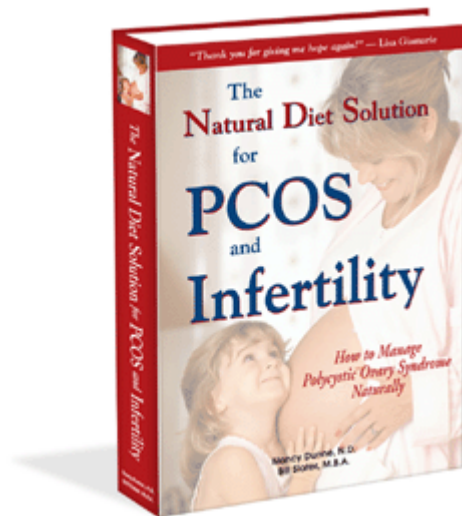


# The Natural Diet Solution for PCOS and Infertility

Use Healthy Foods to Reduce PCOS Symptoms and Become Pregnant



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By  
**Nancy Dunne, N.D.**  
and  
**Bill Slater**

v. 1.01

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# The Natural Diet Solution for PCOS and Infertility

Use Healthy Foods to Reduce PCOS Symptoms and Become Pregnant

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## Introduction: Why a PCOS Diet?

Polycystic ovary syndrome is a chronic hormonal and metabolic disorder that presents a bewildering array of health problems such as infertility, overweight, hirsutism, hair loss, depression, dark skin patches, and lack of energy.

As serious as these symptoms are, the consequences of not dealing effectively with PCOS are even more serious, including heart disease, diabetes, reduced quality of life, and shortened lifespan.

Our review of published research on PCOS and our clinical experience strongly indicates that a healthy diet can favorably influence the outcome of this disorder. In other words, what you eat and drink will either improve or worsen the symptoms and consequences of PCOS.

Yet the hundreds of emails we receive from visitors to our website ([www.ovarian-cysts-pcos.com](http://www.ovarian-cysts-pcos.com)) indicate that some women are unsure or confused about their diet. One goal of this book is to provide clear guidelines for those who aren't sure what to eat or not to eat.

### **Which Diet Is Best?**

Women report to us that they have success by following one particular diet or another. For example, one may say that she lost weight and felt better with the Atkins low-carb diet, while another will say a vegetarian high carb diet works best for her. So who's right?

They are both right. What works for one woman may not work for another.

Most popular diets have kernels or elements that make them successful or healthy. However, they also have drawbacks or elements that are not healthy, even if they get "results" such as weight loss.

We have reviewed all of the popular diets as well as a substantial number of medical research studies on diet and PCOS. We have distilled the healthiest elements from each diet and research articles and developed a diet that we believe will benefit most women with PCOS.

The purpose of the Healthy PCOS diet is to help you rebuild your health and maintain a high level of vibrant health for the rest of your life. Nothing is more precious than your health. A healthy body allows you to enjoy your life and be the woman you want to be.

### **Expanding Universe of Knowledge**

An enormous amount of research is going on in the areas of PCOS, fertility, hormones, and diet. Hundreds of new, relevant research articles are published every month.

Please understand that we are not aware of the entire universe of medical and health knowledge. We have tried our best to review as much research data as possible so that we could provide

relevant and useful information to you. However, this book may contain errors or omissions. For example, in the area of diet, what is "right" today may be "wrong" tomorrow, as new research comes to light. What we think is the best and most correct information today may be incorrect in the future. So, essentially we are sharing with you what we know today. Next year, we will know more than we know today. Gradually, parts of this book may become dated or obsolete. We hope to revise this book from time to time to keep it current with the latest research.

### **The Modern American ("Western") Diet**

A huge body of evidence shows that most Americans eat foods and drink beverages that do not provide the nutrition they need for good health. By "nutrition", we're referring to essential food elements required to sustain life and good health, such as vitamins, minerals, amino acids, essential fatty acids and fiber.

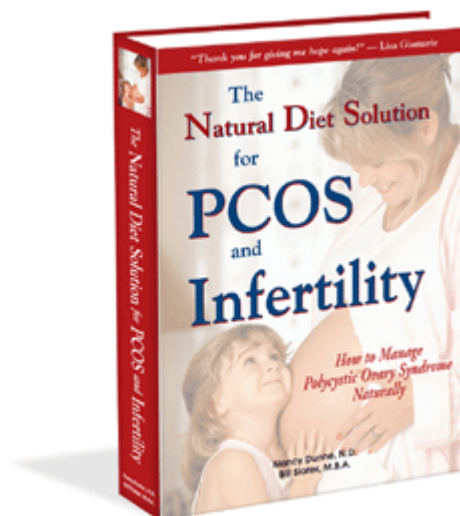
Secondly, processed foods contain large quantities of adulterated or damaged food substances, such as partially hydrogenated vegetable oils or rancid (oxidized) oils.

Thirdly, processed foods contain all kinds of added artificial ingredients, such as monosodium glutamate (MSG), preservatives, artificial colorings, artificial flavors, artificial sweeteners, and more.

Finally, many of our foods contain pesticides and other petrochemicals that disrupt hormone function and seriously damage our health.

Please understand that good nutrition is just as important as breathing clean air and drinking pure water. As far as your body is concerned, eating French fries is the same thing as smoking a cigarette or drinking water out of a well contaminated with dioxin. Either way, you damage your body, endanger your health, and shorten your lifespan.

If you intend to manage your PCOS symptoms, have a successful pregnancy, and enjoy a healthy and long life, you'll want to master the art of nutritious, healthy eating.



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## About the Authors

### **Nan Dunne, N.D.**

Hello, my name is Nancy Dunne. I'm a naturopathic physician licensed in the state of Montana. My specialty is the use of natural medicine to improve the health of my patients.

Over the past few years, PCOS and ovarian cysts have become especially relevant to me. My daughter's menstrual difficulties and persistent acne were diagnosed as aspects of polycystic ovary syndrome. This disturbing discovery galvanized me to do research in order to create a safe, effective treatment plan for her. The success we had with her treatment was so exciting, I began to offer similar individualized treatments to the women in my medical practice with PCOS and fertility issues. The effectiveness of this approach is clear. In addition, I have personally lost more than 50 pounds of body weight, and maintained my healthy dimensions for over five years, using the diet and exercise principles described in this book.

I've been a practicing physician since 1989. My clinic, Bitterroot Natural Medicine, is located in Missoula, Montana and offers primary care for clients of all ages. The clinic is best known for its treatment of women's health concerns, fertility issues, body reshaping, physical fitness, menopause, and polycystic ovary syndrome. Before becoming a naturopathic physician, I was a Registered Nurse, specializing in obstetrics and neonatal health.

