



Physiological Aspects of Snehapana

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Abstract

The *Panchakarma* therapy, which does purification and detoxification of the body, promotes health and longevity as well as cures diseases too. But prior to such therapy, it is necessary to make a patient fit or ready to expel the already accumulated toxic materials through the process known as *Purvakarma* (preparatory measures) which include *Snehana* (Oleation therapy) and *Svedana* (Sudation therapy). Here an attempt has been made to rule out how the *Sneha* (medicated ghee or oil) that is ingested during the process of *Snehapana* (intake of oil) produces *Samyak snigdha lakshana* (some specific symptoms) through Lipid metabolism.

Keywords: *Snehapana, Grita, Samyak Snigdha lakshana*

Introduction

*Panchakarma*¹, the five most important therapies do purification and detoxification of the body, promote health and longevity as well as cure diseases. They are the main treatments for most of the Chronic and degenerative diseases in Ayurvedic science along with internal medications or *Samana Oushadhi*. The main causative factors for the disease are *Dosha Vishamyata* (vitiated *Dosha*), which in turn leads to the *Vishamyata* of *Dhatu* and *Mala*. The *Panchakarma* therapies are useful in preventive and curative aspects by preventing the occurrence of *Dosha Chaya* and *Prakopa* (different stages of vitiated dosha). By doing such therapies, one can maintain his health and longevity. *Panchakarma* can also retard the aging process of a person. It has so many health promoting benefits, hence considered as the most important Therapies. But prior to such therapies

, it is necessary to make a patient fit both physically and mentally, to make him ready for expelling the already accumulated toxic materials. This is done through the process known as *Purvakarma* (preparatory measures) which include *Snehana* (Oleation therapy) and *Svedana* (Sudation therapy)

. In *Snehana* large doses of unctuous substances like *Grita* (plain ghee or medicated ghee or medicated oil) are administered orally (*Snehapana*) for a particular period of time till the person attains *Samyak snigdha lakshana*² (the symptoms appear in proper Oleation).

Aims and Objectives

- To rule out how *Sneha* (Ghee) gets digested in the body.
- How *Samyak snigdha lakshana* appears during the process.

Materials and methods

Source of data: For the study, several related articles were referred and an attempt has been made to find out how *Sneha* gets digested in our body thereby how it produces *Samyak snigdha lakshana* (exact symptoms). A basic study has been done through the Digestion and Metabolism of Lipids.

Methodology

*Snehapana*³ is an important treatment procedure that has multiple actions in our body. Such procedure is done by administering a particular amount of *Sneha* (substance that gives unctuousness) in the form of medicated *Grita and Taila* (ghee and oil) for a particular period of time till that person attains some exact or

good symptoms which are together called *Samyak Snigdha Lakshana* . Some of the health benefits of *Sneha or Grita* mentioned are it increases ones *Agnibala* (stimulate digestive enzymes), *Dhee* (intellect) , *Smriti* (awareness or memory) and *Medha* (intelligence)⁴. While consuming *Grita* alone [known as *Acchapeya*], as per the rules, leads to *Samyak Snigdha lakshana* such as *Vatanulomyam* (forcing the direction of Vata in right way) , *Deeptoragni* (stomachic), *Snigdha* (smooth or unctuous) and *Asamhata Mala* (loose stool), *Snehodvega* (belching), *Klama* (to get fatigue or exhausted), *Mrududeha* (soft and smooth body), *Vinihanthi malasangam* (allowing easy movement of faecal matter) and so on, which depends upon the *Koshta* (bowel) of a person. If the dose of *Grita* administered is more than from the normal dose of a person , it leads to severe complications⁵ such as *Panduta* (anemic), *Sraava* (discharges) through *Ghraana* (nose), *Vaktra* (mouth) and *Guda* (anus), *Sopha* (inflammation), *Arsa* (piles) , *Kushta* (skin disorders) , *Sthambha* (stiffness), *samjavikalaya* (loss of consciousness or disorientation), *Jwara* (fever), *Shoola* (pain), *Anaha* (constipation) etc:

All these symptoms or *lakshana* are found to be due to the various *Guna* (properties) of *Grita* (ghee) such as *Snigdha* , *Seeta*, *Guru*, *Sara*, *Mridu*, *Drava*⁶ (unctuousness, coldness, heaviness, laxative, soft, fluid properties)

