

Review article

Upavasa (fasting) for health & longevity: an overview

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ABSTRACT

Ayurveda is the science of life. It guides about the protection of health of the healthy and alleviation of ailments of diseased person. In Ayurveda Upavasa (fasting) is one among all Daivavyapashraya (spiritual) therapies and one among ten Langhana (that which produces lightness of the body) therapies. It is also stated in Ayurveda that fasting increases digestive fire and causes digestion of Ama-dosha (metabolic toxins). On religious grounds, Upavasa is a way to get closer to the almighty. Scientists have found fasting activates autophagy. Yoshinori Ohsumi, a Japanese cell biologist won the Nobel Prize in Medicine in 2016 for his research on how cell recycle and renew their content, a process called autophagy. Many published studies indicate positive effects of fasting on neuroprotection and longevity.

Keywords Upavasa, langhana, Ama, fasting, autophagy.

INTRODUCTION

The Sanskrit word for fasting is 'Upavasa'. 'Upa' means "near" and 'Vasa' means "to stay". Implicit in the word is that fasting means "to sit or stay near (the Lord)" to keep the Lord close to your heart and mind. The very word fasting thus has an inbuilt orientation of the divine therapy. In Ayurveda, Upavasa is one among all Daivavyapashraya (spiritual) therapies and one among ten Langhana (that which produces lightness of the body) therapies. Fasting is defined as "complete voluntary abstinence from taking any kind of food for particular time, in order to give rest to digestive system" (Mangalagowri V. Rao, 2016). It helps to get rid of flesh tainted with toxic filth, 'vital power' is engaged in eliminating the morbid foreign matter deposited in body parts. Fasting helps us cultivate control over the senses and keeps the mind peaceful. Fasting & Starvation are two different terms commonly confused with each other. Starvation means not eating or drinking altogether, while fasting means control and restraint of five sensory and five motor senses. Fasting activates autophagy, which helps to slow down the aging process and has a positive impact on cell renewal. Japanese cell biologist Yoshinori Ohsumi won the Nobel Prize in medicine in 2016 for his research on a process called autophagy is that how cells recycle and renew their content. Autophagy is an evolutionarily conserved lysosomal catabolic process by which cells degrade and recycle intracellular endogenous (damaged organelles, misfolded or mutant proteins and macromolecules) and exogenous (viruses and bacteria) components to maintain cellular homeostasis (Antunes F et al., 2018). Yoshinori Ohsumi's work is not directly related to the topic but somehow it helps to understand the process of cells to survive and to stay healthy during fasting; because during fasting, cells breakdown into proteins and

nonessential components and reuse them for energy. The process he studies is critical for cell to survive and to stay healthy. The autophagy genes and the metabolic pathways he discovered in yeast are used by higher organisms, including humans.

CONCEPT OF UPAVASA

'Upavasa' is giving up of anger etc. (grief, greed etc.) and following of truthfulness. It is said that "complete dissociation from sinful acts, association of virtuousness and/or good qualities or person of good qualities should be known as upavasa not the emaciation of the body (Charak Samhita Sutra sthna, 1/6). According to Vachaspathyama, upavasa is lack of food day and night and upavasa has two types – one is 'vaidha' or lawful fasting and other one is 'avaidh' or lawless fasting (Vachaspathyama, 1322). Fasting causes ignition of digestive fire. As per Ayurveda, Intermittent fasting is not only an eating regimen, it's pattern of consumption. It's a method for planning meals to get the most advantageous health impact out of them (Gaikwad ST et al., 2017).

PROCESS OF HEALTH IMPROVEMENT BY UPAVASA (FASTING)

Intensity of fire is reduced by the ash particles remaining on it, due to which it hampers the process of burning. Same in the case of human body, the vitiated dosha in human body, especially the digestive viscera known as Aamashaya in Ayurveda. This lessen the power and disable the digestive fire and causes stomach related debilitation, and production of ama (metabolic poisons or factors which arise as a consequence of the impaired functioning of digestive fire), which is considered as underlying driver of all illnesses. Which further lead to blockage of channels of the body, bringing about different sicknesses. Fasting, without nourishment in the viscera leads to the important destruction of many metabolic toxins, ignite the digestive fire along with clearance of blockages in the channels.