I'm a graduate of National College of Naturopathic Medicine in Portland, Oregon, and licensed as a primary care provider in Montana. I also have a Masters degree in Applied Behavioral Science from Bastyr University in Seattle, Washington. I'm a Professional Member of the Polycystic Ovarian Syndrome Association and President of the American Association of Naturopathic Physicians.

I want to share my experiences treating PCOS and its accompanying difficulties by using natural therapies. PCOS can be a devastating experience, with health consequences that reach deeply into a woman's life. The burden of this condition can be lightened, even erased in many cases, with your active participation, your willingness to learn and make changes. It is challenging and exhilarating to take your health in your own hands and make life the best it can be. Bill and I hope you will use this book and our website for long term support and as an outlet for celebrating your success.

### **Bill Slater**

In 1977, when my mother was diagnosed with cancer, I began to question my concepts of health and the causes of disease. Wanting to understand my mother's illness, I conducted extensive research in the areas of health, nutrition and disease prevention. This was the beginning of what would later become a career in health care services.

I'm the co-founder of a chiropractic clinic that became an integrative medicine center with health practitioners from different disciplines. We specialized in treating people with chronic disorders with a variety of holistic, natural therapies.

Since retiring from the clinic, I'm focusing my time on helping average people learn how to take more responsibility for their own health. My first project is polycystic ovary syndrome, because it is an under-recognized disorder but it is quite serious. Unfortunately, the standard treatments are quite limited or ineffective. Dr. Dunne and I firmly believe there are some very powerful things *you* can do to effectively manage this health problem.

This diet book is the first phase of our plan to help women who have PCOS and infertility.

By the way, you may be a little shocked at the foods we are asking you to avoid. For example, we ask you to stay away from wheat and dairy products. If you find this a challenge, I understand. I have an autoimmune disorder that requires me to not eat any wheat or dairy. I can assure you that I did not die or go crazy because I could not have a cheese sandwich. It took a while, but I learned to eat different foods. Now I'm used to my new diet.

But I will admit I would love to have a pizza. Or a pastry and mocha. However, when I look at these desires rationally, I realize I would much rather keep my good health than have the momentary pleasure of a pizza. So I skip the pizza and have something else.

I have a M.B.A. from the University of California. Although I don't have a medical degree, I have studied nutrition and disease prevention for 30 years and have attended hundreds of hours of medical seminars.

### **Acknowledgments**

The authors wish to give special thanks to Elizabeth Harris and Marilyn Lewis for their invaluable contributions to this book.



# What's in this Book

## PART I: THE FUNDAMENTALS

### Section 1: A Word about PCOS

[Chapter 1.1: What is PCOS?](#) This chapter tells you what polycystic ovary syndrome (PCOS) is and what its symptoms are. It also describes the long-term health consequence of PCOS.

[Chapter 1.2: What Causes PCOS?](#) PCOS is a disorder not well understood nor are its causes fully known. To most individuals and doctors, PCOS is a "medical mystery". It appears to be partly a genetically inherited disorder. However, genetic inheritance does not fully explain the causes of PCOS. This chapter describes possible environmental and other causes of this syndrome.

### Section 2: How We Developed the Healthy Diet for PCOS

[Chapter 2.1: The 'Food Pyramid'](#). The Food Pyramid has done much to make America fatter. However, the revised Pyramid, issued in early 2005, is a big improvement although it didn't go far enough.

[Chapter 2.2: Low-Carb Diets](#). Low-carb diets have both benefits and risks. Although they clearly can lead to short-term weight loss, their long-term health effects are unclear. A high-carb, high-fiber diet has some benefits. The type of carbohydrate and the total calories consumed are important factors in weight control.

[Chapter 2.3. The Other Diets](#). This chapter is a review of eight of the most well known diets other than the popular low-carb diets such as Atkins or South Beach. The success of any weight loss diet is due to three factors: (1) long-term adherence, (2) portion size control, and (3) restricted number of calories.

[Chapter 2.4: What Did Your Ancestors Eat?](#) The genes of your ancestors are virtually the same as yours. But our food today is nothing at all like what your ancestors ate. The few remaining hunter-gatherers are mostly free of cardiovascular disease, diabetes or obesity, in contrast to people who consume a "modern" diet.

[Chapter 2.5. The Basis of the PCOS Diet](#). We propose a diet that is more suited to your genes. This chapter describes the basic elements of a healthy diet for PCOS and improved fertility.

[Chapter 2.6: Healthy PCOS Diet vs. Low-Carb Diet](#). This chapter compares our healthy PCOS diet to a typical low-carb diet. A primary distinction between the PCOS and a low-carb diet is that we place much greater emphasis on the *type* of carbohydrate.

### Section 3: A Word about Your Weight

[Chapter 3.1: Thrifty Genes and Your 'Set Point'](#). There's evidence to indicate that PCOS women tend to gain more weight with the same amount of calories when compared to "normal" women. This chapter reviews two mechanisms that may cause this to happen.

[Chapter 3.2: What Makes You Hungry?](#) Women with PCOS tend to have a bigger appetite than non-PCOS women, and they feel hungrier. Numerous hormones are involved in this appetite problem. In this chapter, we describe how the hunger process works and three hormones that are involved in this process.

[Chapter 3.3: 'Evil Twins': Insulin Resistance and Leptin Resistance](#). Resistance to the actions of these two hormones is a big reason why you have PCOS, infertility problems, and weight/appetite problems.

[Chapter 3.4: How Calorie Density Makes You Fat](#). Consumption of processed foods trick us into eating more calories than we realize. The calorie density in foods -- not the fat by itself -- may be responsible for the excessive total calories we consume in a meal.

[Chapter 3.5: Portion Control](#). Americans are eating larger meal portions than ever before. The result is a big increase in total caloric intake. A large portion of high calorie density foods is especially troublesome. Portion control is an important component of any healthy diet.

[Chapter 3.6: Is Calorie Restriction a Good Idea?](#) Reduction of total caloric intake has been shown to cause weight loss and to restore menstrual cycling. However, "crash diets" are unwise.

[Chapter 3.7: What Is Ketosis?](#) Ketosis is a poorly understood concept. Many low-carb diets are "ketogenic" diets. Ketoacidosis is a condition you want to avoid.

[Chapter 3.8 Weight vs. Body Composition](#). Many women seem obsessed about "losing weight". However, we think that "body composition" is a better indicator of your health. The weight you want to lose is fat, while retaining lean muscle mass.

## **Section 4: Carbohydrates**

[Chapter 4.1: What's a Carbohydrate?](#) Some aren't clear on just what a "carbohydrate" is. This chapter reviews various aspects of carbohydrates.

[Chapter 4.2: Glycemic Index](#). Food with a low "glycemic index" appear to be beneficial for PCOS complications such as diabetes, insulin resistance, cardiovascular disease and chronic inflammation. This chapter explains terms such as "glycemic index", "glycemic load" and "available carbohydrate".