Among the *Samyaksnigdha Lakshana*, *Vatanulomya* means forcing the Vata (air) in the right direction or downwards or subsiding the abnormal *Vata* and enhancing the normal functions of organs or parts of the body in the abdomen. The *Snigdha Guna* (unctuous property) of *Grita* (ghee) is mainly responsible for this. *Deeptoragni* means stimulating the action of *Agni* (digestive fire) in *Koshta* (Stomach, Intestine) and stimulating *PachakaPitta* , *Kledaka kapha*, *Samanavata* (which comes under types of Pitta, Kapha and Vata). Thus the enzymatic activities of stomach get stimulated . But which *Guna* will be responsible for such functions is unable to explain even through it posses various *Guna* . Hence *Acharya* considered that it is due to the *Prabhava*⁷ of *Grita* (extraordinary power) . *Snehodvega* means expelling excess air accumulated in the digestive tract . The air that is raised as belching , after the proper *Vipaka* of *Grita* (digestion of Ghee) contain the essence of *Sneha* in it. *Twak snigdha* or *Gatra maardavam* (smoothness of skin /soft body) is obtained through the *Snigdha* and *Mrudu Guna* of *Grita*. Due to its *Snigdha*, *Sara Guna*, *Grita* is responsible for the easy bowel movements. It can lubricates the *Pureeshavaha srotas* (Rectum and Anal canal) also . In this way *MalaSanga* (constipation or hard stool) is corrected by the administration of *Ghruta*.

The *Drava* property of *Grita* means that it can act as a solvent for many substances within the body so that it can reach up to *Sroto* level (microchannels or nanochannels) and provide nutrients to the minutest level. Inturn it dissolves toxins or metabolic waste products and carry them to the *Koshta* (bowels) make it ready for expulsion. Thus *Grita* helps in Clearing the *Srotas* and removing the *Srotorodha* (blockage in channels).

Discussion

For better understanding of the concept, such mechanisms can be explained by connecting them with Lipid digestion and metabolism. Lipids⁸ are compounds that are relatively insoluble in water but soluble in non-polar solvents such as Chloroform, ether etc: Lipids involve Fats, Cholesterol, Triglycerides, Fattyacids, oils, Steroids, wax, Fat soluble Vitamins etc:

Triglycerides is an ester formed from Fattyacids and Glycerol. Fatty acids are Carboxylic acids with unbranched chains of Carbon which usually derived from Triglycerides or Phospholipids.

Saturated Fatty acids having no double bonds are usually solid at room temperature. Such fats are found in meat, cheese, butter, Palm oil, Coconut oil . Past studies mentioned several health hazards of Saturated Fattyacids and they are considered as the main cause for CAD. But recent studies showed that Saturated Fattyacids are harmless and have many therapeutic effects.

Among Unsaturated fattyacids, the Monounsaturated fats have a bend in the chain, so that molecules cannot be packed tightly and they does not become solid at low temperature, found to be in liquid state generally. Eg: Olive oil, Peanut oil, Sesame oil

Poly Unsaturated are found in Cornoil, Safflower oil, Soybean oil, Sunflower, fatty fishes like Tuna. They are believed to reduce the risk of heart diseases too. Among Unsaturated Fattyacids, Omega-3 Fattyacid or alpha-linolenic acid [ALA] and Omega-6 Fattyacid or Linoleic acid [LA] are very essential since they are not synthesized in the body. They need to be consumed through food. Both Fatty acids are found in two

forms - ShortChain varieties and Long Chain varieties.

Short chains of Omega-3 are found in Plants in the form of Alpha-Linolenic acid, whereas **Long-Chain varieties** are found in animals such as fish, in the form of EPA or Eicosapentaenoic [EPA] and DHA or Docosahexaenoic acids. DHA is present in cod liver oil, fats, organs of animals, fatty fishes etc: It is the primary structural component of brain, retina. EPA is the precursor of DHA. They have Anti-inflammatory effects.

Short chains of Omega-6 is Linoleic acid, found in Sunflower oil, Cornoil. **Its longer variety**-Arachidonic acid ,is found to be an important component of cell membrane, Mitochondrial membrane. It is present in animal food such as liver, egg yolk, meat, seafood. It has several benefits such as for brain growth, in vision, in promoting wound healing, skin disorders, regulate inflammation.

The cell membrane of human is made of the components of Omega- 3 and Omega-6 unsaturated Fattyacids, which serve as precursors to bioactive lipid mediators and provide a source of energy.

