



Effect of Carbonated Prebiotic Beverages versus Carbonated Caloric and Non-Caloric Beverages on Satiety, Glucose, Insulin, and GLP-1 Response in Healthy Male Participants

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Abstract

Background: Prebiotic sodas are marketed as healthy alternatives to traditional soda, but these claims have not yet been substantiated by research. This study evaluated the effects of fasted consumption of the prebiotic sodas Olipop and Poppi, compared with Diet Coke and Coca-Cola Original, on blood glucose, insulin, glucagon-like-peptide-1 (GLP-1), satiety, gastrointestinal symptoms, and beverage preference.

Objectives: Determine the effects of carbonated prebiotic beverages compared to conventional carbonated beverages on blood glucose, insulin, GLP-1, satiety, gastrointestinal symptoms, and beverage preference.

Methods: A single-blind, repeated-measures design was employed with 10 participants. Participants completed four randomly assigned trials with a one-week washout period between each. During each visit, blood samples and satiety questionnaires were collected at baseline and throughout a two-hour trial. Beverage preference was assessed post-consumption, and gastrointestinal symptoms were evaluated using a follow-up questionnaire 24h post-intervention.

Results:

Conclusion:

Methods

Study Design: Single-blind randomized crossover trial with four conditions

Participants: 10 male participants age 19-28 with BMI between 18.4 and 24.9 kg/m² and no diagnosis of diabetes or pre diabetes

Intervention: Participants consumed one of four beverages over four visits, Olipop, Poppi, Diet Coke, or Coca-Cola Original

Measured Outcomes:

- Biochemical values (glucose, insulin, and GLP-1) and satiety were measured at 6 timepoints (0, 15, 30, 60, 90, and 120 minutes)
- Beverage preference was measured after consumption using an online survey
- Gastrointestinal symptoms were measured 24 hours post-visit using an online survey

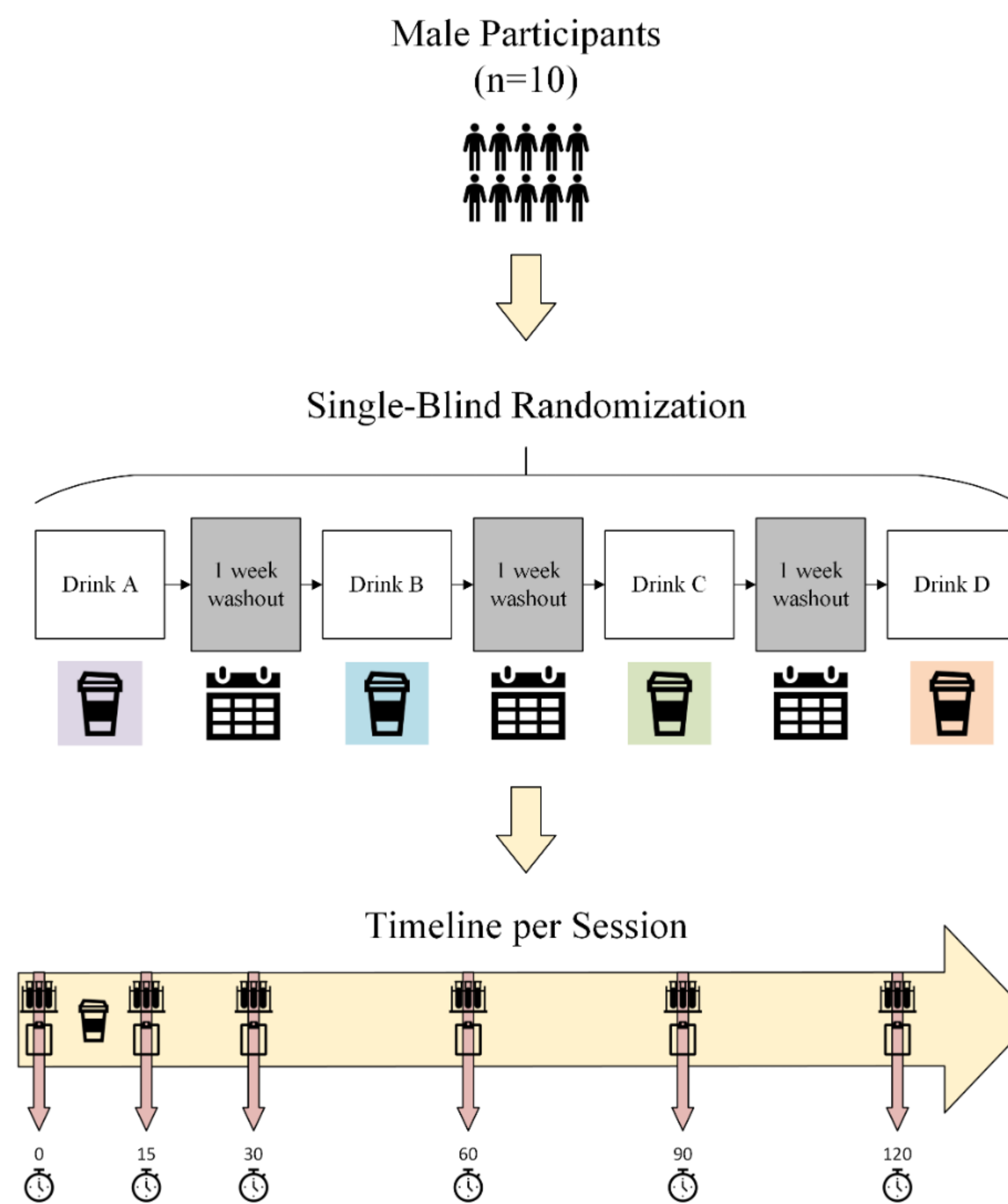


Figure 1: Study Design and Timeline of Experimental Procedures.