[Chapter 4.3 Anti-Nutrients in Grains and Legumes](#). Anti-nutrients are substances in foods that may not be beneficial to us, and may possibly be harmful. We consume these substances every day and should be more aware of them.

[Chapter 4.4: To Soy or Not to Soy](#). The food industry strongly promotes the consumption of soy. But it's questionable whether consumption of genetically-modified soy products is healthy.

[Chapter 4.5: What Is Fiber?](#) Fiber is the part of a plant that is not digested. Most Americans don't consume nearly enough fiber, even though it will help balance estrogen, reduce insulin resistance, reduce glucose levels, curb appetite, and provide a host of additional health benefits.

[Chapter 4.6: Plant Foods.](#) The substances in plant foods are absolutely essential for good health. They also contribute to better hormonal balance and may improve ovarian function.

[Chapter 4.7: Guidelines for Eating Carbohydrates.](#) This chapter is a brief summary of what type of carbohydrates you should consume.

## **Section 5: Protein**

[Chapter 5.1: What Is a Protein?](#) This chapter describes the value and uses of protein in your body.

[Chapter 5.2: The Problem with Milk.](#) Consumption of high levels of dairy products from cows is a fairly recent phenomena. This chapter discusses the health implications of consuming milk and dairy products.

[Chapter 5.3: Guidelines for Eating Protein.](#) This chapter provides guidelines for eating proteins.

## **Section 6: Fats**

[Chapter 6.1: What's a Fat?](#) Dietary fats are a complex and confusing topic. This chapter provides a basic introduction to the topic of fats.

[Chapter 6.2: Essential Fats and Eicosanoids.](#) Essential fatty acids and eicosanoids are poorly understood...yet they are absolutely crucial for good health and controlling health problems associated with PCOS. This chapter explains what essential fats and eicosanoids are and how they work in your body.

[Chapter 6.3: Other Fatty Information.](#) This chapter discusses saturated fats, medium chain triglycerides, unsaturated fats, and monounsaturated fats.

[Chapter 6.4: Guidelines for Eating Fats.](#) This chapter outlines the types of fats and oils to consume, and describes the problems with bottled oils.

# **PART II: THE HEALTHY PCOS DIET**

## **Section 7: Introduction to the Diet**

[Chapter 7.1: PCOS Diet Levels.](#) This chapter describes the mechanism of the diet in this book. You'll want to read this chapter in order to make sense of the rest of the book.

[Chapter 7.2: What to Eat.](#) Here we tell you what to eat, in very basic terms. There is no "one size fits all" diet that works for PCOS. To some extent, you will want to customize our diet to your specific needs.

[Chapter 7.3: What Not to Eat](#). In this chapter, we describe, in general terms, all the foods you should always avoid, regardless of your PCOS symptoms.

## **Section 8: Main Components of the Diet**

[Chapter 8.1: Meats](#). List of acceptable and unacceptable meats, plus additional comments.

[Chapter 8.2: Seafood](#). List of acceptable and unacceptable seafood, plus additional comments.

[Chapter 8.3: Poultry](#). List of acceptable and unacceptable poultry, plus additional comments.

[Chapter 8.4: Eggs](#). List of acceptable and unacceptable eggs, plus additional comments.

[Chapter 8.5: Dairy Products](#). List of acceptable and unacceptable dairy products, plus additional comments.

[Chapter 8.6: Legumes](#). List of acceptable and unacceptable legumes, plus additional comments.

[Chapter 8.7: Grains](#). List of acceptable and unacceptable grains, plus additional comments.

[Chapter 8.8: Vegetables](#). List of acceptable and unacceptable vegetables, plus additional comments.

[Chapter 8.9: Sprouts](#). List of sprouts, plus suggestions on how to grow sprouts.

[Chapter 8.10: Fruits](#). List of acceptable and unacceptable fruits, plus additional comments.

[Chapter 8.11: Nuts and Seeds](#). List of acceptable and unacceptable nuts and seeds, plus additional comments.

[Chapter 8.12: Fats and Oils](#). List of acceptable and unacceptable fats and oils, plus additional comments.

## **Section 9: Water and Beverages**

[Chapter 9.1: Water](#). This chapter reviews the numerous health benefits that water offers. Water is what your body wants, not a manufactured beverage. Drinking pure water is an important part of our diet.

[Chapter 9.2: Purified Water](#). Chlorinated tap water may impair ovarian function and the menstrual cycle. Always drink purified water.

[Chapter 9.3: Coffee](#). The evidence on coffee is conflicting. In general, however, you may wish to avoid coffee because it may unfavorably influence fertility and pregnancy.

[Chapter 9.4: Tea](#). Green tea may reduce estrogen, inhibit the action of testosterone, and reduce appetite. It is also well-known as a cancer preventative.

[Chapter 9.5 Soft Drinks](#). Under no circumstances should you ever consume soft drinks. This chapter tells you why.

[Chapter 9.6: Alcoholic & Other Beverages](#). In this chapter, we briefly review alcoholic and other beverages not discussed in previous chapters. Moderate consumption of wine or beer appears to be mildly beneficial.

## **Section 10: Other Elements of Your Diet**

[Chapter 10.1: Herbs, Spices, Seasonings and Condiments](#). This is a listing of numerous spices and seasonings that you can use to make your food more flavorful in a healthy way. Also included is a discussion of salt.

[Chapter 10.2: Sweeteners](#). The best source of something sweet is fresh fruit. If you need an added sweetener, use stevia. This chapter has a list of acceptable and not acceptable sweeteners, along with some descriptions of various sweeteners.

[Chapter 10.3: Snacks](#). This chapter contains a list of acceptable snack foods.

[Chapter 10.4: Meal Replacement Shakes](#). Meal replacement shakes are not a substitute for a healthy diet. A high-quality product may be used on those occasions when you do not have access to a healthy meal.

## **Section 11: More Dietary Tips**

[Chapter 11.1: Eat Organic](#). Although more expensive, organic foods are well worth the cost in terms of better nutrition and reduction of exposure to pesticides and other chemicals.

[Chapter 11.2: Eating in Restaurants](#). People who eat frequently in restaurants are fatter than people who don't. This chapter gives you some guidelines if you're going to eat in a restaurant.

[Chapter 11.3: Eating Away from Home](#). Because of your job or for social reasons, you may find yourself eating away from home. This chapter gives you some helpful dietary tips for any away-from-home situation.

[Chapter 11.4: Healthy Eating Habits](#). *What* you eat is important. But **how** you eat can also be very beneficial for your health.

[Chapter 11.5: When Should You Eat?](#) Eating breakfast and having regular meals appears to reduce caloric intake, improve weight control, and help normalize insulin.

[Chapter 11.6: Tips for Increasing Your Fertility](#). This chapter is a summary of sixteen dietary and other tips that will help to improve your fertility.

