

Soluble and insoluble fractions from nopal (*Opuntia ficus*) cladodes improve postprandial glycaemic regulation: a crossover randomized study in healthy volunteers

A popular science summary by Wanussavee Deenissai

Type 2 diabetes (T2D) is a chronic condition that causes the rise in sugar level in the blood. There is a growth in the prevalence of T2D associated with metabolic syndrome, globally. Diabetes is one of the world's leading cause for death, and it is highly related to lack of exercise, personal lifestyle and poor food consumption. Moreover, diabetes is a costly disease, it affects not only the patients, but also the public health systems. The focus was on the identification of possible methodology to be adapted to reverse the unhealthy trend. One of the most important factors to decrease this trend is the diet. Therefore, there is need for more products of specific health properties within this area.



Nopal is one of the amazing plants that can help in the prevention of T2D. It is a domestic species of the cactus, originally from Mexico. This cactus plant also plays an important role in traditional medicine for the treatment of diabetes. The majority of studies on nopal is focusing on the anti-diabetic effects in patients suffering from T2D. Would it then be possible to prevent T2D onset of the disease? A previous study on nopal found that it can lower glycaemic regulation in healthy humans. Also, there are studies showing that dietary fibre is

one important factor in nopal that imparts beneficial effects on glucose regulation. The findings led to further concerns on mechanisms behind the physiological effects of nopal. Therefore, the next step of investigation was to figure out the type of fibre involved in the preventable effects. Thereafter, dietary fibre (soluble and insoluble dietary fibre) was focused on, in this study.

Different nopal fractions (soluble and insoluble nopal fractions) were studied. The effect of the postprandial blood glucose regulation after consuming breakfast breads containing different fraction was evaluated in healthy humans. First, a fractionation of dietary fibres was performed in order to separate the soluble and insoluble nopal fractions. These fractions were then mixed into bread mixtures for meal study investigations. All breakfast breads studied possessed the same amount of available starch. The breads contained different nopal fractions and was compared with control bread (without any nopal fraction). The healthy volunteers were asked to consume the product and the blood samples were collected to measure the postprandial blood glucose and insulin levels.

The observations from the study showed that the effect on lowering postprandial blood glucose levels were imparted only by the insoluble nopal fraction. On the other hand, both nopal fractions resulted in a reduced insulin secretion. It is important to consider the other components in the nopal fractions in further investigations. However, it can be concluded that both fractions can give a beneficial effect on glycaemic regulation and it can be one of the healthy food choices in the market to prevent the human population from T2D.