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This process helps to combat against illness. Notwithstanding, feasting before and after observing a fast is not at all recommended. In Ayurveda, Time and sort of fasting for detoxification is distinctive for various people according to their body category. Fasting as indicated by one's body sort implies fasting as per the doshas. This is on the grounds that each Ayurvedic measure ought to be coordinated to individual constitution. As indicated by Ayurveda, physiology of each individual is infested by three all-inclusive and all-encompassing basic powers (doshas), Vata, Pitta and Kapha. These represent all physical, mental and psychosomatic processes. This major individual balance of Vata, Pitta and Kapha decides Dosha category. Practically everybody is a 'blended sort' since a few or less everybody have blend of these three. The classics explain that wellbeing is only the balance condition of Vata, Pitta and Kapha, the three physical doshas (constituents) and Satva, Rajas and Tamas, the mental doshas. Therefore, the vitiation of physical doshas which are Vata, Pitta and Kapha alongside mental doshas Tamas and Rajas result in different toxicities (Gaikwad ST et al., 2017).

METHOD OF FASTING

Fasting is considered not from the last meal, but after the meal has been digested. One should drink water whenever feels hungry. Daily from sunrise the faster should be without food for 6 hours or more, until natural hunger is experienced, than take light meal with positive food (Mangalagowri V. Rao, 2016).

TIME-SPAN OF FASTING

According to Ayurveda, in jwarachikitsa as long as there is flatulence due to stagnation of the doshas, the patient should not partake any food and the regimen of light liquid diet may be followed (Sushruta Samhita Uttara tantra, 39/101-102).

CONTRAINDICATION DURING FASTING

Day-sleep, all beautifying agents like; collyrium, odour, flowers, garland, jewelry, tooth brushing, body massage, head massage, sexual activity, chewing of betel leaves etc are contraindicated on the day of fasting (Shabdakalpadruma, 1967). Eating in bronze vessel, eating meat, drinking of Sura (alcohol), drinking honey, greed, using slang words, exercise, sexual activity, day sleep, collyrium, body massage, oil, eating of Bengal gram, eating of red lentil etc are also contraindicated previous and after day of fasting. (Shabdakalpadruma, 1967)

FOOD INDICATED DURING & AFTER FASTING

Ayurveda advocates the intake of freshly prepared rice gruel, which is easy for digestion and a good appetizer soon after fasting (Sushruta Samhita Uttara tantra, 39/102). According to shabdakalpadruma water, root, fruit, milk, Havana (votive ritual), brahmanakamya (to follow the virtuous acts), gururvachana (to follow the perceptions of teachers) and aushadhi (medicine), these eight things are indicated during fasting (Shabdakalpadruma, 1967).

SIGNS AND SYMPTOMS OF PROPER FASTING

Proper and timely discharge of wind, urine and feces; lightness of the body, feeling of clarity in cardiac region, eructation, throat and mouth; disappearance of drowsiness and fatigue, appearance of sweat, relish, feeling of hunger and thirst all together and also inner feeling of well-being are the features of proper application of langhana therapy (Charaka Samhita Sutrasthana, 22/34-35). Upavasa (fasting) is a type of langhana therapy so all these features can be observed in proper fasting.

SIGNS AND SYMPTOMS OF EXCESSIVE FASTING

Cracking pain in joints, body-ache, cough, dryness of mouth, loss of appetite, dislike for food/anorexia, polydipsia, weakness of hearing and vision, mental confusion, excess upwards movement of vayu (eructation), feeling of darkness (before eye), loss of body fire (digestive and metabolic fire) and strength, these are the features of excess application of fasting (Charaka Samhita Sutrasthana, 22/36-37).

