PHARMACODYNAMICS OF “BASTI- KARMA” – A REVIEW

Sapna Kumari Vishwas¹*, Manabjyoti Sarmah², K. K. Sharma³, Parul Sharma⁴

¹ & ² M. D. Scholar, Dept. of Panchakarma, Rishikul Campus, U.A.U. Haridwar.
³ Prof. & H.O.D. Dept. of Panchakarma, Rishikul Campus, U.A.U. Haridwar.
⁴ Asst. Professor, Dept. of Panchakarma, Rishikul Campus, U.A.U. Haridwar.

ABSTRACT
In the management of diseases the fundamental principles of the Ayurveda is Samshodhana (therapeutic purification), Samshamana (palliative treatment) and Nidana Parivarjana (avoid causative factors). Panchakarma presents a unique approach of Ayurveda with specially designed five procedures of internal purification of the body through the nearest possible route. Basti Chikitsa regarded as the prime treatment modality among the Panchakarma. Pharmacodynamics of Basti Karma includes biochemical and physiological effects of Basti Dravyas on body, which may be understood through absorption mechanism, neural stimulation mechanism, chemical stimulation mechanism and mechanical stimulation mechanism. The Basti Dravya may be absorbed directly or by diffusion, filtration and osmosis method. The Enteric Nervous System (ENS) works in synergism with the Central Nervous System (CNS), stimulation with Basti, either by chemo or mechano receptors may lead to activation of concerned part of CNS which precipitates result accordingly. Certain mechanical or chemical stimulation is responsible for nervous stimulation and thus produces the effect.

KEYWORDS: Pharmacodynamics, Samshodhana, Samshamana, Nidana Parivarjana, synergism.

INTRODUCTION
In Ayurveda Samshodhana is first line of treatment then Samshamana is suggested. Samshodhana refers to bio-purification of body aiming to cleanse the macro and micro channels of our systems hence pulls the weeds out of their roots. Thus it aims at recouping the harmony of diseased passages and maintaining normalcy of our system. Nevertheless
among all the Shodhana procedures Basti is considered as the supreme therapeutic modality. It has been designated as Ardhachikitsa by all Acharyas, because it has the capacity to produce multi dimensional therapeutic effects. One can achieve any goal like Bramhana, Shodhana, Shamana, Rasayana, Vajikarana and many others by just one therapy. Basti is reaching up to Kati, Parshava, Kukshi and draws out the morbid Doshas and fecal matter outside the body\(^1\). Basti, not only cures Vatika disorders but also cure Samsarga & Sanmitpata condition of Doshas, and KaphajalPittaja disorders\(^2\), Sakhagata and Koshtthagata Rogas by combination of different types of Basti Dravyas. Though effect and safety of Basti Karma is time tested and well established, but exact Pharmacodynamics by which it acts is still unknown. Basti has two types Niruha Basti [homogeneous mixture of honey, salt, oil, Kalka (fine paste) and Kwatha (decoction)] and Sneha Basti (oil Basti). Honey has Chedana (scraping) and Ruksha (dry) Guna and Ushna Veerya. The most important properties of honey in the context of Basti Karma are the Yogavahitva and Sukshma Marga Anusaaritva (potency to penetrate into the minute capillaries of the body). Saindhava has Laghu and moderately hot and has Margavishodhana effect (clears the channels). The Sneha lubricate the colon, softens the Mala and helps to eliminate it without strain. Kalka Dravyas helps to disintegrate the Malas by increasing the osmotic permeability of the solution. Kwatha helps in maintaining the volume of the fluid, helps in spreading and cleansing\(^3\).

Probable mode of action of Basti Karma

Vayu is the lord and responsible for all the functions of the body and also for the production of diseases. Basti control the Vata and thus it controls the Pitta and Kapha also\(^4\). When Basti Dravyas administered, they reaches up to the micro and macrocellular level due to its Virya (potency), which helps first to disrupt the pathogenic process and carries out the morbid matter towards Pakvasaya for elimination and then after absorption it starts the regenerative process. Thus it works as a curative as well as a purificative measure\(^5\). In contemporary science, action of Basti remains as a great dilemma. We can postulate certain hypothesis on the basis of mode of action: Absorption mechanism, Neural stimulation, Chemical stimulation and Mechanical stimulation\(^6\).

Literature review

According to Acharya Charaka, Veerya of Basti reaches to Apana Vayu & nourishes it, then acts on Samana Vayu. After nourishing Samana Vayu, it nourishes Vyana Vayu, thereafter
acting on Udana vayu and Prana Vayu and nourishes them[7]. According to Sushruta Samhita, Veerya of Basti Oushadha reaches in all over the body through the Srotas in the same way as the water poured at the root of the plant reaches up to leaves, even though Basti Dravyas comes out very quickly with Mala, but their Veerya acts all over the body by the action of Panchvata, just as sun draws moisture from the earth[8]. The Veerya of Basti Dravyas presents in colon & transported quickly by Apana Vayu to the regions of Samana Vayu, thus normalizing it[9]. According to Astanga Hridaya, as the cloth absorbs the dye from water mixed with Kusumb plant, in the same way Basti eliminates the Malas from the body which have undergone liquefaction due to Snehana and Swedana[10].