## **Section 12: Getting Started**

[Chapter 12.1: Prepare for Success](#). This chapter helps you to actually get started with your new diet. Included are a description of our menu plans and recipes, shopping tips, suggestions for on-the-go meals, kitchen tools you'll need, and time-saving tips for the cook.

[Chapter 12.2: Shopping List for Recommended Diet Level](#). There are two diet levels in this book. The most restricted is the Recommended Level. The master shopping list in this chapter

is limited to Recommended Level foods. If instead you are at the Maintenance Level of our diet, you can add Maintenance Level foods to this shopping list.

[Chapter 12.3 Handy Cooking Tips](#). This chapter contains a variety of suggestions for easy and healthy cooking or food preparation.

### **Section 13: Meal Plans and Recipes**

[Chapter 13.1 Daily Meal Plans for 30 Days](#). The purpose of this chapter is to show you how you might eat for one month if you are at the Recommended Level, which is the most restricted level of the diet.

[Chapter 13.2: Recipes](#). This chapter contains dozens of recipes that you can use (or modify) as you implement your new diet.

## **PART III: ADDITIONAL STEPS TO TAKE**

### **Section 14: Other Things You Can Do**

[Chapter 14.1: Exercise](#). Other than diet, regular exercise is the most important thing you can do to control PCOS symptoms. Exercise is helpful for weight loss, including loss of abdominal fat. Exercise can also reduce insulin resistance, which is a primary cause of PCOS.

[Chapter 14.2: Stress Management](#). Chronic stress is an important but under-recognized contributor to PCOS. Stress may have an adverse effect on reproductive hormones, cause an increase in abdominal fat and create a host of other health problems.

[Chapter 14.3: Emotional Factors](#). Dealing effectively with PCOS is not restricted to "physical" things like diet and exercise. There is also a huge emotional component that is ignored by most doctors. It's important to recognize the emotional issues and deal with them.

[Chapter 14.4: Liver Health](#). PCOS is not simply a problem with your ovaries. All of your glands and organs are involved in some way. An essential organ that is almost always overlooked is the liver. Impaired liver function or fatty liver degeneration will make it harder for you to manage PCOS.

[Chapter 14.5: Your Health Care Team](#). PCOS is a complex, poorly understood disorder. You may need more than one health care professional to help you.

[Chapter 14.6: Check for Food Allergies](#). Food allergies cause inflammation and a variety of unpleasant symptoms. Most food allergies are "hidden", so it's wise to get a test. You'll want to avoid allergenic foods, even if they are included in the healthy PCOS diet.

[Chapter 14.7: Measure Your Progress](#). Keeping track of your progress increases the probability of ultimate success. This chapter gives you some guidelines.

### **Section 15: Nutritional Supplements**

[Chapter 15.1: Why You Need Nutritional Supplements.](#) You may have heard that you can get 100% of your nutrition from your food. This chapters gives twenty-two reasons why this may not be not true.

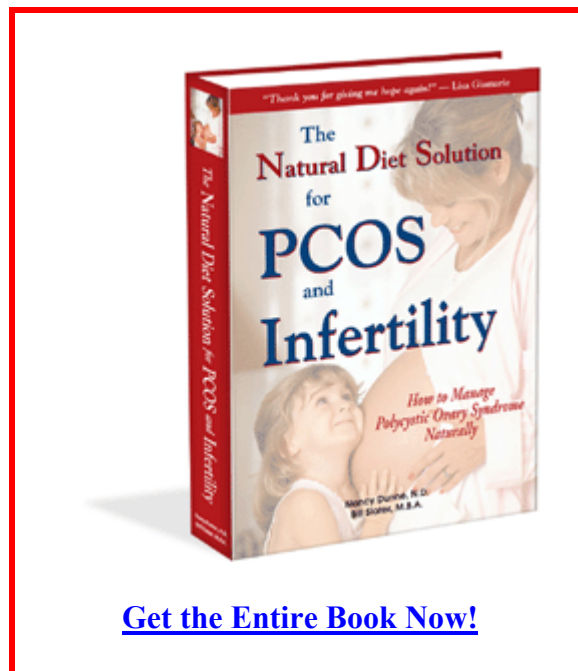
[Chapter 15.2: Nutritional Supplement Quality.](#) This chapter gives you tips and guidelines for choosing the best nutritional supplement.

[Chapter 15.3 Supplements for PCOS, Infertility and Insulin Problems.](#) This chapter is a descriptive list of forty supplements you could possibly take for PCOS. Of course, we are not recommending you take all of them. Always consult with a physician about which supplements are appropriate for you.

## **Section 16: Resources and Feedback**

[Chapter 16.1: Resources.](#) Here you will find sources of professional help as well as sources for obtaining more information about PCOS and infertility.

[Chapter 16.1: Feedback.](#) What you think and feel is just as important as what we think and feel. Go to this chapter to communicate with us and let us know what's on your mind.





## 1.1 What Is PCOS?

In each menstrual cycle, follicles grow on the ovaries. Eggs develop within those follicles, one of which will reach maturity sooner than the others and be released into the fallopian tubes. This is "ovulation". The remaining follicles will dissolve back into the ovary.

In the case of polycystic ovaries, however, the ovaries are larger than normal, and there are a series of undeveloped follicles that appear in clumps, rather like a bunch of grapes. Polycystic ovaries are not necessarily troublesome and may not even affect your fertility.

However, when the cysts cause a hormonal imbalance, a pattern of symptoms may develop. This pattern of symptoms is called a syndrome. These symptoms are the difference between suffering from PCOS and from simply having polycystic ovaries.

So you can have polycystic ovaries without having PCOS. However, all women with PCOS will have polycystic ovaries. Polycystic Ovary Syndrome is the name given to a metabolic condition in which a woman will have polycystic ovaries, along with a certain pattern of other symptoms that reflect imbalances in reproductive and other hormones.

We referred to PCOS as a "metabolic" disorder. By this we mean that there are numerous factors in basic body processes that have gone off track. Because your body is a unified whole, a problem or dysfunction in one area causes dysfunction in other areas. PCOS is a dysfunction that is related to your whole body, not just your ovaries.

### **What are the Symptoms of PCOS or Polycystic Ovaries?**

PCOS presents a complex and baffling array of symptoms. Each woman with PCOS will have some combination of the following symptoms.

- Multiple ovarian cysts.
- Polycystic ovaries 2-5 times larger than healthy ovaries.
- Irregular or absent menses.
- Infertility.
- Acne.
- Obesity or inability to lose weight.
- Excessive body or facial hair (hirsutism).
- Insulin resistance and possibly diabetes.
- Thinning of scalp hair.
- Velvety, hyperpigmented skin folds (acanthosis nigrans).
- High blood pressure.
- Multiple hormone imbalances, commonly including:
  - Androgens (testosterone).
  - Cortisol.
  - Estrogens.
  - FSH (follicle stimulating hormone).
  - Insulin.

