



EXPLORING THE SIGNIFICANCE OF *DINACHARYA* IN “IMPROVING AGNI AND ENHANCING METABOLISM FOR DISEASE PREVENTION”

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Abstract: *Ayurveda* is a holistic science that focuses on disease prevention by bringing about the harmony between body and mind. A *Samavastha* (balanced state) of Agni plays a major role in maintaining the digestion, metabolism and is critical to achieving bodily homeostasis. *Ayurveda* emphasizes on the various measures to ensure the importance of routines like *Dinacharya* (daily regimens), *Ratricharya* (night-time regimens), *Ritucharya* (seasonal regimens), and *Sadhvritta* (good conduct) to prevent diseases and maintain health. Thus, it is the need of the hour to adopt these Ayurvedic principles into daily practice in order to preserve Agni and achieve health. **Methods:** The Ayurvedic texts and databases such as MEDLINE, AYUSH Portal, and PubMed were searched for relevant literature. Original research articles that were subjected to peer review were reviewed. Using the search phrases "metabolism," "*Agni Dushti*," and "*Dinacharya*" articles were chosen. They were screened by reading titles and abstracts and were initially excluded if they did not refer to *Agni* and *Dinacharya*. **Discussion:** *Dinacharyas* that can benefit *Agni* were analysed, and conclusions on how they affect metabolism were drawn from the analysis. **Conclusion:** With the prevalence of lifestyle disorders rising in the modern period, it is imperative to implement preventive measures like *Dinacharya*, which can significantly influence *Agni* and enhance the body's metabolism.

Index Terms - Dinacharya, Agni, Digestion, Metabolism, Disease prevention

I. INTRODUCTION

According to Ayurveda, the *doshas*, *Agni*, *Dhatu*, and *Mala*, are in balanced state when it comes to health.^[1] They control physical processes and are essential for preserving general health. As a result, every individual should engage in activities that support keeping these elements in balance. A sedentary lifestyle and poor eating habits can contribute to an unhealthy body. A good metabolism is very important to prevent lifestyle disorders for which *Agni* in its *Samavastha* is essential. The metabolic transformation of substances in the body takes place through the action of 3 forms of *Agni* - *Jatharagni*, *Bhutagni* and *Dhatvagni*. *Jatharagni* initiates the digestive process by stimulating *Bhutagni* to transform *Panchabhautika Ahara*, which further facilitates tissue metabolism by *Dhatvagnis*. The resulting metabolites circulate through the *Srotas* with the help of the *Vata Dosha*, promoting tissue development, strength, complexion and overall well-being.^[2] Ayurveda strongly asserts that every illness stems from the disruption of *Agni*. The basic approach to both prevention and treatment in Ayurveda focuses on the regulation and supervision of the state of *Agni*. When *Agni* is disturbed, *Ama*, a metabolic toxin is produced that leads to various diseases.^[2] Therefore, it is necessary to maintain *Agni* by following the various concepts told in Ayurveda like *Dinacharya*. *Dinacharya* refers to a set of daily practices ('*Dine Dine Charya*') aimed at focusing on self-care. It emphasizes the importance of a consistent routine from waking up to throughout the day to maintain an

individual's health. *Acharyas* have elucidated the benefits of *Dinacharya* practices, which could be further analyzed through scientific interpretations to understand their impact on *Agni*, further aiding in digestion and metabolism in preventing disease and improving health.

II. Methods:

The *Ayurvedic* texts and databases such as MEDLINE, AYUSH Portal, and PubMed were searched for relevant literature. Original research articles that were subjected to peer review were reviewed. Using the search phrases "metabolism," "*Agni Dushti*," and "*Dinacharya*" articles were chosen. They were screened by reading titles and abstracts and were initially excluded if they did not refer to *Agni* and *Dinacharya*.

