



# Can Pulses Improve Fertility?

SPG-funded research tests the link between eating pulses and improving female fertility

by **Noelle Chorney**

Pulses are already considered superstars as part of a healthy diet, but one University of Saskatchewan (U of S) researcher thinks they can also play a starring role in treating infertility in women.

Three years ago, Gordon Zello, a professor in the College of Pharmacy and Nutrition at the U of S, began to question a link between eating pulses and successfully treating polycystic ovarian syndrome (PCOS), an endocrine disorder that affects hormones and metabolism in women of child-bearing age, sometimes causing infertility.

With Growing Forward 1 funds provided by the AAFC and

Saskatchewan Pulse Growers, Zello and his team were able to start Phase One of the project in 2011. They recruited women diagnosed with PCOS to participate in a 16-week lifestyle intervention study beginning with a basic healthy diet, and then substituting pulse-based meals for half of the group. The program also involved an aerobic exercise program designed by Dr. Philip Chilibeck of the College of Kinesiology at U of S.

Students from the College of Nutrition prepared pulse-based meals and delivered them to women in the pulse test group. Fourteen meals were provided every week. Through the process of the first

phase, several pulse-based recipes were standardized. In the second phase of the project, beginning shortly, an "evidence-based" recipe book will be prepared, offering pulse recipes that have been demonstrated to have a positive impact on people suffering from insulin resistance or diabetes, metabolic syndrome, and cardiovascular disease.

Women in the study reported regularly and participated in testing to determine improvements in their health. Women in both intervention groups reduced fat mass and waist circumferences. However, women in the pulse-based group also



*Many women reported more regular menstrual cycles; in fact, some women left the study because they became pregnant."*

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in brief

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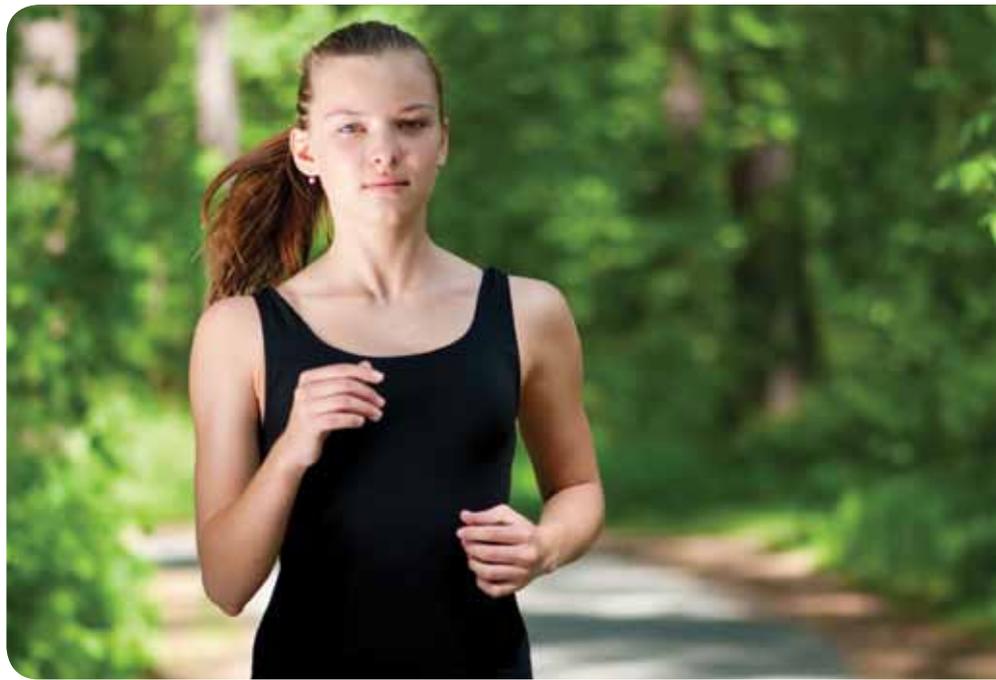
showed signs of improved blood glucose levels, reduced cholesterol, balanced hormone levels, and a reduced number of follicle cysts on their ovaries. There were signs of improved fertility as well. Many women reported more regular menstrual cycles; in fact, some women left the study because they became pregnant.

Shani Serrao, a project participant, says the takeaway from participating in the project has had a huge impact on her lifestyle. “I learned what I can put into my body to help prevent me from experiencing diabetes or heart disease, and also to reclaim my femininity, which PCOS affects.”

Beyond the 16-week program, the research team also followed up with the study participants six and 12 months after the program.

“This is more than just a diet program,” Zello says. “It is a lifestyle intervention, and we want to confirm whether the changes have been incorporated into the long-term eating and activity habits of our participants.”