- LH (luteinizing hormone).
- Progesterone.
- Prolactin.
- Thyroid hormones.

### **How Common Is PCOS?**

PCOS is the most common hormonal disorder occurring in women during their reproductive years. It's thought that 4% to 10% of all women have PCOS. However, since many women don't know they have PCOS or some aspect of it, the actual number probably exceeds 10%. PCOS is a leading cause of infertility. Symptoms of PCOS frequently start to show up soon after puberty.

### **PCOS Is a Threat to Your Health, if Left Untreated**

The long-term health consequences of PCOS may include but are not be limited to:

- Cardiovascular disease.
- Diabetes.
- Pregnancy-associated disorders.
- Cancers.
- Seizure disorders.

Below is a sampling of what the medical studies have to say about PCOS and your health.

- Evidence of pancreatic exhaustion is seen frequently in women with PCOS. Insulin resistance normally forces the pancreas to overwork to secrete lots of insulin. This leads to cellular dysfunction, an inability to produce enough insulin to control blood sugar, and diabetes.
- 40% of women with PCOS have abnormal blood sugar levels, and 10% already have type 2 diabetes.
- The incidence of diabetes in adolescents with PCOS is comparable to that seen in adults.
- Women with PCOS have blood sugar imbalances at rates as high as those in the highest risk ethnic groups in the world, such as the Pima Indians.
- PCOS is associated with elevated LDL "bad" cholesterol, regardless of weight.
- PCOS and obesity together lead to chronically elevated triglycerides, which contribute to heart disease.
- High blood pressure is commonly seen in women with PCOS.
- PCOS is associated with indicators of cardiovascular disease, including increased blood clot formation, increased inflammation and thickening of blood vessel walls, and abnormal cholesterol and triglycerides.

- 77% of women with abnormally infrequent or scanty menstrual flow have evidence of PCOS and 33% have abnormal blood sugar levels.
- Using menstrual cycle length of 40 days or more as an indicator, the Nurses' Health Study showed a 2.2-fold increase in the risk of type 2 diabetes development. The study also showed that irregular menses was associated with a 53% increase in cardiovascular disease events.
- Women with PCOS have reproductive abnormalities, including increased gestational diabetes in both obese and non-obese women, pregnancy-induced hypertension, and preeclampsia. Preeclampsia is a condition that can develop in late pregnancy that is characterized by a sudden rise in blood pressure, excessive gain in weight, generalized swelling, protein in the urine, severe headache, and visual disturbances.
- PCOS women also have an increased endometrial cancer risk. The risk of ovarian cancer is increased 2.5-fold, particularly among women who had never used oral contraceptives. Breast cancer risk is not clearly increased with PCOS.
- Women with seizure disorders have increased risk of PCOS.

As you can see, PCOS is not something you want to ignore. "Watchful waiting" is not your best option.

### **Can PCOS Be Treated by Diet?**

Improvements in diet, exercise and lifestyle are essential methods of dealing with PCOS.

A mere 7%-10% weight loss may lead to regular ovulatory cycles in many women. A healthy diet is a vital component of a successful weight loss program.

Several recent studies have shown that a calorie-restricted diet tends to normalize hormones, induce ovulation, improve fertility and reduce other PCOS problems.<sup>1 2 3 4 5</sup> Whether the "best" diet for PCOS is low-fat or low-carb is not so clear; the studies suggest that either diet works, provided the calories are kept low.

The problem with a calorie-restricted diet is that it is hard to maintain over the long term. After all, who wants to have to "count calories" for the rest of her life?

Another problem with using these restricted diets is that, according to one recent study, women with PCOS have an impaired satiety mechanism.<sup>6</sup> In other words, it may be harder for PCOS women to feel that they have eaten enough. Impaired satiety makes it doubly difficult to stay on an artificially restricted calorie diet.

This book will outline a diet that you can comfortably live with the rest of your life -- and that also reduces your PCOS symptoms and greatly improve your overall health.



## 1.2 What Causes PCOS?

There is uncertainty and no conclusive agreement as to what causes PCOS.

The most common reasons given for PCOS are:

- Genetic predisposition.
- Excess insulin production, insulin resistance and obesity.
- Environmental petrochemical pollution.

Additional possible contributory causes of PCOS may be:

- Food adulteration
- Autoimmune disorders.
- Chronic inflammation.
- Some medications.

Most of these proposed causes of PCOS can be changed for the better by improving your diet. In other words, if you change your diet, you may be able to lessen or remove some of the factors that are causing your PCOS. Your symptoms will be reduced and you will be much healthier.

### **PCOS is Partly a Genetic Disorder**

Most researchers agree the polycystic ovary syndrome is at least partly caused by the set of genes you were born with. Your genetic pattern is somewhat different compared to women who don't have PCOS.<sup>7 8</sup>

For example, a study recently conducted at Nanjing Medical University examined the ovarian DNA of women with or without PCOS.<sup>9</sup> Out of 9,216 DNA strands examined, 290 of those in the PCOS ovaries were different from those in normal ovaries. Some of these genes were active when they shouldn't have been, and some of those that should have been active were inactive. Improperly operating genes lead to cell dysfunction and abnormal metabolism.

### **Diet and Your Genetic Predisposition**

Many women with PCOS have been told that their condition is a genetically inherited trait and that there's not much that can be done except possibly to take birth control pills to reduce symptoms. Most people believe that genes are set of blueprints that determine your physical characteristics, how you behave, what diseases you get (or don't get), and how long you live. They are like rules set in stone -- they can't be altered.

This is a myth.

You are not genetically "doomed" to an outcome over which you have no control. Your health destiny is not preordained. "Genetic determinism" has been completely discredited by recent research.

Genetic research has revealed that your traits or characteristics are not forever cast in stone at the instant you were conceived. Rather, how they behave is modified by their environment. The nature of the environment will strongly influence what actually does happen.<sup>10</sup>

For example, suppose your mother had taken DES (a synthetic estrogen) while you were in her womb. Her doctor would have given DES to her to prevent miscarriage, or just to have a healthier pregnancy and healthier baby. You would have been born as an apparently healthy baby. However, you would have had a vastly higher risk of developing reproductive tract deformities and abnormalities, including a rare form of vaginal cancer, because of subtle changes in the cellular environment, brought there when the DES chemistry entered the picture.

Think of your genetic blueprint as "written in pencil". In this case, DES was like a big eraser that erased part of your blueprint and replaced it with a different blueprint. The same is true for anything else in your environment, from the moment of conception until you die. You are continually under the influence of your environment, whether it's inside your body or outside.