PERSONS UNFIT FOR FASTING

Fasting is contraindicated when diseases due to increased Vatadosha, subjects with excessive hunger and thirst, emaciated/weak, very young, very old and pregnant lady. Acharya Charaka says when the pregnant woman very often observes fast and other religious vows, takes stale or unwholesome food, has aversion to unctuous articles, uses diet and mode of life aggravator of vata, then her fetus does not grow due to being dried up, this is also stays for long and does not quiver, this is called nagodara (Charaka Samhita Sharirasthana, 8/26). Those with excessive anger, jealousy and such psychological extremities. Subjects who are suffering from vataja, shramaja, purana (chronic) and kshatajajwara (fever), in them fasting is contraindicated (Charaka Samhita Chikitsasthana, 3/140).

UPAVASA AS A TREATMENT IN AYURVEDA

In Ayurveda, Upavasa is one among all Daivavyapashraya therapies (Charaka Samhita Sutra sthana, 11/54) and one among ten types of langhana i.e. reducing or depletion therapies (Charaka Samhita Sutrasthana, 22/36-37). In Ayurveda, upavasa (fasting) is indicated as a treatment therapy in various diseases. Such as Vamana (vomiting), Atisara (diarrhoea), hridroga (cardiac disorders), Visuchika (cholera), Alasaka (paresis of bowel), Jwara (fever) – If these ailments are of less severity should be treated by fasting (Charaka Samhita Sutrasthana, 22/21-25).

Upavasa in Raktajaroga (blood born diseases)-Upavasa is indicated for curing diseases due to the vitiation of blood (shonita) (Charaka Samhita Sutrasthana, 24/18). In general, pitta (biological factor responsible for digestion & metabolism, colour complexion, vision etc.) and rakta (blood) get aggravated in a living being because of the excitation of these ailments by amadosha. Therefore, in the beginning, the patient should be kept on fasting (Charaka Samhita Chikitsasthana, 4/29).

Upavasa in Santarpanajanyavikara (diseases due to over satiation)- Ailments due to over satiation are- urinary disorders, diabetes, pidaka (small abscess or furuncles including diabetic boils), kotha (urticarial patches), itching, anemia, fever, skin disorders including leprosy, disorders due to ama (indigested food), dysuria, anorexia, drowsiness, frigidity, excessive obesity, heaviness of body, obstruction of sense organs and channels, confusion/ delusion of intellect, always closing eyes, edema/ inflammation and similar other disorders. Fasting should be advised to treat these disorders (Charaka-Samhita Sutrasthana, 23/5-8).

Upavasa in Alasaka (choleric diarrhoea) and Visuchika (intestinal torper)- The patients suffering from Alasaka and Visuchika should be kept on fasting (Charaka Samhita Vimana sthana, 2/13).

Upavasa in JwaraRoga (fever)- In the first stage of jwara, langhana or fasting is prescribed. There are ten types of langhana described. All these ten types are not useful in the present context, it is only fasting type of langhana which is

indicated here (Charaka Samhita Chikitsasthana, 3/139).

Upavasa in ShothaRoga (Oedema) - If shotha (oedema) is caused by ama, then the patient should be given langhana (fasting therapy) (Charaka Samhita Chikitsasthana, 12/17).

Upavasa in GrahaniRoga (irritable bowel syndrome) - If the dosha in its ama (undigested) stage is converted into rasa (chyle) and pervades other parts of the body, then the patient should be made to fast, and be given drugs conducive to pachana (metabolic transformation) of the undigested material (Charaka Samhita Chikitsasthana, 15/75).

According to Chakradatta and Yogaratnakar; Akshiroga (eye disorders especially conjunctivitis), Udararoga (abdominal diseases), Pratishyay (rhinitis), Vrana (wound) and Jwara (fever); in the beginning of five days of these five diseases are destroyed by fasting therapy (Chakradatta 59/3 and Yogaratnakaruttarardha).