III. Scientific understanding of *Dinacharya* procedure:

1. *Brahmi muhurtha uttistha*: A healthy person with an intention to preserve health should get up from sleep in *Brahmi Muhurtha* after analysing whether the food consumed on the previous night is properly digested or not. Waking up at this hour supports *Vata Dosha* in carrying out its *Prakrutha Karma* of aiding in bowel movements as the last part of the night is primarily dominated by *Vata Dosha*. Clinical studies have reported, significant improvement in patients with *Vibanda* to heal better^[3] when practiced waking up in *Brahmi muhurtha*.

Brahmi Muhurtha is approximately two muhurats, (i.e. 96 minutes) before sunrise. This time period plays a pivotal role in resetting the body's biological clock daily, effectively rebooting and regulating its rhythm and pattern.^[4] The Cortisol hormone, the chief glucocorticoid is at its peak in 30 minutes post awakening in *Brahma muhurta*, which carries anti-stress, immune-modulation and metabolic enhancement activity.^[5] Hence This time period can be considered best to engage in learning or any activity one wishes to excel in. Also, Melatonin, the chief hormone responsible for regulation of energy metabolism and glucose homeostasis will be high during this period.^[6] The brain's circadian clock directly regulates the activity of a cluster of immune cells crucial for gut health, which could help explain the connection between sleep patterns and gut inflammation. Changes in sleep habits, like sleep deprivation, can lead to significant health issues, including diseases with an immune aspect, such as bowel inflammation. Type 3 innate lymphoid cells (ILC3s), a vital immune cell in the gut responsible for guiding lipid absorption, have been found to interact with nerve cells; suggesting that, disruptions in circadian rhythms might influence ILC3 function.^[7] Disruption of the circadian system known as circadian dysrhythmia, is increasingly common, which can alter microbiome communities and can perturb host metabolism, energy homeostasis and inflammatory pathways, leading to the metabolic syndrome.^[8] Hence, waking up in early hours helps maintain circadian rhythms and maintain gut health.

2. *Ushapana*: Drinking 8 *Prisriti* (640ml) of lukewarm water during *Brahmamuhurata* is recommended, it is beneficial in *arshas*, *grahani*, *jatara jara*, *medho vikara*^[9] as Drinking warm water moderately increases temperature and blood pressure in the local tissues. This might increase more secretion of digestive enzyme, promoting the digestion as in improving function of *bhutagni* and *jataragni*. Thus, consuming ample of warm water on an empty stomach eases the process of bowel movement by improving the peristalsis movement of the intestine and easy excretion of wastes in the early hours.

In 2003, a Study was conducted to test the hypothesis that 'the sympathetic stimulus which was provided by drinking water could increase the metabolic rate' (Thermo-genesis). This study Reveals that drinking 500 ml of water increases metabolic rate by 30%. Further this increase in metabolic rate was observed within 10 minutes of drinking Water and it reached a maximum, 30-40 minutes after water drinking.^[10] In healthy subjects, water drinking increases muscle sympathetic nerve traffic and venous plasma norepinephrine concentrations. Furthermore, the pressor response can be abolished with systemic ganglionic blockade. The sympathetic nervous system is important in regulating energy metabolism and fuel utilization. Thus, Sympathetic activation increases cellular glucose uptake improving metabolism and stimulates lipolysis. It is called as water induced thermogenesis. Similar to function of *dhathvagni*.^[11]

3. *Malathyaga*: Waste generated from previous food will be stored in rectum and will be expelled naturally by urges in morning. *Vata* is predominant during early morning hours and excretion is the function of *Apana vayu*. Thus, doing *malathyaga* at this time clears the rectum, increase digestive power and prevents many disease manifestations like *Antra koorjana*, *adhmana*, and *udhara roga*.^[12]

Fecal solid component includes 30% of undigested food components and 10 – 20% of cholesterol and other fats. Thus, helps in clearing metabolic waste debris and preventing in formation of *Ama*.^[13]