DISCUSSION

Absorption Mechanism: Human colon has much less surface area than small intestine, but colonic crypt cells are capable of much absorption as well as secretion. In Ayurveda Paka (digestion) process is divided into three stages, the last stage is known as Katu-Avashta-Paka, which denotes that some residual digestive process may have been occurring in the colon. GIT is lined with epithelial cells; drugs must pass or permeate through these cells in order to be absorbed into the circulatory system, which involves two routes: the Transcellular route and Paracellular route. The different Dravyas which are use to make Basti have different properties: some may be water soluble and some may be fat soluble, thus they may absorbed accordingly. Transcellular route depends on lipophilicity, so that Sneha Dravya used in Basti promotes this type of absorption. In Paracellular route, drug diffuses through space between epithelial cells thus it may be the route of absorption for decoction preparation. Rectal absorption of drugs also depended on several drug characteristics such as partition co-efficient and molecular size. Small partition co-efficient, large molecular size, charge and high capability of hydrogen bond formation are the typical factors identified for poor absorption of drug. In Basti Karma, a homogenous emulsion of honey, Saindhava, Sneha Dravya, Kalka and Kwatha mixed in remarkable combination after proper churning (break the large and middle chain fatty acids into small chain fatty acids) is given which facilitates absorption better then a single drug per rectum.

Human gut has a natural habitat for gut microbial community or gut microflora. In digestive process major metabolic function of colonic micro flora is fermentation of non-digestible dietary residue and mucus secretion by epithelium. Also play significant role in certain vitamin synthesis (like K and B), absorption of ions (like calcium, magnesium and iron) in
colon, is improved by carbohydrate fermentation and production of short chain fatty acids (short chain fatty acids are more water soluble and allow direct diffusion from the epithelial cells) especially acetate, propionate and butyrate. Differentiation of epithelial cells is also hugely influenced by colon micro-organisms, which may enhance the absorption and metabolic process and play a role in Basti process also\[^{11}\].

**Neural Stimulation Mechanism:** The GIT has a nervous system of its own called ‘Enterric Nervous System’. It lies entirely in the wall of the gut, beginning in oesophagus and extending all the way to anus, containing 100 million neurons. It especially controls gastrointestinal movements and secretions. The two plexuses in enteric system are myenteric plexus or Aurbach’s plexus and submucosal plexus or Meissner’s plexus. The sigmoidal, rectal and anal regions of the large intestine are better supplied with parasympathetic fibers than other portions as they are stimulatory in defecation reflexes\[^{12}\]. Major Neurotransmitters like serotonin, dopamine, glutamate, nor epinephrine and nitric oxide are in the gut. Also two dozen small brain proteins, called neuropeptides are there along with the major cells of immune system. ENS works in cooperation with the CNS. Stimulation with Basti (either by chemo or mechano receptors) may lead to activation of concerned part of CNS which precipitates result accordingly. Basti works on the Pharmacodynamics of ‘Hit and Run Module’; means it is not mandatory for a drug to stay in long contact to the receptor, like in proton pump inhibitor where drug interact and flush out from circulation\[^{13}\]. In this way Basti works on entire physiological and neurological levels to get the bodily internal homeostasis i.e. maintains the balance of body to keep firm and healthy.

**Chemical and Mechanical Stimulation:** Hyper osmotic solution of Basti Dravya causes movement of solvent from cells of colon to the lumen and facilitates the absorption of endotoxin and produce detoxification during elimination. In Basti Dravya the Kalka has got irritant property along with other ingredients which may induce distention of colon, which stimulates pressure effects and produces evacuatory reflex. The parasympathetic fibers of colon are mainly stimulatory in action and function, especially in defecation reflexes. About 100 cc volume of gas is estimated to be present in the tract which is readily expelled by Basti. Even though the Basti given is expelled out immediately as such or mixed with feces, the Veerya of Basti is spread throughout the body by the Vata. From this we can understand that the action of Basti is possible through nervous stimulation\[^{13}\].
CONCLUSION

The Pharmacodynamics of Basti Karma is complicated and difficult to explain. But Ayurvedic classics explained it beautifully in simplified language. Rectum is not a usual site for absorption of ingested nutrients, the active principles of the Niruha Basti Dravya introduced to rectum may be absorbed here, by active transport and diffusion due to water solubility. Sneha Basti and other nourishing Basti contain hypo osmotic solution facilitating absorption into the blood. Thus Basti may have systemic as well as local effect. The water soluble substances may be easily absorbed as the water moves in both the directions across the mucus membrane of colon; and short chain fatty acids are also absorbed from the colon. The Pharmacodynamics of Basti Karma may be due to functioning of the combined effect of Absorption mechanism, Neural stimulation mechanism, Chemical stimulation mechanism and Mechanical stimulation mechanism.

REFERENCES

9. Astanga Sangraha, Kalpa Sthan, 5-68.