CONTEMPORARY RESEARCHES SHOWING THE BENEFICIAL EFFECTS OF FASTING

In modern science, there are various terms for fasting like intermittent fasting (IF), caloric restriction (CR), periodic fasting (PF) etc. Fasting has been practiced for millennia, but only recent studies have shed light on its role in adaptive cellular responses that reduce oxidative damage and inflammation, optimize energy metabolism and bolster cellular protection. Fasting in humans helps reduce obesity, hypertension, asthma and rheumatoid arthritis. Thus, fasting has the potential to delay aging and help prevent and treat diseases while minimizing the side effects caused by chronic dietary interventions. (Longo VD et al., 2014)

- Fasting & the Brain – Some study showed that alternating days of normal feeding and fasting (IF) can enhance brain function as indicated by improvements in performance on behavioral tests of sensory and motor function (Singh R et al., 2012) and learning and memory (Guevara-Aguirre J et al., 2011). The behavioral responses to IF (intermittent fasting) are associated with increased synaptic plasticity and increased production of new neurons from neural stem cells (Lee J et al., 2002).
- Fasting and factors implicated in aging- Additional effects of fasting in human cells that can be considered as potentially 'anti-aging' are inhibition the mTOR pathway, stimulation of autophagy and ketogenesis (Sengupta S et al., 2010). The major effects of fasting relevant to aging and diseases are changes in the levels of IGF-1, IGFBP1, glucose, and insulin. Fasting for 3 or more days causes a 30% or more decrease in circulating insulin and glucose, as well as rapid decline in the levels of insulin like growth factor 1 (IGF-1), the major growth factor in mammals, which together with insulin is associated with accelerated aging and cancer (Fontana L et al., 2010).
- Fasting and cancer- Fasting has the potential for applications in both cancer prevention and treatment. Although no human data are available on the effect of IF or PF in cancer prevention, their effect on reducing IGF-1, insulin and glucose levels, and increasing IGFBP1 and ketone body levels could generate a protective environment that reduces DNA damage and carcinogenesis, while at the same time creating hostile conditions for tumor and pre-cancerous cells (Longo VD et al., 2010). Furthermore, the serum from these IGF-1 deficient subjects protected human epithelial cells from oxidative stress-induced DNA damage. Furthermore, once their DNA became damaged, cells were more likely

to undergo programmed cell death (Guevara-Aguirre J et al. 2011). Thus, fasting may protect from cancer by reducing cellular and DNA damage but also by enhancing the death of pre-cancerous cells.

- Fasting, inflammation and hypertension- In humans, one of the best demonstrations of the beneficial effects of long-term fasting lasting one to 3 weeks is in the treatment of rheumatoid arthritis. Alternate day IF also resulted in significant reductions in serum TNF α and ceramides in asthma patients during a 2 month period (Johnson JB et al. 2007). Water only and other forms of long-term fasting have also been documented to have potent effects on hypertension. An average of 13 days of water only fasting resulted in the achievement of a systolic blood pressure (BP) below 120 in 82% of subjects with borderline hypertension with a mean 20 mm Hg reduction in BP (Goldhamer AC et al., 2002).
- Fasting and the metabolic syndrome - Periodic fasting can reverse multiple features of the metabolic syndrome in humans: it enhances insulin sensitivity, stimulates lipolysis and reduces blood pressure. Body fat and blood pressure were reduced and glucose metabolism improved in obese subjects in response to an alternate day modified fast (Klempel MC et al., 2013).

