



Review Article

AUTOPHAGY FROM SIDDHARS PERSPECTIVE IN PREVENTING NON-COMMUNICABLE DISEASES - A REVIEW

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ABSTRACT

Siddha system of medicine is one of the ancient medicines in the AYUSH system of medicines. It described the prevention and cure of disease through the ways of "Naal Ozhukkam" (daily regimen) and "Kaala Ozhukkam" (seasonal regimen). Fasting (*Pattini*) is one of these practices of Naal Ozhukkam. In 2016, a Japanese man named Mr. Yoshinori Ohsumi got his Noble Prize for finding the mechanism behind autophagy. Fasting is the most efficient method of activating autophagy. This review showed fasting in our Siddha literature and autophagy from Siddhars perspective in preventing non-communicable diseases. In our Siddha literature, it says that the uses of fasting are to rest our digestive organs, remove toxins and waste products from our bodies, and refresh our body cells. Autophagy is the body's way of eliminating damaged cells in order to regenerate newer, healthier cells. Recent research has indicated roles for autophagy in an increasing number of pathologies, from bacterial and viral infections to cancer, and more recently in neurodegenerative and other age-related diseases. But during their period, Siddhars treat fever and some other diseases by fasting. By this method, they prevent non-communicable diseases. As a result, we must lead the Siddhars' ideas by performing Naal ozhukkam and Kaala Ozhukkam to prevent non-communicable diseases.

INTRODUCTION

The term "autophagy" was first discovered by the Nobel Prize-winning scientist Christian de Duve. In a 1962 rat study, after infusing glucagon, the number of lysosomes increased in the rat liver cells. Then, the term "autophagy" was first described. In 2016, a Japanese man named Mr. Yoshinori Ohsumi got his Noble Prize for finding the mechanism behind autophagy. Fasting is the most efficient method of activating autophagy.^[1] The Siddha system of medicine is traditional medicine, and it's widely used in the southern part of India, especially in Tamil Nadu and Kerala. It described the prevention and cure of disease through the ways of "Naal Ozhukkam" (daily regimen) and "Kaala Ozhukkam" (seasonal regimen). Fasting is a popular term among researchers, scholars, doctors, and the general public these days.

But the term "fasting" (*Pattini*) was widely used in our Siddha literature a thousand years ago. Fasting (*Pattini*) is one of these practices of Naal Ozhukkam. Some of Siddhars quotes about fasting are "*Langanam Paramavizhtham*"- "fasting is the best medicine"- and "*Suarm Neenku Matum Sorukattathe*"- "avoid food until the fever gets cured".^[2] In our Siddha literature, fasting has been recommended for many diseases like fever, indigestion, and dyspepsia.^[3] In India, many religions followed different methods of fasting at different times of the year. This review showed fasting in our Siddha literature and autophagy from Siddhars perspective in preventing non-communicable diseases.

AIM AND OBJECTIVES

The main aim of this review is fasting and autophagy in Siddhars perspective in preventing Non communicable diseases. This review also discusses the various types of fasting methods in Siddha literature and types of fasting in Indian cultures and recent researches in autophagy and fasting.

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Methodology

Siddha books and research articles from Pub Med, Google Scholar, the Web of Science, and other indexed journals were used in the review. The study was done within three months.

RESULTS AND DISCUSSION

In the Siddha system of medicine, 96 *Thathuvams* are the basic concept, and it explains many methodologies like the three humours or functional units of the human body (*Vali*, *Azhal*, and *Iyam*) and the *Imboothangal* (earth, water, fire, air, and ether), etc. *Thirukural* says '*Ozhukkam*' which means virtue, righteousness, morality, regularity, discipline, decorum. It gives values and eminence and so it is highly regarded than 'life'. Though there are different meanings for '*Ozhukkam*', here it is taken as regularity and habits. Habits are two types. One is daily regimen and another one is seasonal regimen. Fasting (*Pattini*) is one of these practices of *Naal Ozhukkam* (daily regimen). In our Siddha literature, it says that the uses of fasting are to rest our digestive organs, remove toxins and waste products from our bodies, and refresh our body cells.^[4] Fasting is strongly recommended in *Suram* (fever) in Siddha literature. 64 types of fever are classified in our Siddha literature, and the main cause of fever is "*Seethamilathu Suram Varathu*" - "*Kabam* is the major cause of fever."

