



What Is Polycystic Ovary Syndrome?

Unpacking the Connections Between Diet and PCOS

By Lisa Simon, RD
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Polycystic ovary syndrome (PCOS) is the most common hormone-driven condition in women and those assigned female at birth, affecting up to a quarter of women of reproductive age. It is the number one cause of subfertility in that population group. PCOS is chronic, meaning there is no cure, but making diet and lifestyle changes can help to manage symptoms.

Editor's Note: This article is adapted from [The Plant-Based Dietitian's Guide to Fertility](#), by Lisa Simon, RD.

What Is PCOS?

PCOS is a complex chronic condition. Rather than PCOS being a syndrome caused by a disorder of the ovaries, it is actually an endocrine (hormone) system disorder that affects the function of the ovaries. It also causes general metabolic symptoms.

What Are the Signs and Symptoms of PCOS?

Higher circulating levels of androgens (sex hormones) is one of the main diagnostic criteria for PCOS and is thought to affect [up to 80%](#) of patients with the condition. This is why so many women with PCOS experience difficulties conceiving, as it causes disruptions to the menstrual cycle, resulting in many turning to fertility treatments to help them conceive. Other symptoms include weight gain, excess body hair, skin problems, hair loss, fatigue, depression, and insulin resistance.

Insulin Resistance and PCOS

Our bodies produce insulin, a hormone, to allow our fat and muscle cells to take up glucose from our bloodstream. It also allows our liver to store it. In insulin resistance, the hormone is less effective and we have to produce more and more insulin from our pancreas to encourage our cells to take up glucose. Initially this isn't a problem, but over time, if it continues to happen, the cells in the pancreas that produce the insulin can wear out and fail to produce enough insulin to overcome the resistance. This then results in high blood glucose levels and ultimately the development of Type 2 diabetes. (Learn more about [insulin resistance here](#).) The incidence of insulin resistance in the general population is around 10–25% but in women with PCOS it may be [as high as 95%](#).

PCOS is a complex condition; we know it involves a combination of lifestyle and genetic factors, but the cause is not fully understood. While there is no cure for PCOS, making positive diet and lifestyle changes can help the body's tissues use insulin more effectively and improve PCOS symptoms, because as insulin levels drop, so do androgen levels.

The Role of Advanced Glycation End-Products (AGEs)

Harmful compounds known as advanced glycation end-products are an important dietary factor when it comes to PCOS. On a basic level, AGEs are formed in the body when sugars attach to proteins. There are many routes for the entry of AGEs into our bodies: They are made internally but there are also outside sources, including diet, alcohol, and smoking. These compounds are a known risk factor for heart disease and stroke, as they can stiffen our arteries, but they are also associated with decreased male and female fertility.

We have receptors for AGEs [throughout our body](#), including throughout the male and female reproductive

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tract. When AGEs attach to these receptors they can cause damage to cells and DNA, and cause inflammation. In men, they may cause damage to the DNA in sperm and reduce sperm quality, and in women they can accumulate around the ovaries and inside the uterus. This can lead to early ovarian aging and failure of the embryo to implant. Women with PCOS have been shown to have more than twice the average circulating level of AGEs.

Reducing dietary AGEs is vital for all women and men trying to conceive, but especially for women with PCOS. The highest dietary sources are cooked meat and animal products, as, although they are naturally present in raw animal foods, when they are heated, especially if they are cooked with dry heat, new AGEs are formed. If you are considering reducing the animal products in your diet, meat is the best place to start. It is worth noting that although plant foods are much lower in AGEs, there are certain foods that can contain significant amounts, and these include roasted nuts and toasted bread. My advice would always be to eat nuts in their whole, natural form as these are packed with fertility-friendly nutrients, and to avoid over-browning your toast.

The Importance of Fiber for Managing PCOS

Increasing fiber intake is an important part of dietary management of PCOS, as lower fiber intakes are associated with an [increased risk of insulin resistance](#). Fiber slows down the absorption of glucose and can therefore help to regulate blood glucose levels. It can also aid weight management, with one reason being that some of the energy contained in high-fiber foods becomes a component of your poo rather than being absorbed. In the UK, adults' average daily fiber intake is around 18 grams (in the U.S., it's around 15 grams), much lower than the recommended 30 grams per day. It is important to highlight that the only foods that contain fiber are plant foods. There is no fiber in meat, fish, dairy, or eggs.

Benefits of Healthy Lifestyle Changes for PCOS

PCOS is chronic, meaning there is no cure. However, making positive diet and lifestyle changes can help manage the condition and significantly reduce symptoms.

As many women with PCOS are above what is considered the healthy weight range, interventions that help manage weight are vital. Losing as little as 5–10% of body weight has been shown to benefit reproductive and overall physical health, including the restoration of a normal menstrual cycle, achieving pregnancy, and a reduction in miscarriage rates. It can also reduce the risk of [metabolic syndrome](#), which is [common in women with PCOS](#).

The key is focusing on healthy lifestyle changes that will result in gradual, sustainable weight loss. The problem is there are lots of crash diets out there, promising to deliver rapid weight loss, and this can be very tempting. If women seek support and follow a weight loss program purely aimed at calorie restriction, although weight loss may initially happen, most of the weight is likely to be regained within one year. We know that, on the whole, “diets” do not work, as the basis of every weight-loss diet is restriction. Certain foods may be demonized, some meals may be replaced by shakes, and often calorie restriction is significant, leading to hunger, despondency and ultimately a return to previous eating habits. Many weight-loss diets also tend to focus on increasing animal protein and reducing carbohydrate foods, an approach that will exacerbate rather than help manage symptoms of PCOS and can even lead to disordered eating.

A predominantly whole-food, plant-based diet, on the other hand, is not a “diet” in the traditional sense but rather a dietary pattern that, although it minimizes or eliminates animal products, focuses on what you can add into your diet to make every meal colorful, tasty, and satisfying. Such foods contain key nutrients in terms of PCOS, including vitamin A and magnesium. Lower intakes of these micronutrients are associated with insulin resistance. A plant-based eating pattern focuses on including a huge variety of different grains, vegetables, fruits, nuts, seeds and legumes; after all, there are around 2,000 plant species in the world that are cultivated by humans for food. That is incredible, right? The choice is almost endless!

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Excerpted with permission from Hammersmith Health Books from The Plant-Based Dietitian's Guide to Fertility, a brand-new book in which Lisa Simon, RD, draws on her personal experiences with infertility and IVF, her expertise as a dietitian, and a wealth of scientific research to offer easy-to-understand guidance for optimizing fertility and achieving healthy pregnancy using a whole-food, plant-based diet and other lifestyle interventions. Learn more [here](#).