

Popular Scientific Summary

The risk of developing cardio-metabolic diseases such as type 2 diabetes and cardiovascular diseases is increasing around the world. These diseases are related to lifestyle habits including diet and physical activity, meaning it can be avoided and the risks of developing it can be reduced. The inclusion of dietary fiber in diets is considered to have beneficial effects on the consumer, as it may decrease the blood sugar levels and potentially reduce the risk of developing type 2 diabetes.

Opuntia ficus-indica or Nopal is a cactus plant rich in dietary fiber and other bioactive compounds such as ascorbic acid and flavonoids. Nopal originates from Mexico and is commonly grown in deserted environments around the world. Habitants of Hispanic origins use Nopal cactus as a natural treatment to control their sugar levels and prevent risks of developing diabetes. The aim of this study was to enrich a daily food type with dietary fiber-rich nopal flour to determine effects on postprandial blood glucose levels and insulin responses in healthy volunteers. Examining such a food component can further help in increasing the nutritional value of our meals and reduce the risks of developing cardio-metabolic diseases, paving the way for designing foods and diets to achieve health benefits. This study investigated the effects of the water-soluble and water-insoluble fractions of Nopal cladodes included in bread on postprandial glycemic responses along with appetite-related variables (hunger, satiety or fullness and desire to eat) in healthy participants for 2 hours after consumption. Three white wheat flour-based breads, enriched with nopal flour, were tested in the pilot meal study and the postprandial effects were compared with white wheat flour bread without nopal flour.

The results from the study showed that there were no detectable differences on the postprandial glycemic responses when eating the different test breads. The only noticeable difference between the reference bread and the nopal breads was the time of the peak glucose response. Thus, the three test breads delayed the postprandial glucose concentration peak. This study also showed that the Nopal bread containing an extra amount of the water soluble fraction increased the fullness feeling when compared with the white bread. Thus, this fraction can be included in dietary plans to achieve satiety and prevent over-eating (e.g.: obesity treatment). Further research on Nopal is required to generate more results, to be able to categorize nopal as a functional or “healthy food”, and incorporate it in diets for the prevention of cardio-metabolic diseases.