SPIRITUAL FACTS ABOUT UPAVASA

In Hinduism upavasa is "to keep the Lord close to your heart and mind". Christian, jews, buddhist and hindus who fast on designated days of the week or calendar year. Muslims keep fast from dawn until dusk during the month of Ramdan. Christian fasting is abstaining from food, drink, sleep or sex to focus on a period of spiritual growth. Specifically, we humbly deny something of the flesh to glorify God, enhance our spirit, and go deeper in our prayer life. Ten to forty days fast done in every few month helps to-It is like recharging your depleting batteries in the body and Retarding the aging process. During fasts some rituals have been added so that a particular aspect of health can be taken care off, the example of santoshimaakavrata on every Friday, Where married women are supposed to observe a fast and take gura (jaggery) and chana (chickpeas). Jaggery contains Iron and chana is the source of Protein and the two are most common deficiencies known to occur in women in the fertile age group. Even WHO recommends that every woman once in week should take iron, folic acid supplements and take a high protein diet. A fast done on Purnima (full moon) is said to be an important fast as on that day due to vibration in the nature the mind is difficult to get control. To control the mind some prefer doing a fast on Ekadashi (11th day of the lunar fortnight) as the negative vibrations starts few days before Purnima.

DISCUSSION

A weakly fast is a ritual in India. One is supposed to restrain senses, do proper meditation, eat less, eat once a day and not eat cereals specially the refined ones. Eating refined carbohydrate today on a daily basis has been linked to insulin resistance. Which in turn is responsible for all the new epidemics of the society namely - Heart blockage, high BP, diabetes, Paralysis and Obesity. A vedic fast is a process in which we try to maintain our mind and body in a state of Sattwa for a time period. Probably that was the reason that in Vedic era heart attacks practically were not known to occur.

Fasting is one of the hygienic practices, which gives rest for digestive system & radical cure of diseases. It is one of the cheapest mode of treatment. In Ayurveda, upavasa (fasting) is a type of treatment, by which one can ignite the digestive fire and destruction of metabolic toxins (amadosha). Amadosha is an underlying driver of all illnesses. So in Ayurveda, during the treatment of various diseases where ama dosh is involved, fasting is prescribed with proper consideration of bala (power), kala (time period), desh (habitat) of patient. Scientists have also found that fasting for 12 to 24+ hours triggers autophagy, and are thought to be one of the reasons that fasting is associated with longevity. Autophagy plays an important role in the renewal of cellular components, which function in energy production metabolism and clearance of damaged organelles (Wang R et al., 2019). An FGF21-TFEB signaling axis links lysosome homeostasis with extracellular hormonal signaling to orchestrate lipid metabolism during fasting, there is FGF21 is a fasting induced hormone with pleiotropic roles in energy metabolism (Chen L et al., 2017). There is a large area of research that connects fasting with improved blood sugar control, reduced inflammation, weight loss and improved brain function. Nobel Prize winner Ohsumi created a whole new field of science with his work studying autophagy in yeast. He discovered that the autophagy genes are used by higher organisms including humans' and those mutations in these genes can cause diseases. Animals, plants and single cell organisms rely on autophagy to withstand famines.

CONCLUSION

This manuscript is a literary review from Ayurvedic classical texts & modern research articles and we have critically analyzed the fact about fasting is that, the practice of fasting is not only religiously approved but scientifically also for the benefit of each person. Fasting purifies mind and body. It strengthens one's conviction and teaches you self-control. Many cultures believe that abstinence facilitates spiritual purification leading to a stronger willpower. In present scenario human being are continuously presented to various poisonous substances through water, air, unhealthy food and sedentary lifestyle, which leads to higher collection of different toxins in the body. Due to which, the regular procedures of body to remove unhealthy things and purifying the body to retain person sound are not sufficient. After seeing the various research work and concept of Ayurveda, we can say that upavasa is the perfect choice for purification of toxins and to stay healthy. The aim of Ayurveda is 'swasthasyaswasthyarakshanama, aturasyavikaraprashamanama cha' means to maintain the health of a healthy individual and cure of diseases of a patient. Through upavasa we can accomplish the aim of Ayurveda.

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CONFLICT OF INTEREST

There is no conflict of interest to declare

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