In *Snehapana* or during the period of consumption of medicated ghee, the whole qualities of *Grita* including the qualities of medicines used in *Ghruta* ,diffuses into each cells. Inturn toxins from cells diffuses back into the *Grita* medium through active and passive transportation and reaches the circulation, ready for expulsion.

In high temperature, the bondings of Fattyacids can rotate causing chain shortening and make the Cell membrane thinner, so that it enable a rapid exchange of substances between the cells. There will be an increase in Basal metabolic rate during *Snehapana*. This aids the exchange processes between the cells as well as between the cells and *ghrita*. The *Sveda karma* (sweating procedure) after *Snehana* procedure, also progress the exchange processes of substances between the cells. So that more unwanted materials will be move towards the nearest route, *Koshta* (GIT) for expulsion

, while those accumulated under the skin will be expelled through the minutest sweat pores in the skin.

Each and every part of our body is made of various types and composition of *Sneha* . Some Unsaturated Fatty acids, a Phospholipid layer (derived from the combination of Glycerol, 2 Fattyacid chains and Phosphate group), Glyco-protien layer, Cholesterol, Carbohydrates and Protiens together constitute the structure of a Cell. Cholesterol⁹ [Chole-bile; Stereos- solid ; ol – alcohol] = is considered as the precursors of Steroid hormones and Bileacids. They are even necessary for the development of Myelin sheath. Forms the main component of adipose tissue , essential for repairing damaged cells, for Vitamin D synthesis and so on.

If we examine the Composition of Ghee :-

Source:USDA Nutrient Data base¹⁰

Fat-99.5%, such as Monounsaturated Fattyacids - 17-20% Polyunsaturated Fattyacids - 3-6% , Where Omega-3 longchain Fattyacids -1.447mg , Omega-6 Fatty acids -2.247 mg, Omega-9 Fattyacids -25.026 mg Cholesterol - 256mg Vitamin A, E, K in Micrograms.
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Here ,Ghee or *Grita* contain 100% *Sneha* substances or substances that provide unctousness to the body .

So, if we administer *Grita* , it will be easy to get absorbed into the cells due to their similarities. Before absorption, it should be brokendown into simple substances with the help of enzymes.

Whenever a fatty rich food enters the body, Salivary Amylase, Gastric Lipase, Lingual lipase, Bile, Pancreatic lipases will act on it and breakdown into Fattyacids and Glycerol . Bile salts have detergent action which promote Emulsification. It also has detoxicative functions. Majority of Cholesterol get break down in the

body due to the action of Bile acids.

Nearly 500mg of Cholesterol are utilised for further synthesis of bile acids and excess get eliminated through bile into the Intestine every day, particularly in situations of excess Cholesterol ingestion . About 95% of Bile acids are absorbed back into blood within the Ileum. Only a small quantity get lost from the body ¹¹. In case of *Snehapana* ,(oral administration of medicated Ghee) the same process might be happening.

Along with Bile, Pancreatic lipase also convert most of the Triacylglycerol into Monoacylglycerol and Free Fatty acids.

Fatty acids greater than 14 Carbon atoms , retain their association with bile acids and finally forms Micells which are absorbed into the Enterocytes by simple diffusion through specific transport protein such as SLC 27. Example, Long chain fatty acids and some Cholesterol molecules . Within the Cytosol of Enterocytes, mostly in Mitochondria, the Long-Chain fatty-acid-CoA ligase, catalyzes the reaction between a Fattyacid molecule with ATP to give a Fatty acyl-adenylate, which then reacts with free Co-enzyme A, to give a Fatty acyl-CoA molecule. They are transported to Endoplasmic reticulum, where they are used to synthesize TAG or Triglycerides. The whole process continue in Golgi apparatus. Triglyceride is packed with Cholesterol, phospholipids, proteins, other lipid molecules to form Chylomicrones. The Chylomicrones are then transported from Golgi by Exocytosis into the space outside the cells, directly into lymphatic vessels ¹².Researches showed that Short chain and Medium chain fatty acids do not require media such as

Bilesalts, Pancreatic lipase, or Micell formations for their absorbtion ¹³. Such fatty acids present in Ghee, Milk, natural oil are directly absorbed into the cells of intestine and then into Portal vein. The fatty acids are transported by Plasma albumin and diffuses across the cell membrane, using a protein transporter and form Acyl-CoA in the cytosol. Acyl-CoA molecules crosses the inner membrane of Mitochondria. Within the Mitochondrial matrix, β - oxidation takesplace . Acetyl-Co A, Water, 5 ATP molecules are the products of each events of Oxidation.

