Research findings

Changes in Blood Glucose Levels from Consumption of High Fat and High-Protein Meals

WHAT WAS THE AIM?

Currently, people with diabetes work out how much insulin to give for meals based on how much carbohydrate they are planning to eat. Some recent studies have indicated that more insulin is needed for a high-fat meal when compared to a low-fat meal with the same amount of carbohydrate. However, there is very little information from research studies that shows the effect of fat and protein in foods on blood glucose levels. The aim of this study was to see what happens to the blood glucose levels of young people with diabetes after eating meals that are high in fat, high in protein or high in both.

HOW DID WE DO IT?

The participants in the study were given four different meals of pancakes for breakfast on four different days. All of the meals had the same amount of carbohydrate, however, they contained different amounts of protein and fat. The participants gave themselves the same amount of insulin each morning. They calculated how much insulin to give using their insulin-to-carbohydrate ratio based on the amount of carbohydrate in the meal. Blood glucose levels were recorded every 30 minutes for five hours after the participants had eaten the meal.

WHAT DID WE FIND?

The rise in blood glucose level after eating the meals high in fat and protein was compared to the rise after eating the meal that only contained carbohydrate. For the meal that was high in fat, there was a delay in the rise in blood glucose levels and they remained high for longer. For the meal that was high in protein the blood glucose levels also remained high for longer. The participants were less likely to have an episode of hypoglycaemia after the high protein meal. For the meal that was high in both fat and protein the blood glucose levels were still high five hours after eating the meal.

WHAT DOES THIS MEAN IN PRACTICE?

The findings of this study helped to explain why people with diabetes may find that their blood glucose levels are high three to five hours after eating a meal that is high in fat and protein, such as pizza or lasagne. The study indicates that extra insulin may be needed for these meals and that additional insulin should be given via an extended insulin bolus to avoid hypoglycaemia straight after the meal. Studies are currently being conducted to work out how much extra insulin is needed for meals that are high in fat and/or protein, and the timing of insulin delivery to prevent extended rise in blood glucose levels.

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