According to Siddha literature, other causes of fever include unhealthy food habits, indigestion, constipation, improper food, poisonous food, exposure to more air, poisonous air, too much sex, fear, sleeplessness, worries, too many chills, wetting in rain, etc.^[5] Different types of fasting methods have been recommended for 64 types of fever. For *Valisuram* (7 days), *Piththasuram* (6 days), *Kabasuram* (9 days), and *Mukkturasuram* (10 days), fasting has been recommended. However, a complete fasting patient

experienced fatigue, nausea, and thirst. So, in *Valisuram*, three days without food, *Azhal Suram* water, and a small quantity of liquid food, *Kabasuram* liquid diet, and medicines have been advised.^[3]

Fasting procedures in all types of *Suram*, according to *Siddha Maruthuvanga Surukkam*:

Fasting is prescribed on the day when the fever occurs, followed by mouthwash with hot water the next morning. Covering the body either fully or partially and lying in the left lateral position during sleep. On the fourth day, fasting is completed by drinking Lukewarm water and eating a *Strychnos potatorum* seed.^[6]

Pitha humour has increased during fasting. The natural characteristics of *Azhal* is it helps in digestion, hunger, thirst, light, giving heat, sight to the eyes, thought, intellect and strength. The functions of *Azhal* in the body in maintaining heat of the body, giving red or yellow colour to the skin, creating heat at the times of digestion and assimilation, inducing perspiration, increasing the quantity of blood and flowing of blood, giving yellow colours to the skin, eyes, fecal matter and urine.^[7]

Short-term fasting, long-term fasting, intermittent fasting, and regular fasting are prescribed in the Siddha system, and how to follow them and which people are taking them and which people should avoid them have been clearly mentioned in Siddha literature. pregnant women, infants, children, alcoholics, persons with excessive sexual indulgence, persons with diseases like eye disorders, tuberculosis, *Pitha* diseases, diarrhoea, dysentery, and horse and elephant riders should avoid fasting. Nausea, tiredness, excessive sleep, thirst, vomiting, cough, dyspnoea, hiccups, and fever with weight loss, anger, depression, and fever, have been contraindications to excessive fasting.^[8]

Table 1: Tamil Nadu festivals and highlighting the feasts and fasts

Months	Festivals
January	Three days are set aside to honour the harvest season: Bhogi, Pongal, and Maattu Pongal (or Kaanum Pongal). The feast is primarily composed of dishes made using recently harvested rice, jaggery, and seasonal vegetables.
February	Maha Sivarathiri: During this festival, devotees of Lord Shiva observe a 24-hour fast. Only the following morning do they eat. In some households, sweet potatoes are prepared with jaggery and consumed as a meal at night.
March	Tamil Nadu celebrates Karadaiyaan Nonbu during this month. Up until the puja, one observes a fast. Following that, one consumes rice cakes cooked with jaggery, chilies, and black-gram lentils along with a decent amount of ghee. During this month, there are also Telugu and Kannada New Year celebrations. People only break their fast during Poojas, after which key delicacies like obattu and poli, prepared with maida, jaggery, and ghee, are served as part of the New Year's celebration.
April	The birth of Lord Rama is celebrated in April as Rama Navami. Aromatic jaggery water called panagam, buttermilk, and soaked moong dhal with coconut, cucumber and seasoning are consumed. The Tamil New Year is also celebrated during this month. Poli is also an important