4. *Dantadavana*: method of cleaning the teeth by means of brushing, *Manjana*, *Pratisarana*, etc., using soft tooth brush made from medicated plants or, also with herbal powders. *Danta kashtha* should be of *Katu*,

Tikta, Kashaya Rasa. It helps in cleaning the oral cavity, perceiving the taste better, stimulates desire for food i.e *annabiruchi*^[14] by removing *asyavairasya*.^[12]

Katu rasa helps to improve digestion by removing *Abhisyanda*, *tiktha rasa* improves the taste, aids in digestion and is carminative and *Kashaya Rasa* does *sthambana* of excess secretions and is anti-inflammatory in nature required for gut health.^[15]

5. Jihwa nirlekana: As a part of oral hygiene *Acharyas* have also mentioned scraping of the tongue using an instrument made of silver, gold, iron or strong twig of tree that is soft, smooth & serves to clean. This action helps to prevent *Aruchi* and *Vairasya*^[14] and improve taste sensation of the food. *Acharya Vaghbata* also mentioned that doing *Jihwa Nirlekhana* would also contribute in bringing *laghuta* in the body. According to Chinese medicine tongue acupuncture is a treatment where in, it stimulates the particular organ to enhance their function. Thus, scrapping of tongue with this knowledge may have an additional benefit to improve function of liver and stomach also.^[16]

6. Gandusha and Kavala:

Kavala is a process in which medicated paste in small quantity are filled & swish around the mouth. Helps treat *arochaka*, *asya vairasya*.^[14] *Gandusha* in which medicated liquid in sufficient quantity are filled & hold in the mouth for certain time period. it removes *aruchi*^[17] *ruchya*,^[12] helps in *rasa gnana*,^[2] *ruchi uthama*.

By doing *kavala* & *Gandusha*, active ingredients of the drugs get absorbed through buccal mucosa & reach the blood stream by increasing the mechanical pressure inside the oral cavity. This stimulates the chemoreceptor and mechano- receptors of the oral cavity to send signals to salivary nuclei in the brain stem. Resulting in increased salivary secretion and also increases the local defence mechanism of the oral cavity^[18] hence help to provide good initial level of digestion.

The oral cavity performs really important function of digestive health. It helps break down food in two main ways: that is while chewing mechanically breaks down of food into smaller pieces and while saliva contains enzymes that chemically start breaking down food. When we chew and mix food with saliva, it kick-starts digestion. This not only makes it easier to swallow but also helps our digestive organs later on in the process.^[19] Interestingly, new studies have found that, the oral microbiomes can move to other parts of the body like stomach, heart, and even brain. This shows that taking care oral microbiome isn't just about keeping our teeth and gums healthy^[20] but also important for our overall health.

7. Abhyanga – Practice of massaging the whole-body including head, with suitable oil regularly helps in nourishing the body (tissues) at *dhatu* level and does *Dathupusti* and *Samhanan*. Massage has local and systemic effects on the body as it mainly affects the nervous system and endocrine system. A definite vasodilation along with an increase in the peripheral blood flow is usually observed after massage, bringing more oxygenated blood and nutrients to the area which in turn reduces muscle fatigue and soreness. This also aids the removal of toxins and waste products from the muscle.^[21] That could be co related to *dhathvagni* function.

8. Udhwartana - In this the body massage is done in an upward direction by the use of herbal powder. Increased *kapha* in the body may lead to heaviness and hamper the metabolism due to its *guna*. For *Udhwartana ushna* and *Ruksha Dravya* are used as it helps to liquefy and reduces the tissue fat as well as serum lipid, which could be understood as *sharira parimarjana*.^[2]

Based on contemporary knowledge, it can be understood as that increased friction across the body stimulates beta-3 receptors found in subcutaneous fat tissue, leading to the breakdown of triglycerides into fatty acids. Centripetal massage enhances circulation to internal organs, facilitating the conversion of fatty acids into bile in the liver. The bile produced is expelled through faeces, reducing its reabsorption and promoting lipid utilization in the bloodstream.^[22] Thus improving *dhathu* level of metabolism.

