

Public Abstract

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Title: THE EFFECTS OF A PROTEIN-RICH BREAKFAST ON GLUCOSE METABOLISM IN OVERWEIGHT/OBESE LATE ADOLESCENT GIRLS

Background: Skipping breakfast has been associated with an increased risk of type II diabetes and obesity. **Purpose:** To examine the effects of normal protein vs. higher protein breakfast meals on pre- and post-lunch glycemic control in overweight/obese adolescents who either habitually skip breakfast vs. adolescents who habitually consume high CHO breakfast meals. **Methods:** Thirty-five overweight/obese teen girls participated in the following randomized crossover-design study. The participants were grouped according to habitual breakfast frequency. The habitual breakfast skipping group randomly completed the following breakfast patterns at home for 3 days: 1) Breakfast Skipping (BS); 2) Normal Protein (NP) breakfast; and 3) High Protein (HP) breakfast. The habitual breakfast consuming group randomly completed the NP and HP breakfast patterns at home for 3 days. On day 4 of each pattern (for both groups), the participants complete the respective 8-h testing day. The respective breakfast was provided at the beginning of the day and a NP lunch was provided 4h post-breakfast. Blood samples were collected at specific times throughout the day for plasma insulin and glucose responses. **Results:** The addition of breakfast led to increased morning glucose and insulin responses vs. BS (both, $P < 0.05$). When comparing the normal protein vs. high protein breakfast meals, the post-lunch glycemic response was different between the meals but was significantly modulated by the frequency of habitual breakfast consumption. The breakfast skippers experienced lower afternoon and total glucose concentrations following the normal protein breakfast but higher afternoon and total glucose concentrations following the high protein breakfast compared to the breakfast consumers (both, $P < 0.05$). Minimal differences in afternoon and/or total insulin were detected between meals or between groups. **Conclusion:** These data suggest that the addition of breakfast, regardless of protein content, has very little effect on post-lunch glycemic control in individuals who habitually skip the morning meal but illustrates novel differences in the glycemic response to high versus normal protein breakfast meals which appears to be influenced by habitual breakfast frequency.