	ingredient here. A dish made of raw mango pieces, Neem flowers, and jaggery representing different tastes of life is taken as a special dish on Tamil New Year's Day.
August	Varalakshmi Vratham is celebrated by women in the household. They fast until the time of puja and eat foods such as idlis, dumplings, and sandkheer. They don't have rice. The birth of Lord Krishna is celebrated this month. Puja is only performed at midnight. People fast for the whole day and eat after Puja. Oil concoctions and simple healthy concoctions such as flat rice (avarin tamil) with jiggery and coconut, cottage cheese and milk are the main products eaten at these festivals.
September	Ganesh Chaturthi is celebrated this month. The feast includes kheer and sweet and spicy lentil dumplings (vada). Many people celebrate Chaturthi, the fourth day after the monthly full moon. They fast for the whole day. They eat after puja at night. They don't eat rice.
October	Durga Puja and Navaratri are celebrated this month. People usually fast until the time of the puja and then enjoy the food. Some people skip meals all day and only eat at night to avoid rice.
November	Deepavali is celebrated this month. All kinds of sweet and savoury dishes are served on this day. Special herbal medicines made from pepper, cumin, ajwain, ginger, tistrata, coriander seeds, jiggery, and ghee are taken as antidotes to oily foods.
December	This month marks the celebration of Karthigai Deepam. Items made from puffed rice and happamsebrated du with rice flour are made on this day. Thiruvadhurai, or Arudradarisanam, the Chidambaram festival honouring Lord Nataraja, falls during this month. In an "uppuma"-like preparation made out of rice and jaggery and a gravy with lentils, seven or nine seasonal vegetables are offered to God during the dawn of the day and eaten. ^[9]

Today, there are many articles on fasting and autophagy. Fasting is the most effective way for the trusted source to trigger autophagy. Autophagy is the body's way of eliminating damaged cells in order to regenerate newer, healthier cells. "Auto" means "self," and "phagy" means to eat. So, the literal meaning of autophagy is "self-eating." It's also referred to as "self-devouring." So, it makes sense that intermittent fasting and ketogenic diets are known to trigger autophagy. Anti-aging principles are the primary benefit of autophagy. When a person is hungry, autophagy consumes cellular materials and recycles them. It consumes energy for a longer period of time, but it cannot last forever. Still, it gives us more time to find nourishment. When the body is low on sugar through fasting or ketosis, it brings positive stress that wakes up the survival-repairing mode.^[10]

During fasting, in 4–8 hours, blood sugars fall, all food has left the stomach, and insulin is no longer produced. In 12 hours, the food consumed has been burned, the digestive system goes to sleep, and the body begins the healing process. Then HGH begins to increase, and glucagon is released to balance blood sugars. In 16 hours, the body is ramping up fat burning. In 18 hours, HGH levels begin to skyrocket. In 24 hours, autophagy begins and ketones are released into the bloodstream. Autophagy increases by 300% in 36 hours. Autophagy increases by 30% in 48 hours, the immune system resets, regeneration increases, the inflammatory response decreases, and glycogen stores are depleted. In 72 hours, autophagy peaks and plateaus.^[11]

Recent researches in fasting and autophagy

Rheumatic Diseases: In a randomized trial investigating an initially 7–10 days fast followed by an individually adjusted vegetarian diet, fasting patients obtained substantial reduction of disease activity including a variety of laboratory markers over the 1-year study period. Results that fasting followed by vegetarian diet is useful in the treatment of RA.

Osteoarthritis: The effect of fasting in OA of the knee and hand was investigated for the first time in an uncontrolled pilot study with 30 patients. After 4 and 12 weeks of observation, substantial pain relief, improvements in quality of life, and improved articular function were documented.

Hypertension, Cardiovascular Risk, and Metabolic Disease: 1. In a study on 68 patients with borderline hypertension undergoing 10–14 days of water-only fasting. The mean blood pressure reduction amounted to 20/7mmHg. 2. Modified fasting is frequently successfully applied in patients with type 2 diabetes and metabolic syndrome. An early study found glucoregulatory improvements in obese diabetic women after 3 days of fasting, already. In an own uncontrolled study in 30 outpatients, a 1-week Buchinger fasting led to pronounced decreases in triglycerides, LDL-cholesterol, insulin, and leptin. 3. Long-term effects of Buchinger fasting were also evaluated by outcome research in 599 obese patients of a German rehabilitation facility. With response rates of 55%, the effect sizes for change of subjective health outcomes at 12 months after discharge were large and the patients showed lasting weight reduction and improved cardiovascular risk. Against the background

of the available experimental and clinical evidence, it can be suggested that fasting is beneficial in hypertension, as additive treatment in type 2 diabetes, and in risk reduction of cardiovascular disease, even more pronounced when followed of useful lifestyle changes.