9. Vyayama – Regular physical exercises should be done based on one's capacity. Exercise stimulates the sympathetic nervous system & will induce an integrated response from the body. This response works to maintain an appropriate level of homeostasis for increased demand in physical, metabolic demand. contracting muscles release substances known as Myokines which promotes the growth of new tissues, tissue repair.^[23]

According to the World Health Organization, not being active enough leads to 6% of global deaths. When exercised there will be increased mobilization of fatty acids from the adipose tissues and these free fatty acids gets transported to the muscle mitochondria where there will be oxidation. Thus, *vyayama* helps to decrease body fat and metabolism related disorders.^[24] Considering this mode of action, it can be understood that practicing *vyayama* regularly brings *laghuta* of the body, increase work ability and does *deepthagni* (improves digestive power and metabolism).^[2]

10. Snana – *Snana* is not just the form of cleansing of the body but also does many more physically and psychologically effect like increases the appetite, *arochaka*, removes *gaurava*, does *Deepana*.^[17]

Bathing induces hyperthermic action, warming the blood in surface vessels and subsequently raising deep body temperature through circulation. This increase in body temperature excites heat-sensitive neurons and suppresses cold-sensitive neurons in the hypothalamus's thermoregulatory centre. As a result, sympathetic nerves are inhibited while parasympathetic nerves are stimulated, leading to vasodilation and increased perspiration, thus lowering body temperature. This process also stimulates metabolism and promotes the digestion, elimination of metabolic waste materials.^[25]

As per naturopathy principles, bath is considered as external hydrotherapy or type of water irrigation like jacuzzi having different benefits with different temperature of water used in improving circulation and promote fat metabolism. A study says that utilization of mineral water in spa treatments has demonstrated effectiveness in inducing clinical remission of the disease, as well as normalizing echoscopic images of the stomach and gallbladder, improving their motor function. Additionally, the tesiocystalloscopic characteristics of saliva further support the effectiveness of this approach in rehabilitating patients with gastric and gallbladder motor-evacuatory dysfunction.^[26]

11. Tambula sevana - A betel leaf prepared with *Lavanga*, *Karpura*, *Jatiphala*, *Sudha*, *Kramuka*, *Kankola* and *Latakasturi* etc. should be taken (chewed) after meals, after vomiting, after bath as well as after waking from sleep. In general, betel leaf along with other *dravyas* are *kaphashamaka* and does easy digestion when consumed after food intake. Bioactive compounds present in betel leaf called Allylpyrocatechol is proven to be gastroprotective by increasing mucous production and decreasing damaging factors in stomach.^[27] Chavibetol, along with hydroxychavicol, acts as a radio protectant, and exhibits substantial immunomodulatory and free radical scavenging activities. Researchers also found the advantage of betel leaf in maintaining salivary ascorbic acid levels in humans and regulation of the appetite.^[18] Hence increases *ruchi*^[17] and does proper *pachana* of food.^[28]

12. Chankramana – *Acharyas* have told to practice *chankramana* (walking) after *bhojana* for 100 steps and lie down on left lateral position for better digestion of food. Sitting immediately after meals can cause drowsiness which may lead to delayed digestion of food. Walking after eating helps digestion as it is the milder form of *vyayama* by developing thermogenesis effect, does breaking down of complex foods into simpler forms and easing their passage through the digestive system. Since the stomach is positioned obliquely in the upper and lateral parts of the abdomen, including the epigastric, umbilical, and left hypochondriac regions, with much of it covered by the left costal margin and ribs, lying on the left side supports the stomach. This position aids in digestion and reduces the risk of food regurgitation through the cardiac notch.^[29]