You can't change what has already happened to you. If your mother took DES, smoked cigarettes, drank alcohol and ate a lot of fried food while you were in her womb, you have turned out to be a different person than you would have if she had not done those things.

However, you still have the rest of your life. You *do* have a lot of control over your environment and therefore you can greatly influence your genetic blueprints.

One of those control mechanisms is your diet.

We think of our height as genetically locked in stone. However, whole populations change when the quality of nutrition changes. The average height of adult Japanese men and women has increased nearly six inches since World War II. Why? Their diet has changed drastically over the years, thus leading to changes in a physical trait that many people previously thought was unchangeable.

An individual woman's genetic blueprint may shape her with rounded hips, backside and thighs, and delicate shoulders with small breasts. Depending on diet choices, that basic shape can be lived in at 135 pounds or 195 pounds, with significant differences in her daily experience and life long health.

Another important consideration is that you are genetically and biochemically unique from anyone else. So what you eat will affect you differently from someone else. That's why a "one size fits all" diet will not work for many women.

Example: Health authorities have told you to reduce salt intake if you have high blood pressure. However, studies show that only 30%-50% of people can reduce their blood pressure by restricting salt intake. Salt restriction does not reduce blood pressure for the others. Your current genetic blueprint will determine whether salt restriction will reduce your blood pressure or not.

## **Insulin Resistance**

At least 30% of women with PCOS have insulin resistance, although some investigators think the number may be higher than 50%.

The symptoms of insulin resistance are acne, apple-shaped obesity, difficulty losing weight, high blood pressure, hirsutism, carbohydrate cravings, and elevated blood glucose and triglycerides.

Insulin resistance means that cells in your body are less responsive to the insulin hormone. It's as if insulin knocks on the door, but no one answers. As a consequence, the many insulin-dependent processes in your body are impaired. For example, you have a reduced ability to receive molecules of blood sugar into your cells, to burn fat, and to regulate the liver's production of blood sugar.

To solve this problem, your pancreas gland produces extra insulin to get all these necessary metabolic tasks done. The effect is a condition called "hyperinsulinemia", which means an abnormally high level of insulin in the blood. But too much insulin causes the cells to become even more insulin resistant than they were before.

Meanwhile, your pancreas is working very hard to produce all this insulin. It eventually gets tired out and starts producing less and less insulin. Then there is less insulin to store and regulate blood sugar, and your blood sugar goes out of control. This is diabetes. Your pancreas is shot. You must take insulin injections for the rest of your life to keep your blood sugar under control.

Chronically high levels of insulin and insulin resistance lead to hyperandrogenism<sup>11</sup> (excessive levels of certain male hormones such as testosterone) by stimulating ovarian androgen production and by reducing serum sex-hormone binding globulin (SHBG). This process worsens PCOS symptoms.

This condition is called "hyperinsulemic hyperandrogenism" and is estimated to be the cause of lack of menstruation and infertility in at least half of PCOS women, whether they are overweight or lean.<sup>12</sup>

We now have a vicious cycle:

- High levels of insulin help to create insulin resistance and hyperandrogenism.
- Insulin resistance causes insulin levels to be too high, leading to hyperinsulinemia and hyperandrogenism.
- Hyperandrogenism tends to increase insulin levels.

Both hyperandrogenism and insulin resistance will contribute to excessive insulin levels. The high insulin levels in turn increase insulin resistance and hyperandrogenism. It's like a closed loop, with each of the variables making each other worse.

## **What Causes Insulin Resistance?**

Insulin resistance syndrome is thought to be caused by several factors:

- Genetic abnormalities.
- Poor nutrition when you were a fetus.

- Too much body fat, especially around the middle.
- Your diet.<sup>13</sup>

### **Diet and Insulin Resistance**

A number of studies have suggested a link between what you eat and insulin resistance.<sup>14 15 16 17</sup>  
Two factors are at play.

First of all, when a diet made up of a lot of refined or processed foods is consumed, insulin spikes to high levels. Insulin levels increase in order to control the sudden increase in blood sugar resulting from rapid assimilation of refined starches and sugars. Each meal or snack made up of refined or pre-packaged food represents another substantial increase in insulin. Too much insulin triggers the cells to protect themselves from excessive exposure by becoming "insulin resistant".

Secondly, there are micronutrients in a healthy diet that make insulin's action more efficient, thus reducing insulin resistance. They include: biotin, calcium, chromium, magnesium, selenium, B-complex vitamins, vitamin C, vitamin E and zinc. The typical highly refined American diet is deficient in many of these micronutrients. Therefore the cells do not have enough of the substances they need in order to work with insulin in an efficient manner.

Either way, you create a condition of insulin resistance.

### **Insulin Resistance and Aborigines and Diet**

A fascinating study was conducted with Australian aborigines, comparing their traditional hunter-gatherer diet with their modern Westernized diet.<sup>18</sup>

Dr. Kerin O'Dea, an Australian physician, gathered ten middle-aged, hyperinsulinemic, diabetic, mildly overweight aborigines who had been living on a typical urban, Western diet of refined foods. He sent them to an isolated area and had them live as hunter-gatherers for seven weeks.

Dr. O'Dea monitored what they ate as they wandered about in inland and coastal areas. Their diet varied, depending on where they were. Their diet ranged from 54%-80% protein, 13%-40% fat, and 5%-33% carbohydrate. Even though 64% of the diet was of animal origin, it was relatively low in fat due to the very low fat content of the wild animals that were eaten. About 1,200 calories were consumed daily, which would qualify this diet as "low calorie".

How did these men fare? Their blood glucose fell from a dangerous 210 to a slightly elevated 118. Insulin dropped from 23 to 12, nearly normal. Triglycerides dropped from a highly elevated 354 down to 106.

And here's the real kicker...they were less active in the wild than in the city. In other words, their level of exercise actually declined, but they were still able to improve their health.

This study suggests to us that a hunter-gather type of diet is effective in reducing chronic health problems, regardless of exercise. By eating a diet that had **no** processed foods, they were able to recover much of their lost health in only seven weeks.

A diet consisting of whole, unrefined foods will reduce your need for insulin because you do not have a large quantity of sugars and simple carbohydrates entering your bloodstream and forcing a rapid increase in insulin. A diet of whole foods will also reduce your inclination to gain weight, which in itself contributes to insulin resistance.

The PCOS diet in this book recommends that you do not consume any processed, fabricated foods. You are overfed and undernourished. The PCOS diet will correct this imbalance.

### **Diet and Food Adulteration**

There are hundreds of chemicals and other substances added to your foods to "improve" the taste, texture or appearance. Although these chemical additives are approved by the FDA, that does not mean they are safe for you to consume.<sup>19</sup>

The most serious example is a family of substances called excitotoxins, which are chemicals that damage nerve cells. They stimulate nerve cells to fire so rapidly that they become exhausted and possibly die.

