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# A literature review of *Upavasa* in PCOD w.r.t. Intermittent Fasting

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## ABSTRACT

Polycystic ovary syndrome (PCOS) is one of the most common reproductive endocrine and metabolic diseases affecting women of childbearing age. It is associated with an increased prevalence of metabolic syndrome, cardiovascular diseases and type 2 diabetes. PCOD is major cause for infertility in today's era. This metabolic syndrome affecting the females very fast but the treatment part for this is very restricted, as this is metabolic disease there is definitely scope in life style modification and reduce its severity of disease. In *Ayurveda* there is one type treatment known as *Langhan*, our *Acharyas* told that - *Langhanam Param Aushadham*, *Upavasa* is amongst one from *Langhan Chikitsa*. Many published studies indicate positive effects of fasting on PCOD.

**Key words:** *Upavasa, intermittent fasting, time restricted meals, Langhan, fasting.*

## INTRODUCTION

Polycystic ovarian syndrome is a hormonal irregularity that affects as many as 10% of women worldwide. It is characterized by small cysts that develop on the ovarian follicles when ovulation does not occur. These cysts produce androgens (male sex hormones), which may further contribute to menstrual dysfunction and loss of ovulation.

However, it is important to note that the cysts are not the cause of PCOS, but a symptom. The exact cause of PCOS is not well understood, in part because it is likely

influenced by many factors. It may stem from genetic, environmental, and behavioural causes. Women who have mothers or sisters with PCOS are more likely to suffer from it, as are women who have poor insulin sensitivity and are overweight or obese. Exposure to environmental toxins may even play a role.

The most common PCOS symptoms include: missed or irregular periods, ovarian cysts, hirsutism (excess body hair), weight gain (particularly abdominal weight gain), acne, and male-pattern baldness. In addition, PCOS is a primary cause of infertility in women of childbearing age. However, not all women with PCOS may have all symptoms or risk factors, making it difficult to diagnose. Most women who have PCOS do not know they have this common reproductive endocrine disorder.

Polycystic ovarian syndrome (PCOS) is characterised by multiple ovarian cysts, hyperandrogenism causing hirsutism, hyperinsulinemia, insulin resistance, obesity, infertility, and mood disturbances.<sup>[1]</sup> Affected women have an increased risk of developing endometrial cancer, cardiovascular disease, hypercholesterolaemia, and type 2 diabetes mellitus meaning that early intervention and management are

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of crucial importance.<sup>[2]</sup> Both pharmacological and nonpharmacological therapies (based around weight loss, diet, and exercise) are employed, the latter being the foundation of PCOS management.

The majority of women with PCOS have insulin resistance, independent of weight.<sup>[3]</sup> This is often subclinical and may not be reflected in routine biochemical tests<sup>[4]</sup> Despite this, hyperinsulinemia and abnormalities in glucose haemostasis lead to cardiovascular and systemic inflammatory changes<sup>[5]</sup> Women with PCOS are more likely to have postprandial hyperglycaemia owing to the peripheral insulin resistance rather than fasting hyperglycaemia due to intact endogenous glucose production mechanism.<sup>[6]</sup>

While the restriction of calories and an increase in exercise improve insulin sensitivity in overweight patients with PCOS,

### AIM AND OBJECTIVES

This study is providing way of eating and fasting in PCOD patients to reduce their weight, regulate menstrual cycle, improve fertility and reduce risk of other metabolic diseases like diabetes and cardiovascular disease.

### MATERIALS AND METHODS

This study is made with help of various research article, *Ayurveda* texts and *Samhita* and research article; related modern text related to PCOD -pathophysiology and treatment protocols.

#### 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.<sup>[7]</sup> 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.<sup>[8]</sup> Fasting causes ignition of digestive fire. As per *Ayurveda*, Intermittent fasting is not only an eating

regimen, its pattern of consumption. It's a method for planning meals to get the most advantageous health impact out of them.<sup>[9]</sup>

#### Upavasa treatment in Ayurveda

In *Ayurveda*, *Upavasa* is one among all *Daivavyapashraya* therapies<sup>[10]</sup> and one among ten types of *Langhana* i.e., reducing or depletion therapies.<sup>[11]</sup> 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.<sup>[12]</sup>

#### Upavasa in Raktaja Roga (blood borne diseases)

*Upavasa* is indicated for curing diseases due to the vitiation of blood (*Shonita*)<sup>[13]</sup> 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.<sup>[14]</sup>

#### Upavasa in Santarpanajanya Vikara (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, anaemia, 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.<sup>[15]</sup> *Upavasa* in *Alasak*.