Two important enzymes involved in Fattyacid metabolism are delta-6 desaturase and delta-5 desaturase. ¹⁴ The bile which is normally produced during the period of *Snehapana*, has more chance to be excreted out through feces. This bile carry and eliminate some amount of unwanted Cholesterol along with it. Bile is one of the major excretory route for potentially harmful exogenous lipophilic substances, endogenous substrates like Bilirubin, bile salts and for those substances not excreted or filtered properly by kidney. Bile also excretes some metals like Copper,,Zn, Hg, Pb and so on.

The final product **Acetyl-CoA molecules** involve in many Biochemical reactions in the body such as Cellular respiration and enters the Citric acid Cycle in Mitochondria, react with Oxalo - acetate to form Citrate, which is an excellent Chelating agent.

Two acetyl-CoA molecules condense to form Aceto acetyl-CoA, which give rise to Acetone. Such Ketone bodies released from Liver cells, finally enter the circulations, can cross Blood-Brain barrier, give fuel for CNS, act as a substitute for Glucose. While Some Acetyl-CoA molecules act as an important content for the synthesis of a neurotransmitter – Acetylcholine. Acetyl CoA play a major role in melatonin synthesis - a hormone produced by Pineal gland that regulate sleep and wakefulness. The Acetylation process affects Cell growth and mitosis ¹⁷.

The various functions of Acetyl-CoA shows how *Samyak snigdha lakashana* happen. The word *Vatanulomyata* not only means making the movement of Vata in right directions , but it also emphasize all biological reactions, transportations and movements of GIT. *Gritapana* or *Snehapana* thus helps to regulate all these functions in a smooth steady way.

Deeptoragni or Stomachic – the *Grita* induces the production and secretion of several digestive juices or enzymes necessary for excess lipid molecules to get digested thereby eliminate unwanted molecules away from the body. The term also can be used to indicate the Cellular respiration.

Snigdha or *Mrududeha* – to make each and every cells smooth or unctuous. The cell membrane of all animals contain Fattyacids. In high temperature, their bondings can rotate causing chain shortening and make the membrane thinner enabling a rapid exchange of substances between the cells. In *Snehapana* , the whole qualities of *Grita* will enter into each cells due to *Samana Guna* (equal qualities) of *Grita* and Cell

membrane, making the body soft, smooth and unctuous to touch.

Asamhata Mala or *Vinihanthi malasangam* (loose stool) – The lipid molecules entering the intestinal tissues through bile, as well as through diffusion, make them too unctuous and smooth. There will be production of more water molecules within the cells along with other byproducts during the final stage of Lipid metabolism. Such factors might contribute to the Laxative properties during *Snehapana* as well as found as a major *Samyak Snigdha lakshana*.

Snehodvega - means expelling excess air accumulated in the digestive tract . The air that might be raised as belching , after the proper *Vipaka* of *Grita* (digestion of Ghee) ,carry a mixture of Nitrogen, Oxygen, Carbon and other nano chemicals which contain the essence of *Sneha* in it. There is another possibility that the presence of a volatile Fatty acid- Butyric acid¹⁸ can contribute the feelings of rancid smell and taste in the air that comes out through mouth.

Klama -means tiredness or lack of energy to do a work .This symptom occurs due to the excess physical exertions of musculoskeletal cells as well as due to mental exertions during the period of *Snehapana*. But it will be temporary like above other symptoms.

The *Sneha* we ingested after supplying proper nutritions to each and every parts of body, readily absorb the unwanted products back from the cells and through bile such unwanted products will be expelled out through the nearest routes.

Conclusion

A plain *Grita* or a medicated *Grita* will be having so much importance in our day to day life for being healthy and for leading a healthy life. Due to several *Guna*, *Grita* is able to satisfy almost all basic needs of a cell. *Grita* can be consumed alone or along with other food substances daily in a small dosage depending upon the status of one's *Agnibala*, *Koshta*, *Roga-Rogibala* (nature of digestive capacity, bowel, strength of a person ,strength of his disease). If it is consumed as a part of *Snehapana* procedure, it can regulate *Doshic* imbalance as well as provide nutritions to the whole cells. Such functions of *Grita* can be assumed through the symptoms or *Lakshana*, which inturn is found to be due to various factors like Acetyl-CoA, the byproducts formed during Lipid digestion and metabolism.

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