Unfortunately, the nerve cells in an area of the brain called the hypothalamus are very sensitive to excitotoxins. The hypothalamus is a collection of specialized cells in your brain that provide the primary link between the endocrine (glandular) and nervous systems. Nerve cells in the hypothalamus control the pituitary gland by producing chemicals that either stimulate or suppress hormone secretions from the pituitary.

Therefore, if the nerve cells in your hypothalamus become damaged, your body's ability to keep your hormones balanced is impaired.

Some excitotoxins are natural, such as the amino acids glutamate, aspartate, and cysteine. Others are man-made, such as MSG. MSG, a very common flavor additive, is a combination of glutamate and sodium. In mice, high doses of MSG caused a drop in LH (luteinizing hormone) and GH (growth hormone). On the other hand, low doses of MSG were shown to cause abnormally high levels of LH. Elevated LH is one of the primary reproductive problems that PCOS women have.

Administration of MSG to female rats when they were very young significantly reduced ovarian and pituitary gland weights, showed an absence or disruption of ovarian cyclicity after puberty, and had significantly higher concentrations of serum prolactin.<sup>20</sup> Luteinizing hormone (LH), follicle stimulating hormone (FSH) and estrogen were also reduced in another study of rats.<sup>21</sup>

Another man-made excitotoxin is "hydrolyzed vegetable protein" or HVP. On food labels, it is sometimes described as "vegetable protein" or "plant protein". HVP is manufactured from plant material treated with acid and caustic soda. It contains glutamate, aspartate, and cystoic acid, all of which are excitotoxins.

HVP is found in many foods, including protein drinks, frozen dinners, cereals, diet meals, sauces, soups, and salad dressings, to name a few. Be aware that the label may only say "vegetable protein" or "plant protein". "Vegetable protein" may seem like something that is really healthy, when it really isn't.

If your mother was consuming excitotoxins while she was pregnant with you, your developing hypothalamus may have been adversely affected, leading to long-term reproductive problems when you became an adult. You can think of your brain as being "hard-wired" as you develop from an embryo. Your mother may have unintentionally -- and permanently -- disturbed the "wiring" of your brain by consuming excitotoxins or by being exposed to environmental chemicals that act like hormones.

Excitotoxins and other food additives pose a serious threat to your health, and the future health of your unborn children. Moreover, they appear to contribute to your PCOS symptoms.

### **Diet and Environmental Pollution**

The amount of chemical pollution today is unprecedented in human history. We dump nearly 6,000,000,000 pounds of chemicals into our environment every year. At least 75,000 different chemicals have been invented since 1940 and many are scattered throughout our environment -- in the air you breathe, the water you drink, the food you eat, the objects you touch. Only a few hundred of these tens of thousands of chemicals have ever been studied for their human health implications.

Should you be concerned?

There is substantial evidence that environmental chemical pollutants are disrupting the reproductive function of most living creatures as well as harming our basic health.<sup>22 23</sup>

Environmental toxins can disrupt your hormones in two basic ways:

- Interfere with the production, transport, acceptance, activity and metabolism of hormones.
- Mimic hormones.

Of the few hundred chemicals that have been studied, many have been shown to disrupt your hormone and endocrine (glandular) system. Most of them are fat-soluble, meaning that once they enter your body, they will reside for years (or even a lifetime!) in your fat cells. These chemicals confuse your body, since your body's machinery is not designed to metabolize and detoxify these chemicals. Therefore, they are free to do their damage.<sup>24 25 26</sup>

Environmental chemical pollution may influence your fertility<sup>27</sup>, your hormonal balance, your general health and even the health of your unborn child.

A substantial number of chemicals have estrogen-like effects, while others suppress estrogen production.<sup>28 29</sup> Still others may affect testosterone, progesterone, insulin, thyroid and other hormones.<sup>30 31</sup>

In animal studies and cultures of human ovary cells, many of these chemicals damage or destroy ovarian follicles, and thus they can't produce their hormones.<sup>32</sup> These damaged follicles cannot mature in a normal ovulatory cycle and will not produce an egg to be fertilized. Some chemicals can disrupt the maturation of eggs in animals.<sup>33</sup>

Exposure to environmental chemicals may increase the risk of infertility or miscarriage. Concentrations of progesterone, which is necessary to maintain pregnancy, must remain high throughout pregnancy to avoid the loss of the developing embryo. Animal studies show that PCBs cause a reduction in progesterone by accelerating its breakdown in the liver.<sup>34</sup> A study of women who had DDT in their blood showed they had a shortened luteal phase of their menstrual cycle and lower progesterone.<sup>35</sup> It is well known that PCOS women have lower progesterone levels and a higher rate of infertility.

Environmental chemicals have been shown to unfavorably alter the gender development of embryos of many species, including humans, resulting in a whole array of reproductive abnormalities and disorders. One of the primary results is infertility.

Environmental chemical toxins clearly pose an under-recognized but potentially serious threat to your reproductive health, your overall health and longevity, and the health of your children, born or not yet born.<sup>36 37 38</sup>

The bad news is this: there is no escape from chemical pollution. All of us are exposed daily and already have accumulations of synthetic chemicals in our bodies. Your strategy at this point is to reduce any further exposure.

The PCOS diet will provide you with a diet that is as free as possible from environmental chemicals that will disrupt your hormones and damage your overall health.

### **Do You Have Chemical Toxins in "Your" Body?**

We wish to point out that the problem of environmental toxins is not some that is happening only to somebody else. It is a problem for *you*.

Since 1976 the U.S. Environmental Protection Agency (EPA) has been conducting the National Human Adipose Tissue Survey (NHATS). NHATS is an annual program that collects and chemically analyzes a nationwide sample of human fat tissue specimens for the presence of toxic compounds. The objective of the program is to detect and quantify the prevalence of toxic compounds in the general population.

In 1982 the EPA expanded beyond their normal list to look for the presence of 54 different environmental chemical toxins. Their results were astounding. Five of these chemicals were found in 100% of the samples. Another nine chemicals were found in 91-98% of all samples. In addition, PCBs were found in 83% of all samples and beta-BHC in 87%.

76% of samples had detectable levels of 20 of the 54 chemicals that were measured. In addition, the amounts of these compounds were also alarming.

Bear in mind that only 54 chemicals were assessed out of literally thousand of environmental chemicals and toxins that you are being exposed to.

Other studies verify that most of us are carrying some level of environmental toxins in our bodies.

You and your doctor cannot simply ignore the effect of environmental toxins on your hormones and your reproductive and overall health just because you can't see, smell or taste the toxins. You can rest assured that these toxins are everywhere, and some are inside your cells and in your blood right now. There is a mountain of evidence to show that environment chemicals and other toxins are very destructive to your health.

