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A REVIEW ARTICLE ON DEERGHAAYU LAKSHANA

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ABSTRACT

Long healthy life is the wish of every being since antiquity, *Ayurveda* is the science of life with the goal of attaining health and curing diseases ill. The main of *Ayurveda* is to attain pious acts (*Dharma*), wealth (*Artha*), desire (*Kama*), and Salvation (*Moksha*) by Health. A healthy long life is necessary to attain these prime aims. *Ayu*, the life span is divides as *Dheerghayu, Madyamayu Hrusva Ayu*. *Acharyas* explained how one can attain *Dheerghayu* (longevity) and also the same time explains some physiological evidence for longevity. *Prakrati, Agni, Sara, Saatmyam, Trayopathamba,* etc are some of the indicators of *Dheerghayu*. For example, If a person has *Asthisara*, then he will live a long life. In modern science, the indicators for longevity are Heart rate, Respiratory rate, Basal metabolic rate, etc.

Keywords - *Ayu, Prakriti, Sara, Agni, Ayurveda.*

INTRODUCTION

Deerghayu according to *Ayurveda* means the complete balance of body mind and soul, and then living a long life without this balance, a person cannot enjoy the real benefit of longevity: a state of permanent happiness and peace. In *Ayurveda*, the person tries to attain longevity not only to satisfy the physical aspiration but also to fulfill the needs of the mind and soul. Sanskrit uses the term "*Dirghaayu*" for longevity. There is a whole section in the ancient *Ayurvedic* text, *Charaka Samhita* which described the features of longevity such as *Agni Sara, Samhanana, Prakruti*, etc. In *Vimanasthana Acharya Charaka* has described age division and old age is defined as the state of the body corresponding to the length of time. The age is broad-

ly divided into three stages childhood, middle age, and old age. Childhood determined up to sixteen years, middle age determined up to sixty year and old age determined up to one hundred years.[1] According to *Susuruta* age is divided into three stages the young, middle-aged, and the old. Those who are less than sixteen years of age are called the young. They are also of three types those who drink milk only, those who take milk as well as food and those who take food only out of them, those who are up to one year of age or less drink milk only, those who are more than one year but up to two years of age take milk and cereals, above that (i.e. more than two years of age) they take all cereals the adult is between sixteen and seventy years of age . after seventy years of age one is called old.[2] *Acharya Charaka* has mentioned that if all *Doshas* (*Vata, Pitta, Kapha*) are in equilibrium the man will get four important things which are *Bala* (strength) *Varna* (complexion), *Sukha* (happiness), and Ayu (life), and if *Doshas* are not in equilibrium it causes destruction of these four components in our body.[3]

DISCUSSION

Mamsa Sara: The person with the essence of *Mamsa* have their temples, forehead, nape, eyes, cheek, jaws, neck, shoulders, abdomen, axillae, chest, hands, feet, and joints equipped with a firm, heavy, and good-looking muscles. This essence indicates bearance, restraint lack of greed, wealth, learning happiness, simplicity, health, strength, and longevity.

Asthi Sara

Those with *Asthisara* have prominent heels, ankle, knee, elbows, collar bones, chin, head, joints, and also bones, nails, and teeth such persons are enthusiastic, active, enduring having strong time-body as well as longevity.

Majja Sara

The persons with soft organs, strong unctuous. the complexion and sweet voice, prominent, long, and rounded joints should be known as *Majja Sara* (those having *Majja* as essence) they are long-lived strong, and endowed with learning, wealth understanding. Progeny and respect [4]

Kaphaja Prakruti Lakshana

Sleshma (Kapha) is unctuous, smooth, soft, sweet, essence, solid, dull, rigid heavy, cold, slimy, and clear. Because of its unctuousness the person with a predominance of *Kapha* has unctuous organs, due to smoothness smooth organs due to softness pleasing, delicate and fair organs, due to sweetness abundant semen, sexual act and progeny due to nature of essence excellent, compact and stable body, due to solidity all organs well developed and perfect, due to dullness dull in activities, diet, and speech, due to rigidity delayed initiation, irritation, and disorder, due to heaviness movement supported with essence and stability due to coldness little hunger, thirst, pyrexia and perspiration due to hunger, thirst, pyrexia and perspiration due to sliminess well united and strong joints ligaments, due to clarity clear eyes and face with clear and unctuous complexion and affectionate voice. Because of the presence of these qualities the *Shleshmala* persons are strong, wealthy, learned, brave, and long-lived [5]

Satmya

Suitable is that which is used constantly and has a wholesome effect, those suited to ghee, milk, oil, and meat soup, and all *Rasas* are strong, enduring, and long-lived.[6]

***Nidra* (Sleep)**

Dependent on sleep is happiness and misery corpulence and leanness strength and weakness, potency and impotency intellect and non-intellect, and life and death. "Sleep is the diet of mind." Properly regulated sleep is necessary for good health and longevity six to seven hours of sound. Sleep is necessary. One should avoid sleeping in the daytime.[7]

Bowel clearance habit

Cleaning of feet and excretory orifices frequently promotes intelligence, purity, longevity and destroys inauspiciousness and dirt.[8]

***Agni* (*Jatharagni*)**

In *Chikitsasthana Acharya Charaka* has said about Agni in *Grahani Chikitsa adhyaya* that life span complexion, strength, health, enthusiasm, corpulence, lusture, immunity, energy, heat processes, and vital breath all these depend on body fire. One dies if this fire is extinguished lives long free from disorders if it

is functioning properly. The digestive fire cooks the timely taken and balanced food properly leading to the promotion of life span. The Agni which digests food is regarded as the master of all *Agni* because the increase and decrease of other *Agni* depend on the digestive fire. Hence one should maintain it carefully by taking properly the wholesome fuel of food and drinks because its maintenance depends on the maintenance of lifespan and strength.[9]

BMR (Basal Metabolic Rate)

Larger animals in general have a low metabolic rate and tend to live longer than smaller animals with a corresponding higher metabolic rate. One explanation for the difference in metabolism is that all species lose heat through the skin and since small animals have more skin surface in relation to their body size, they lose more heat than larger animals. Because of this, they need a higher metabolism to produce the heat needed to keep a body temperature of 36-38 degrees Celsius, since this temperature is optimum for protein performance.

