

## Anti-Diabetes Efficacy of A Sorghum Starch in Humans

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There is growing interest in researching functional carbohydrates to improve human health. Slowly digestible starch (SDS) and resistant starch (RS) are the starch fractions that show delayed and resistant to digestion and absorption in the small intestine. Slowly digestible and resistant starch consumption has been associated with positive health benefits such as lower blood sugar, decreased insulin release, increased satiety, and weight control.

Dr. Lee's group analyzed total starch content and functional starch fraction (slowly digestible starch and resistant starch) in grain sorghum flour (Table 1).

**Table 1.** Starch fractions (RDS, SDS, and RS) of sorghum flour

	<b>Mean (%)</b>	<b>Standard Deviation (%)</b>
Total Starch Content	76.9	0.9
Slowly digestible starch (SDS)	<b>12.5</b>	0.9
Resistant starch (RS)	<b>52.6</b>	0.4
Rapidly digestible starch (RDS)	11.8	0.5

For the human study, Dr. Lee's group has developed and tried different types of food with grain sorghum flour. Grain sorghum muffins was made of sorghum flour (65g), egg (28g), butter (19g), baking soda (1.7g), salt (1.4g), vanilla extract (1.7g) and water (37g). After overnight fast, participants will consume a muffin or control containing 50 g of starch on a single day.



**Grain Sorghum Muffin** – Master’s degree student Nicole Poquette (left) and undergraduate student Kyle Mattal (right) baked sorghum muffins for Dr. Lee’s research to investigate the efficacy of sorghum starch on blood glucose in humans

Dr. Lee has submitted the IRB (Institutional Review Board) protocol, consent form, and other documents to investigate the effectiveness of grain sorghum product on blood glucose levels in humans. The protocol was reviewed by a regular IRB committee meeting on November 2011 and received the protocol approval (IRB protocol # 11-10-200). The human study is **ongoing** right now and the study will be completed by December 2011.

We will then analyze the data and present the results at national and international conferences to acknowledge the support from Corn and Grain Sorghum Board.