A Randomized 3x3 Crossover Study to Evaluate the Effect of Hass Avocado Intake on Post Ingestive Satiety, Glucose and Insulin Levels, and Subsequent Energy Intake in Overweight Adults
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STUDY OVERVIEW

The pilot study, A Randomized 3x3 Crossover Study to Evaluate the Effect of Hass Avocado Intake on Post Ingestive Satiety, Glucose and Insulin Levels, and Subsequent Energy Intake in Overweight Adults, conducted at Loma Linda University, and funded by the Hass Avocado Board (HAB), was published in the November issue of Nutrition Journal. This randomized crossover feeding study on 26 healthy, overweight adults, evaluated the effects of incorporating fresh Hass avocado to a lunch—either by replacing other foods or by simply adding it to the meal—on satiety, blood sugar and insulin response and subsequent food intake.

Results showed that when approximately one-half of a fresh avocado was added to a lunch consisting of a salad with Italian dressing, a baguette, and cookies, participants felt more satisfied, and had less desire to eat following the meal. The patients also had a lower immediate rise in insulin levels than when the same lunch was eaten without the avocado; however, over a three-hour period there was no significant difference in insulin levels. The blunted rise in post-meal insulin levels was also observed when participants replaced part of the Italian dressing and cookies in the lunch for one-half of an avocado, compared to when they ate the same lunch with no avocado.

STUDY KEY FINDINGS

Study diet details:
- Participants ate the same standardized breakfast followed by three different lunch meals on three different days.

- The standard (control) lunch did not contain avocado and was designed to meet individual meal-based calorie and macronutrient needs. It included a salad with Italian dressing, a baguette and cookies.

- The avocado replacing lunch was the same standard lunch that included approximately one-half of a fresh avocado served in place of part of the Italian dressing and cookies. This meal had the same total energy and macronutrient content as the standard lunch.

- The avocado added lunch was the same standard lunch with approximately one-half of a fresh avocado added. This meal had a higher total of calories and macronutrients.

A dinner buffet was provided for study participants to consume ad libitum on each of the 3 study days and was served 5 hours from the start of the lunch meal.
STUDY RESULTS:

The subjects reported a reduced desire to eat following the avocado added lunch compared to eating the meal with no avocado.

- When one-half of an avocado was added to the lunch meal, participants experienced a 40 percent decrease in the desire to eat over a three hour period compared to eating the lunch with no avocado.

- Over a five hour period, one-half of an avocado added to a lunch significantly decreased the desire to eat by 28 percent compared to the standard lunch.

Adding one-half of an avocado to the meal increased satisfaction following the meal compared to eating the meal with no avocado.

- When one-half of an avocado was added to the lunch meal, participants experienced a significant increase in self-reported subjective feelings of satisfaction by 26 percent over a three hour period compared to the lunch with no avocado.

Despite the extra calories and carbohydrates provided by the added avocado there was no increase in blood sugar levels beyond what was observed after eating the lunch with no avocado.

The rise in insulin 30 minutes following the start of the meal was weakened when the avocado replacing lunch was eaten compared to eating the meal with no avocado.
When approximately one-half of an avocado replaced part of the Italian dressing and cookies in a lunch meal, the rise in insulin levels was significantly weakened by 37 percent 30 minutes after the start of the meal compared to eating a meal with no avocado. And, blood insulin remained significantly lower over a three-hour period.

When one-half of an avocado was added to a lunch meal, the rise in insulin levels was significantly weakened by 22 percent 30 minutes after the start of the meal. Over a three-hour period, however, there was no significant difference in insulin levels.

The conclusions drawn from this study cannot be applied to the general public due to the study size and limitations noted by the researchers. More research is needed to investigate avocados’ effect on glucose homeostasis.

The researchers concluded that the reduction in the rise in insulin levels observed with the avocado replacing part of the Italian dressing and cookies lunch is worthy of future exploration in persons with insulin resistance (e.g. metabolic syndrome) and type 2 diabetes to determine if eating avocados can favorably influence glucose homeostasis.

The results provide promising clues and a basis for future research to determine avocados’ effect on satiety and glucose and insulin response.

The Hass Avocado Board is supporting clinical studies investigating the relationship between fresh avocado consumption and risk factors for cardiovascular disease, avocado’s potential positive role in weight management and diabetes, and avocado’s ability to enhance nutrient absorption.

To read the full study, click here

For more information on avocado nutrition and avocado research, visit LoveOneToday.com/Research

Wien M, Haddad E, Oda K, Sabaté J. A randomized 3x3 crossover study to evaluate the effect of Hass avocado intake on post-ingestive satiety, glucose and insulin levels, and subsequent energy intake in overweight adults. Nutr J. 2013; add publication volume here.