Factors that influence basal metabolic rate are

1. Body composition: - fat tissue has a lower metabolic activity than muscle mass increases metabolic rate increases.

2. Gender: - The basal metabolic rate (BMR) average 5 to 10% lower in woman than in men this is large because woman generally possess more body fat and less muscle mass than men of similar size

3. Age: - A decrease in lean muscle mass during adulthood result in a slow steady decline of roughly 0.3% per year in BMR after the age of 30. This can be largely avoided by strength training throughout adulthood.[10]

Respiratory Rate

The secrete of longevity in all living species is that they have slow respiration and /or high tolerance for carbon dioxide i.e., suggesting that the carbon dioxide tolerance theory may be the most important factor determining longevity.

There are 2 main ways to increase the levels of carbon dioxide in our body r- reduce the outflow and increase the production. when we slow down our breathing less carbon dioxide is lost via exhalation and when you do physical activity, more carbon dioxide is produced as the metabolism increase. A great way is to combine the two, low intense physical activity while only breathing through our nose. Over time the carbon dioxide tolerance training will reset the breathing center in our brain stem and make us tolerate a higher and higher level of carbon dioxide, which in turn may help us to live a healthier and longer life.

In 1908 Rubner published his famous work noting the duration of animal lifespan and its relationship to energy expenditure. The free radical now days called the oxidative stress or the rate of living theory of ageing, took Rubners ideas further and was proposed some 60 years ago, it suggests that a lower metabolic rate means a longer life span and a higher metabolic rate means shorter life span.

Below are three more interesting connections in regard to aging:

carbon dioxide increase fat burning and antioxidant activity through the peroxisomes

(a) control mitochondrial biogenesis (size and number of mitochondria): - through the peroxisome PGC-1∝ is activated and it stimulates mitochondrial growth. In this cancer study, transcutaneous application of carbon dioxide induces mitochondrial apoptosis

Rats had cancer cells injected. In one group the rats were exposed to carbon dioxide and were administered into a bay that covered the tumor, for 10 minutes twice per week for two weeks for a total of 40 minutes, which is not a lot. Despite the tiny carbon dioxide exposure, the tumor volume was reduced by 48% compared to the control group. The researchers concluded that carbon dioxide activated the PGC-1∝ pathway and hence increased the mitochondrial activity, which in turn made the mitochondria induce apoptosis.

(b) covert long fatty acids to Acetyl-Co-A: - so that the Acetyl-Co-A can be fed to the mitochondria for conversion to ATP, hest, water, co_2, and free radicals in contrast to normal length fatty acids. These long fatty acids can't be burnt directly in the mitochondria but instead needs to pass through the peroxisomes for conversion first.

(c) Neutralize free radicals: - the conversion process from fat to Acetyl-co-A generates the free radical hydrogen peroxide consequently, the peroxisomes contain the enzyme catalase one of the fastest enzyme catalases can convert millions of hydrogen peroxide into water and oxygen per second in other words catalase is a powerful antioxidant that can neutralize large amounts of free radicals. In conclusion, the information above means that low co_2 not only leads to reduced mitochondria as the PGC-1∝ pathway is down regulated in low co_2, but low co_2 also reduces the size and number of peroxisomes and thereby decreased ability, which in turn contributes to increased oxidative stress and a shorter life.[11]

Heart rate

Long animals have slower heart rates and live longer than small animals. An inverse relationship between heart rate and life expectancy has been found in mammal this observation was attributed to the higher metabolic rate in small versus large animal. A high metabolic rate leads to the development of free radicals, oxidative stress, and faster ageing. A high metabolic rate is associated with faster heart rate, so the relationship between heart rate and life expectancy has been attributed to different metabolic rates in living organism this was originally described as the rate of living theory [12]

Some believe that fracture risk could be as high as 20 percent for those with osteoporosis. Fractures increase the risk of death. Several studies have shown that an osteoporosis fracture in men or women increases the risk of dying within five to ten years following the injury compared to the normal population (Blue et al. 2009). To reduce this risk, those with bone density issues should be treated or better yet bone density issues should be…**prevented**!

Establishing a high peak bone mass (PBM) by the age of twenty may be one of the most important factors in maintaining strong bones in your elderly years. Having osteoporosis increases fracture risk and increased the risk of death. The mortality rate after a hip fracture can range from 14 to 58 percent [13]

CONCLUSION

Determining *Deerghayu* in any individual is complicated as the long life does not depends upon a single factor but on many factors like *Agni*, *Sara*, *Prakriti*, *Nidra*, etc. in modern, it depends upon some biological parameters such as Heart rate, Respiratory rate, Metabolic rate, etc. in both science that is Ayurveda and modern, explained the evidence of long life only by those signs which are shown by the individual.

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