If you live in the temperate or colder climates of the northern hemisphere of the planet, you have an especially high risk. Most pollution is created in the northern hemisphere. Much of it goes up into the air. Some of it is carried for thousands of miles by wind and thus is widely dispersed.

The diet we recommend not only is designed to minimize your exposure to toxins, but it also is designed to help you naturally dispose of toxins you already have.

### **Diet and Autoimmune Disease**

Some autoimmune diseases are known to effect fertility. It is not yet clear whether these conditions are a causative factor in PCOS. Autoimmune disease is an inflammatory condition where your immune system mistakenly attacks organs or other tissues in your body, thinking that your cells are "foreign" to your body.

The cause of autoimmune diseases appears to be due to some combination of these factors:

- Gender - Nearly 79% of the 8.5 million autoimmune disease patients in the United States are women.
- Hormone disorders or alterations, including but not limited to: estrogen, progesterone, testosterone, prolactin, growth hormone and insulin-like growth factor-1 (IGF-1).
- Inherited genetic predisposition.
- Environmental factors - substances and microorganisms in your food, water, air and physical environment. The environmental factors could be anything, such as food components, toxic metals, chemicals, viruses, medications, you name it.

All of these factors influence your immune system. There are many autoimmune conditions, and they do not have a simple, single cause.

### **Link Between Hashimoto's Disease and PCOS**

A medical study was recently published that showed a relationship between PCOS and Hashimoto's Disease, which is autoimmune thyroiditis.<sup>39</sup> Autoimmune thyroiditis is an inflammatory condition where your immune system attacks and damages your thyroid gland. A healthy thyroid gland is essential to reproductive health and fertility. So if you have Hashimoto's Disease, you are much more likely to have reproductive difficulties such as infertility. The production of adequate thyroid hormones is also necessary for normal fetal and neonatal growth and development

The study found that 27% of the PCOS women had elevated thyroid-specific antibodies as compared to only 8.3% of the control group. Elevated antibodies suggest an aroused immune system that is causing inflammation. Thyroid ultrasound showed that 42.3% of PCOS women, but only 6.5% of the controls, had thyroid tissue images typical of autoimmune thyroiditis (Hashimoto's Disease). The PCOS women also had higher levels of TSH (thyroid stimulating

hormone) than the non-PCOS women, suggesting that the PCOS thyroid is not as successful in making enough thyroid hormone.

### **Link Between Autoimmunity and PCOS**

In another recent study of 108 women with menstrual cycle disturbances, PCOS, endometriosis or chronic lack of ovulation, the researchers found that 40.7% had immune antibodies for autoimmunity, vs. only 14.8% for women without any of these conditions.<sup>40</sup>

In other words, the two studies we just mentioned would suggest that as many as 4 of every 10 PCOS women have an autoimmune disorder of some kind.

### **The PCOS - C-Reactive Protein - Autoimmune Connection?**

CRP (C-reactive protein) is a protein in the blood that is a general marker of infection and inflammation. It is used to assess how active a body-wide inflammatory condition is.

Women with PCOS have significantly increased CRP concentrations as compared to women with normal menstrual rhythm and normal androgen levels.<sup>41</sup> It appears that low-grade inflammation may be a characteristic of PCOS. We could speculate that the inflammation is, in part, caused by an autoimmune condition.

If the CRP is not caused by an autoimmune condition, it may be due to some other type of chronic infection or inflammation. Or, it may be due to "oxidant stress", which is a condition where your antioxidant defenses are depleted and there is inflammation resulting from free radical damage to your cells.

### **Inflammatory Cascade in PCOS Ovaries?**

A small study conducted at Catholic University Medical School in Rome, Italy showed that ovarian tissue from PCOS women produced a higher level of pro-inflammatory prostaglandins (PGE2) than the ovaries of non-PCOS women.<sup>42</sup> Prostaglandins are hormone-like substances that have very powerful effects on the body. PGE2 is a prostaglandin that creates inflammation.

### **Role of the PCOS Diet**

The PCOS Diet is designed to help you reduce the risk of autoimmune reactions by removing as many inflammatory triggers as possible from your food. We also will suggest foods that support thyroid function.

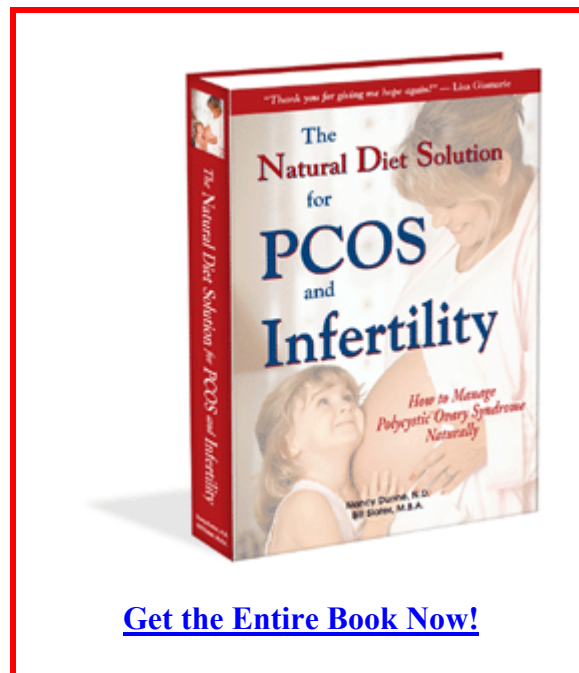
### **Recommended Reading**

If you wish to explore more about genes and environment, and how environmental pollution is affecting your health, you may find the following books helpful.

*The Dependent Gene: The Fallacy of "Nature vs. Nurture"* by David Moore. This book reveals how all traits -- even apparently straightforward characteristics like eye and hair color -- are caused by complex interactions between genes and the environment at every stage of biological and psychological development, from the single fertilized egg to full-grown adulthood.

*Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? -- A Scientific Detective Story*, by Theo Colborn, Dianne Dumaniski and John Myers. You MUST read this book so that you understand the severity of the chemical pollution problem, and understand what a serious threat it is to your health. This book pieces together the compelling evidence from wildlife studies, laboratory experiments, and human data and to lay out the emerging scientific case regarding the largely unrecognized threat. The authors trace birth defects, sexual abnormalities and reproductive failures in wildlife to their source -- synthetic chemicals that mimic natural hormones, upsetting normal reproductive and developmental processes.

*Living Downstream: An Ecologist Looks at Cancer and the Environment*, by Sandra Steingraber. There is a growing body of evidence linking cancer to environmental pollution. Her scientific analysis ranges from the alarming worldwide patterns of cancer incidence to the sabotage wrought by cancer-promoting substances on the intricate workings of human cells. In a gripping personal narrative, she travels from hospital waiting rooms to hazardous waste sites and from farmhouse kitchens to incinerator hearings, bring to life stories of communities around the country as they confront decades of industrial and agricultural recklessness.



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