IV. Discussion:

Prevalence of lifestyle diseases has reached alarming proportions among Indians in the recent years. Studies have also showed metabolic disorders like overweight/obesity seen among 29.9 per cent in relatively young and active adults is quit alarming.^[30] Living an unorganized and unhealthy lifestyle can greatly impact on our digestion, metabolism and weaken our immune system, from young age. When the core digestion is harmed the further process of metabolism is disturbed leading to predisposing conditions like fat deposition, improper functioning of digestive organs etc. *Agni*, which is our digestive fire, is connected to how our body digests food and uses it for energy. This is associated with various hormones, enzymes, and other substances that help with digestion and metabolism. Metabolism refers to the whole sum of reactions that occur throughout the body within each cell and that provide the body with energy.^[31] Hence the role of all three *Agni* plays important role even at *dhathu* level to get-over the minute impairment in regular functioning of the body. The process of transforming food into energy, called *Ahara Paka*, is crucial for good health. But the unhealthy routines can lead to disruptions in *Agni*, which can hamper the process and result in the formation of *Ama*., which can result in various ailments.

Diseases due to *Vikrutha Agni*: Due to the diminished *Agni* the first *Dhatu*; called *Rasa* doesn't form well, so it remains in *Amashaya* for a long time and undergoes fermentation resulting in formation of *Ama*. Diseases like *Ajirna*, *Vibanda*, *Amlapitta*, *Aruchi*, *Grahani*, *Aamavata*, *katigatavata*, *tamakaswasa*, *tandra* are majorly caused because of *dustagni* and *Aama*. *Agni* is also important in avoiding diseases like *jwara*, *athisara*, *chardi*, *Prameha*, *Arshas*.

Ama effecting metabolism in modern aspect:

In modern terms, "ama" can be referred to free radicals. *Ama* arises due to the reduced function of *Agni*, which is responsible for all chemical processes in the body. It forms as an incomplete intermediate state of digestion. Similarly, free radicals are generated in abundance when there's a disturbance in the balance between their production and the body's primary defence mechanisms. Certain enzymes produce free radicals as intermediate substances, which are supposed to undergo further metabolism. The disruption can alter metabolic pathways, resulting in elevated levels of blood urea, uric acid and sugar. Hormonal and enzymatic deficiencies such as hypothyroidism, diabetes, and obesity may also be attributed to reduced digestive function. Similarly, allergic disorders like urticaria, hay fever, and allergic rhinitis may also stem from decreased digestive power.

Scientific understanding reveals the profound impact of incorporating *Dinacharya* practices into daily routines, particularly in the realm of metabolism regulation. Such practice involves awakening during the *Brahma muhurta*, a period characterized by peak physiological activity. Studies suggest that waking during this time aligns with natural circadian rhythms, maximizing the release of cortisol and melatonin, hormones crucial for stress management and metabolic regulation, respectively. Furthermore, the consumption of warm water upon waking stimulates digestive enzyme secretion and enhances peristalsis, promoting efficient nutrient absorption. Similarly, practices like tongue scraping, oil massage, and physical exercise exert systemic effects, stimulating metabolic processes and aiding in toxin elimination. These insights underscore the scientific validity of *Dinacharya* in fostering metabolic health, offering tangible strategies for preventing most common lifestyle disorders like type 2 Diabetes mellitus, cardiovascular disease, obesity, hypertension, cancer, infertility, hypercholesterolemia, atherosclerosis and achieve overall well-being in the contemporary era of sedentary lifestyles and dietary imbalances.

VI. Conclusion: Preserving and promoting health is one's own responsibility. *Agni* is one of the important entities which can influence the state of health. One of the ways to maintain it is by adopting right lifestyle at a very young age. *Dinacharya* when followed regularly, can help in maintaining *sama dosha*, *samaagni* and *sama mala* which is aim of Ayurveda. Hence *Dinacharya* fosters a balanced lifestyle, supporting *Agni*, metabolism and promoting overall health.

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