Cancer: In a first human case series, cancer patients who voluntarily fasted for 4-5 days in combination with chemotherapy experienced significantly reduced side effects. So far, it seems that the periods of fasting have to be maintained at least up to 24 h after chemotherapy to minimize enhanced toxicity of chemotherapy to normal cells in the phase of refeeding.

Affective Disorders and Impact on Mood: in a prospective uncontrolled trial on 52 in patients with chronic pain and metabolic syndrome, more than 80% of fasters (Buchinger fasting 8 days) showed a rapid decrease in depression and anxiety scores. Fasting-induced mood-enhancement has also found to be partly dependent on genetic factors. The fasting-induced neuroendocrine responses may support the motivation for behavioural change.^[12]

CONCLUSION

Autophagy is one of life's fundamental processes. Current studies have indicated roles for autophagy in increasingly pathologies, from bacterial and viral infections to cancer, and extra more in neurodegenerative and other age-associated disorders. The importance and significance of the autophagy process were highlighted very recently with the Nobel Prize award to Prof. Yoshinori Ohsumi for his pioneering studies revealing the mechanisms of autophagy in baker's yeast 30 years ago. Fasting is the most effective way for a trusted source to trigger autophagy. But during their period, Siddhars treat fever and some other diseases by fasting. By this method, they prevent non-communicable diseases. As a result, we must lead the Siddhars' ideas by performing *Naal Ozhukkam* and *Kaala Ozhukkam* to prevent non-communicable diseases.

REFERENCES

1. Autophagy: Fasting to be healthy- Research Gate 2018. Available from: https://www.researchgate.net/publication/323880580_Autophagy_fasting_to_be_healthy

- Uththaramarayan K S, Siddha Maruthuvanga Surukkam, 3rd Edition 2016, Dept. of Indian Medicine and Homeopathy, Chennai, page no- 664.
- Kuppusamymuthaliyar K N, Siddha Maruthuvam Pothu, 1st edition reprinting 2016, Dept. of Indian Medicine and Homeopathy, Chennai, page no-61.
- Shanmugavelu M, Principles of diagnosis in Siddha part-I, 1st edition reprinting 2014, Dept. of Indian Medicine and Homeopathy, Chennai, page no-113.
- Thileepan T, Prasad VM. Literature review of suram (fever) in Siddha medicine. J Res Tradit Med. 2018 Jul 28; 4:21-5.
- Forgotten medical and cultural fasting aspects in Siddha system of medicine. Research Gate 2018. Available from: https://www.researchgate.net/publication/324770576_Forgotten_Medical_And_Cultural_Fasting_Aspects_In_Siddha_System_Of_Medicine.
- Shanmugavelu M, Siddha principles of social and preventive medicine, 1st edition, Dept. of Indian Medicine and Homeopathy, Chennai, page no-232.
- Fasting- A Medico Historical Overview – Research Gate 2018. Available from: https://www.researchgate.net/publication/327069724_Fasting_-_A_Medico_Historical_Overview.
- Kannan S, Mahadevan S, Seshadri K, Sadacharan D, Velayutham K. Fasting practices in Tamil Nadu and their importance for patients with diabetes. Indian Journal of Endocrinology and Metabolism. 2016 Nov; 20(6): 858.
- Jacomin AC, Gul L, Sudhakar P, Korcsmaros T, Nezis IP. What we learned from big data for autophagy research. Frontiers in cell and developmental biology. 2018; 6.
- Hardy B. What happens to your body during fasting? Fasting Lane. Fasting Lane; 2019 Available from: <https://fastinglane.com/blog/2018/12/31/what-happens-to-your-body-during-fasting>
- Michalsen A, Li C. Fasting therapy for treating and preventing disease-current state of evidence. Complementary Medicine Research. 2013; 20(6): 444-53.

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