by David Shield

Lentils: Legal Performance Enhancers?

IN BRIEF

Researchers at the University of Saskatchewan are testing whether pre-game meals of lentils are giving high-performance athletes an advantage.

Forget Wheaties – if a research team at the University of Saskatchewan is correct, lentils could very well become the next 'Breakfast of Champions.'

Along with researchers from Plant Sciences and Pharmacy and Nutrition, Kinesiology professor Dr. Phil Chilibeck has started research to determine how effective pulses are in providing energy to athletes.

According to Chilibeck, it all started with a call from U of S Plant Sciences professor and pulse crop breeder Dr. Bert Vandenberg. An avid soccer player, Vandenberg told the Kinesiology professor he had noticed that eating lentils before his games significantly improved his endurance.

Now, with funding from Saskatchewan Pulse Growers (SPG), Chilibeck is running experiments to test whether Vandenberg's observation is accurate. He has enlisted a group of U of S varsity soccer players who eat a bowl of red lentils or a 'control' meal, like spaghetti or potatoes, several hours before exercise, and then have them run simulated soccer games on treadmills, full of quick sprints and long periods of walking.

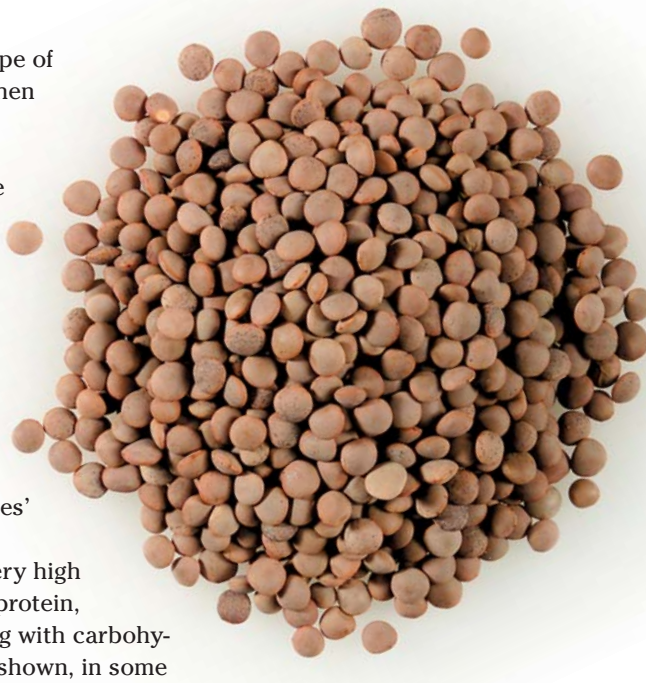
According to Chilibeck, lentils should be an ideal food for athletes.

"Pulses have a type of carbohydrate that, when you consume it, it's digested slowly, so you get a slow-release of blood sugar over time. That's going to help fuel your muscles to perform long endurance-type activity," he says.

As well, he believes that the protein present in lentils will help athletes' performance.

"Pulses have a very high protein content, and protein, when you take it along with carbohydrates has also been shown, in some research studies, to improve endurance performance. So, if you're looking at it from a nutritional perspective, a lentil meal before an endurance performance, theoretically, would be quite beneficial."

Chilibeck hypothesizes that lentils could be more beneficial to athletes than traditional carbohydrate sources (like, for example,



U of S researchers are looking at how lentils affect athlete performance in local soccer players.

PHOTO BY DAVID SHIELD

Dr. Phil Chilibeck (left) and student researcher Jon Little supervise Scott Forbes as he completes an endurance test on a specialized treadmill at the U of S.

pasta). While he says eating pasta can result in a faster increase in blood sugar than lentils, such a rapid increase can trigger an athlete's muscles to absorb more sugar. As a result, athletes may receive a lower blood glucose level after eating pasta, something that may not happen with pulses.

"If you're eating something like (pasta) before an endurance performance, it might be detrimental," he says.

Chilibeck and his team plan on closely monitoring how the lentils are being absorbed by the athletes through everything from blood tests to muscle biopsies to measuring the amount of oxygen and carbon dioxide the athletes are breathing in and out.

Interestingly, he says pre-trial studies showed lentils giving roughly the same benefit as eating a potato, usually seen as an inferior source of carbohydrates.

However, Chilibeck believes they were giving lentils to their test athletes too early in the pre-trial stage. While the original test gave the lentils three hours before the test, Chilibeck plans on shortening the interval to two hours for the main trial.

"It looks like the timing of our testing was off a bit. We were giving our meal three hours before the test, and it looks like, from our data, the optimal time might be two hours for the blood glucose response. So now, we're going to test a greater number of subjects with different time intervals before the testing," he says.

Chilibeck says he's also excited by the study's novel method of testing endurance. While most exercise tests involve athletes running on a treadmill until they reach exhaustion, masters student and research aide Jon Little says he doesn't believe such tests create accurate results.

"(Exhaustion tests) have been shown to be very variable. With that type of test, with the same person, their time for exhaustion can vary quite a bit. Whereas, when you have a test like a sprint test or a race, it's fairly constant over time, so it's a better test to see if there's a difference."

Chilibeck and Little have the athletes run on a treadmill that has been programmed to mimic a soccer game with a variety of short bursts of speed, followed by jogging and walking. In the last 15 minutes of the 90 minute test, the athletes are given control of the treadmill and they can sprint at faster or slower speeds with the goal being to cover as much distance as possible.

"Theoretically if they had the lentil meal and their blood glucose levels and carbohydrate stores are adequate near the end of the simulated soccer game, they should be able to voluntarily run at a faster sprint speed in that last 15 minutes," said Chilibeck. "It's always that last 15 minutes of the game that's the most important because it's when you're fatigued and you might be called upon to do even more sprinting than the rest of the game."

Ultimately, if the study's results prove that lentils are beneficial to athletes, Chilibeck says research could begin on a lentil-based sports performance bar.

"Normal energy bars are quite high in simple sugars. And simple sugars, if you consume them and you don't time it right, you're going to get a rapid increase in blood glucose and then it is going to crash."

"So, we're trying to eventually develop a lentil based energy bar that would allow a slower release of blood glucose in the body, more sustained maintenance of blood glucose levels and that theoretically would help out with your endurance performance."

Chilibeck says the study's results should be completed by this spring.

David Shield is a freelance writer based in Saskatoon, SK.