In Phase Two, many of the earlier results will be further



**Women in the study participated in a 16-week lifestyle intervention, beginning with a basic healthy diet of pulse-based meals, as well as an aerobic exercise program.**

examined with a new group of study recruits. Participants will be assessed by PCOS specialist Dr. Donna Chizen to determine if there were changes to their ovaries and uterus, as well as hormone levels. They will also be assessed for risk of metabolic syndrome, including cholesterol

levels, blood pressure, waist girth, changes in the liver fat, and glucose and insulin levels. The team will test several of the promising measures identified in Phase One, with the intent to strengthen the relationship between health measures and the lentil-based diet.

## Polycystic Ovarian Syndrome (PCOS)



**Ultrasound of a polycystic ovary, showing a “string of pearls” distribution of cysts, which is typical in PCOS patients.**

Polycystic ovarian syndrome (PCOS) is an endocrine disorder that affects hormones and metabolism in up to 10% of women of child-bearing age. The issues surrounding PCOS are incredibly complex, because hormone imbalances can have a domino effect on other body systems.

Women with PCOS often have trouble losing weight, they may develop insulin resistance, and they often experience fertility problems due to irregular ovulation and increased levels of male hormones. But the long-term effects are also worrisome: women with this condition are more likely to develop diabetes, heart disease, and certain forms of uterine cancer.

Women with PCOS often have trouble losing weight, they may develop insulin resistance and increased levels of male hormones, and they often experience fertility problems due to irregular ovulation. Women who have PCOS often have more small follicle cysts on their ovaries than women who do not have PCOS. But the long-term effects are also worrisome:

women with this condition are more likely to develop diabetes, heart disease and cancer of the uterine lining.

The causes of PCOS are not entirely understood. Insulin resistance appears to play a role in the development of PCOS and in the development of Type 2 Diabetes later in life. There appears to be a genetic predisposition to the condition. Male relatives of women with PCOS have a higher occurrence of Type 2 diabetes.

What is generally accepted is that diet and exercise can reduce PCOS symptoms, and may even increase a woman’s chance of becoming pregnant. “Early diagnosis and dietary intervention are crucial to addressing health issues caused by PCOS,” Zello says.

## Do you or someone you know have PCOS?

Phase Two of the PCOS project is getting underway and new recruits are welcome to start anytime. If you or someone you know could benefit from participating in this study, please contact the program at [pcos.pulsestudy@usask.ca](mailto:pcos.pulsestudy@usask.ca).

If you want to try adding more pulse-based recipes to your own diet, check out [www.lentils.ca](http://www.lentils.ca) and [www.pulsecanada.com](http://www.pulsecanada.com) for recipe ideas.

### **Unexpected Benefits: Strategies for Introducing Pulses**

Beyond increasing the understanding of the potential health benefits of pulses in the diet, the research team is making important discoveries regarding the success of lifestyle intervention studies. While the study had a better retention rate than other recent PCOS studies, the dropout rate was still relatively high (32%).

“The most challenging aspects of the study are in motivating change,” Dr. Chizen says. “Pulses are not part of the main diet for many — the texture and preparation techniques can seem foreign to people who are used to eating other foods. We’re learning ways to give a helping hand for our participants’ success.”

There were challenges for participants regarding providing food to their own families while having to eat prepared meals. This feedback from Phase One was taken into consideration and informed the decision to include a recipe book as one of the outcomes for Phase Two.

Since the majority of women in the study were unaccustomed to eating pulses, the research team inadvertently developed a series of strategies for introducing healthy new food into the diets of people who may be resistant to change. These results will offer added benefits to groups undertaking similar studies.



### **Santa Fe Salad**

*One of the pulse recipes used in the study*

**Yield:** 4 servings

**Prep time:** 20 minutes **Cook time:** 20 minutes **Total time:** 40 minutes

**Equipment:** Knife and cutting board, small pot

#### **Ingredients:**

##### **Salad**

4 cups cooked chickpeas, drained  
1 red bell pepper, diced  
1 cup frozen kernel corn, cooked  
¼ cup chopped red onion  
4 Tsp jalapeño pepper, seeded & minced  
1 pita

##### **Dressing**

3 Tbsp extra-virgin olive oil  
1 and ⅓ lime + 2 ½ Tbsp zest  
3 Tbsp cilantro  
¾ Tsp of cumin  
¾ Tsp of salt  
Pepper, to taste

#### **Directions:**

In medium bowl, whisk together oil and lime juice. Add cilantro, cumin, salt, and pepper and mix well.

Stir in salad ingredients and seasoning.

Portion salad equally among servings.

bio

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