PCOS disease we can compare with *Santarpanajanyavikar* and *Raktapredoshaj Vikar* both, and in both condition *Upavasa* is treatment mentioned above.

SN	Symptoms of PCOD	Ayurvedic co relation	Reference of Upavasa
1.	Obesity	<i>Sthoulya</i>	C.S.S 22/21-25
2.	Irregular menses (oligomenorrhoea)	<i>Anarthav</i>	S.S.S 15/12
3.	Acanthosis nigricans	<i>Kustha</i>	C.S.S 23/5-8
4.	Type 2 Diabetics	<i>Premeh</i>	C.S.S 23/5-8
5.	Cardio vascular Disease	<i>Hirdroga</i>	C.S.S 23/5-8

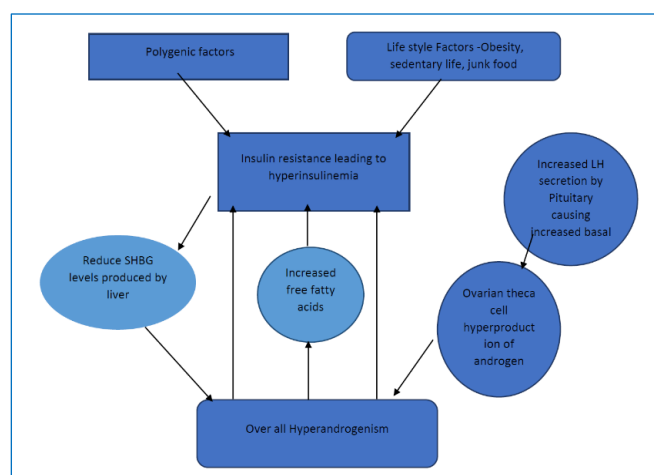
All this symptoms of PCOD are related to *Ayurvedic Srotho Rodha* concept where the *Langhan* and *Upavasa* are the best treatment; hence we can use that knowledge in our research.

### Rotterdam Criteria to Diagnose PCOS

#### 3 out of 2 criteria needed to diagnose PCOD

- a) Menstrual Cycle abnormalities - Oligomenorrhoea or amenorrhoea
- b) Clinical or Biochemical evidence of hyper androgenism increased Testosterone
- c) USG - PCOD Ovaries - 12 or more follicles necklace pattern, increased volume.

### Causes and Patho-physiology of PCOS



### How we can reverse pathophysiology by following Intermittent fasting

Time-restricted eating involves a period of fasting, thereby allowing a decrease in insulin levels, an

improvement in insulin sensitivity, and an improvement in glucose regulation. The short-term putative benefits of time-restricted eating include increased cell metabolic and oxidative stress resistance.<sup>[16]</sup> A period of daily fasting depletes liver glycogen stores and switches energy sources to fatty acid and ketones. This bioenergetic challenge activates signalling pathways that strengthen mitochondrial function and stress resistance and up regulate autophagy of damaged molecules adopting a stress resistance mode.<sup>[16]</sup> This reduces insulin signalling and overall protein synthesis. During refeeding following the daily “fast,” glucose levels rise and ketones are cleared with increased protein synthesis allowing growth and repair allowing more efficient cellular performance, leading to cellular resilience and disease resistance as a long-term adaptation.<sup>[17]</sup> A time-restricted eating regimen where evening food intake is restricted reportedly improves postprandial insulin and glucose handling due to alignment of circadian rhythm with diurnal food intake.<sup>[18]</sup>

Regimen	Description
Intermittent fasting / time restricted eating	Most commonly involves fasting for 16-18 hrs with an eating window of 6-8 hrs plain water and unsweetened fluids allowed
Alternate day complete fasting	No caloric intake during fasting day
Alternate day modified fasting	Restricted calory intake on fasting day
Periodic fasting	1-2 fasting/week 5-6 days normal calorie intake
Ramdan fasting	Fasting from dawn until sunset by ad lib calory intake after sunset to before dawn

In our research we are studying on intermittent /time restricted meal

### What Is Intermittent Fasting for PCOS?

A research-backed PCOS diet has not yet been established. However, because increases in weight and blood sugar levels can increase the risk of PCOS and

worsen symptoms, clinicians have recommended a number of dietary and lifestyle changes. (Up to 1 in 4 women diagnosed with PCOS can become obese, so early and effective intervention is necessary.)

