoring *Agni* (digestive fire) and metabolic balance. Modern research corroborates these notions, suggesting that *Virechana* therapy induces shifts in gut microbial composition, characterized by increased diversity and abundance of beneficial bacteria such as *Lactobacillus* and *Bifidobacterium*, and a reduction in pathogenic species. These alterations in gut microbiota have been associated with improved gastrointestinal function, enhanced immune response, and metabolic regulation.

### Researches showing effect of Virechan on gut microbiota

- A study was conducted to explore the effect of *Virechana Karma* over the gut flora; patients with *Madhyama Koshtha* diagnosed with obesity were included and received the intervention. Before and after *Virechana*, a stool sample was collected and processed for the enterobacterial repetitive intergenic consensus -polymerase chain reaction to find the changes over the facultative aerobic bacteria which concluded that *Virechana* is effective in the management of the obesity due to reduction in the *Escherichia coli* colonization and is effective over the gut flora dysbiosis.<sup>[8]</sup>

- A clinical trial was undertaken to see the ROLE OF AYURVEDIC GRAHANIROGA TREATMENT PROTOCOL IN THE MODULATION OF GUT MICROBIOTA IN IRRITABLE BOWEL SYNDROME- which involved *Virechan* with *Avipattikar churna*, which showed that, it helped in Gut Microbiota modulation and regulation by significant changes in IBS-SSS, IBS-QoL, VAS Scale, BSF Scale (Gut Microbiota Assessment). The effect of treatment protocol shows statistical significance of p value <0.05 in the assessment scales.<sup>[9]</sup>

• A study was carried out at Hatai Ayurveda Clinic in Tokyo, where patients with various manifestations were selected and *Virechan* and *Basti* therapy was carried out on them and fecal samples were taken at the entry, during treatment, at the discharge, and three weeks later for analyzing intestinal microbiota by seqyebcubg 16srRNA, which concluded that The order of top-six microbiota that occupied 99.8% of microbiota at the admission did not change. These were Bacteroidetes (46.6%), Firmicutes (37.5%), Proteobacteria (9.6%), Actinobacteria (2.9%), Fusobacteria (1.7%) and Verrucomicrobia (1.5%). By *Virechana*, Proteobacteria and Fusobacteria increased to 32.5% and 8.1% respectively. At the discharge time in both *Virechana* and *Basti* treated groups, the unassigned bacillus occupied 40.8%, and the Bacteria became 21.1%. These three occupied 93.8%. It was noteworthy that Verrucomicrobia became zero and an improvement was seen in various complaints of patients.<sup>[10]</sup>

## DISCUSSION

In Ayurvedic pathogenesis, dysbiosis in disease production begins with *Agnimandya* (impaired digestive fire). Due to *Alpa Bala* of *Agni Aadya Dhatu* (*Ras Dhatu*) is not formed properly, which is retained in *Amashaya* is called *Ama*.<sup>[11]</sup> *Agni*, in Ayurveda, refers not only to digestive enzymes but also to the metabolic processes in various tissues. When *Ama* becomes reactive, it turns into *Amavisha*, which disrupts tissues and causes chronic inflammation and disease.

Disrupted mucosal integrity, such as impaired tight junctions, can lead to dysbiosis and the formation of *Ama*. *Ama* can also form at the cellular level. Excessive free radicals, produced during cellular metabolism, contribute to *Ama* formation. An overabundance of these reactive molecules can cause damage, initiating the disease process.

The observed changes in gut microbiota following *Virechana* therapy underscore the intricate interplay between Ayurvedic interventions and modern scientific understanding. By promoting microbial diversity and rebalancing dysbiotic states, *Virechana* therapy may offer therapeutic benefits beyond digestive health, extending to immune modulation, metabolic regulation, and mental well-being. However, further research is warranted to elucidate the mechanistic underpinnings of these effects and optimize therapeutic protocols.

*Virechan* therapy is induced in three distinct phases. The first phase, known as the pre-operative process, involves *Deepan Pachana*, which serves as a powerful booster for *Agnimandya*, or weak digestive fire. This initial step is crucial in disrupting the pathogenesis of dysbiosis. Additionally, the drugs used in *Deepan Pachana*, such as *Shunthi*, *Marich*, and *Chitrak*, effectively inhibit the production of *Ama* (toxins).

The pre operative phase also involves *snehapana* and *Snehana*, *Swedana* which play a vital role the process of *Virechana*. It is well known that the *Doshas* are present throughout the body. *Sneha*, due to its *Sukshma Guna* (subtle quality) and *Kledana Karma* (moistening action), draws the *Doshas* from other areas to the *Koshta* (gastrointestinal tract). In this process, *Kledana Karma* acts as a solvent for the morbid *Doshas*, aiding in the elimination of fat-soluble impurities from the body. *Shodhana Dravya* (purifying substances) facilitate the movement of the *Doshas* to the *Koshta* for elimination.

The main procedure that is *Virechana*, leverages the properties of specific drugs characterized by their *Ushna* (hot), *Tikshna* (sharp), and *Sukshma* (subtle) *Gun*s (qualities). These properties enable the drugs to penetrate the heart and circulate throughout the body effectively. The process works by liquefying the morbid *Doshas* (bio-energetic principles) and mobilizing them towards the *Amashaya* (stomach). From there, the toxins are expelled through the anal canal, completing the *Virechana* process. This method directly influences the *Agnisthana* (digestive fire), enhancing digestion and metabolic function (*Agni*).<sup>[12]</sup> Also administration of liquid to normal diet in sequential manner during *samsarjan kram*, kindles the digestive fire.

## CONCLUSION

The convergence of Ayurvedic wisdom and contemporary scientific inquiry unveils the multifaceted impact of *Virechana* therapy on gut microbiota and overall health. By embracing a holistic approach that integrates ancient healing practices with modern evidence-based medicine, healthcare practitioners can unlock new avenues for promoting wellness and preventing disease. Through continued collaboration and research, *Virechana* therapy holds promise as a valuable adjunct in the pursuit of optimal health and vitality.

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