Intermittent fasting may be one way to reduce your chances of acquiring PCOS and other obesity related diseases, including cardiovascular disease and metabolic syndrome.

### How intermittent fasting helps in PCOS

While no one “best diet” for PCOS has been identified, research shows that following a healthy diet can improve symptoms of PCOS and dramatically improve your cardiometabolic health. The key is therefore to identify a healthy diet that women can stick to.

There is overwhelming evidence that a nutrient-dense diet - one that is high in fruits, vegetables, high-quality proteins, and healthy fats - has copious long-term health benefits. Yet, it's also clear that people find it difficult to stick to a consistent plan of eating. A calorically restrictive diet paired with exercise can improve symptoms of PCOS, but this regimen has proven difficult to follow in the long term.

Instead, an intermittent-fasting approach may deliver an effective and realistic way to symptom management. Intermittent fasting does not attempt to constrain what or how much you eat, only when you eat. Studies have shown that following an intermittent-fasting program can be easier than other types of diets because it results in lower hunger levels than typical diets involving caloric restriction, while still spontaneously creating a caloric deficit.

Adherence aside, there are numerous health benefits of intermittent fasting. What makes intermittent fasting an especially good fit for women suffering from PCOS is its ability to improve biomarkers such as body weight, body-mass index, blood-glucose levels, and insulin levels, all of which can help you manage PCOS.

### How Intermittent Fasting Affects Hormone Levels

The majority of women with PCOS have insulin resistance, even if they are not overweight. Being insulin resistant means that your body's cells do not

respond to the effects of insulin, which ordinarily helps your cells absorb glucose from your bloodstream. As a result, blood sugar levels remain high, to which the human body responds by releasing even more insulin. High levels of blood glucose and insulin can result in serious health problems such as type 2 diabetes and heart disease; therefore, early and effective intervention is necessary.

Unfortunately, high insulin levels are not just a symptom of PCOS - they're also a major driver of the condition. High insulin levels can impair ovulation and cause the ovaries to make excess testosterone, which can increase the risk of menstrual-cycle dysfunction and exacerbate symptoms.

Regularly allowing your body to spend time in the fasted state through intermittent fasting improves glucose regulation and insulin sensitivity. Intermittent fasting allows your body to switch into more of a “fat-burning mode” where you rely on your own body's fatty acids and ketones for fuel, as opposed to glucose from the carbohydrates you consume. Flipping this metabolic switch can improve glucose regulation and insulin sensitivity, leading to improvements in PCOS symptoms, and lower risk of other metabolic diseases, such as type 2 diabetes.

### The Science Behind Intermittent Fasting and PCOS

While more human studies directly examining the effects of intermittent fasting on PCOS are needed, one six-week trial of females with PCOS showed that restricting food to an 8-hour eating window led to significant improvements in PCOS symptoms and markers, including a reduction in weight, body fat, and androgen levels. In addition, following this diet for six weeks improved markers of chronic inflammation and restored normal menstrual function for 73% of women in the study.

Another study done in mice with PCOS examined the effects of intermittent fasting on endocrine function. After intermittent fasting for 8 weeks, the mice showed significant weight loss, fat loss, and improved glucose control. These changes helped to lower the mice's abnormally high androgen, luteinizing hormone (LH),



and follicle-stimulating hormone (FSH) levels (all caused by PCOS), resulting in improved reproductive function.

## CONCLUSION

In this research we found that *Upavasa* according to *Ayurveda* is beneficial in different symptoms of PCOD, which will really be beneficial to the PCOD patients as there is not any definitive treatment for PCOD available, just by doing life style modification and efforts of fasting for 16 hrs a day (eating in the window period of 8 hrs) is beneficial to anovulatory PCOS on weight loss especially reducing body fat, improving menstruation, hyperandrogenaemia, insulin resistance and chronic inflammation.

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