This figure illustrates the randomized, single-blinded crossover study design. Healthy male participants completed four experimental conditions testing the effects of different beverages: two carbonated prebiotic beverages, a non-caloric beverage, and a caloric sugar-sweetened beverage. The timeline illustrates the sequence of events and blood sample collection points (indicated by downward arrows) for each of the four experimental conditions. The study assessed the impact of four different beverages on glucose, insulin, GLP-1, and satiety responses.

Results

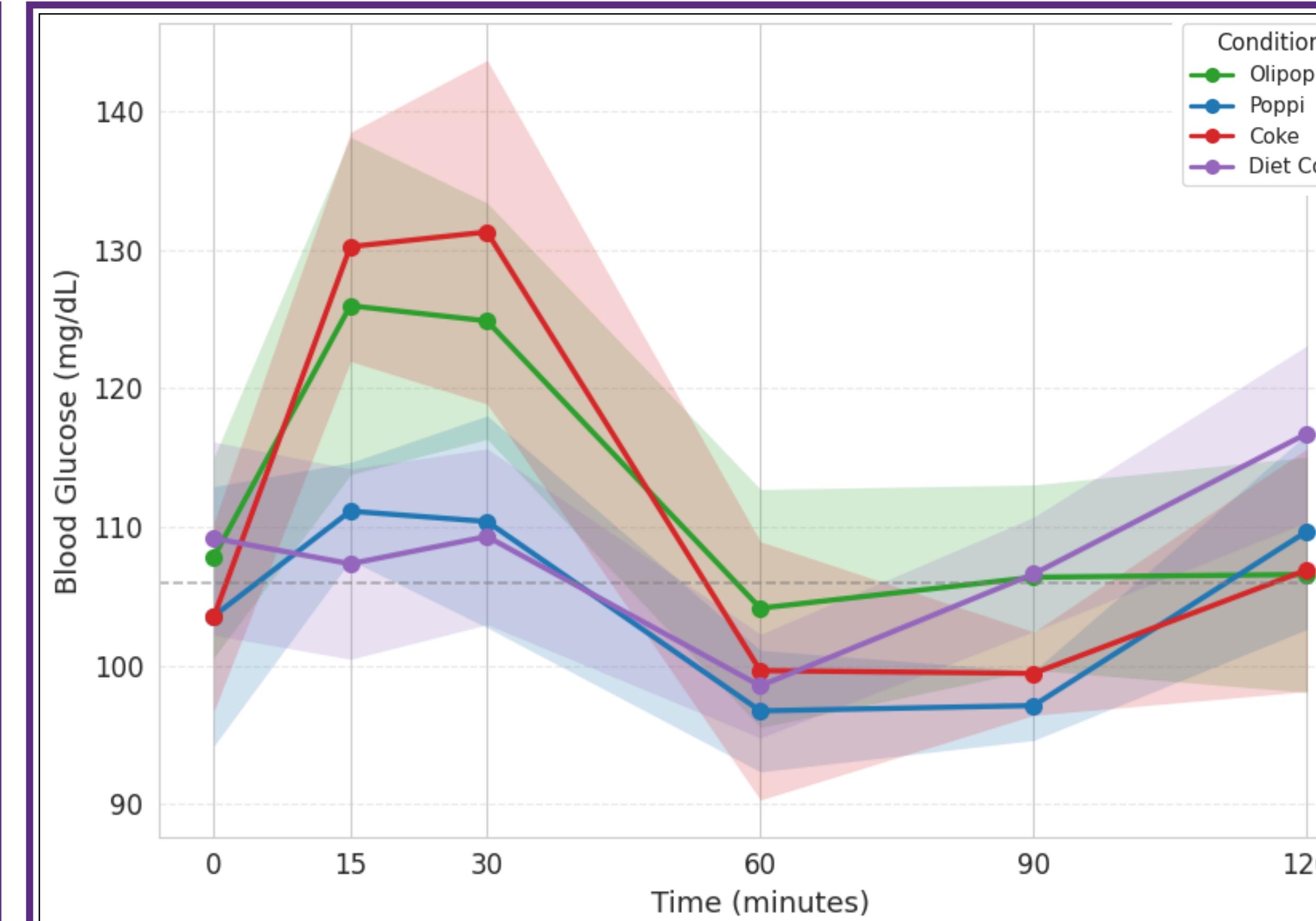


Figure 1: Glucose Response

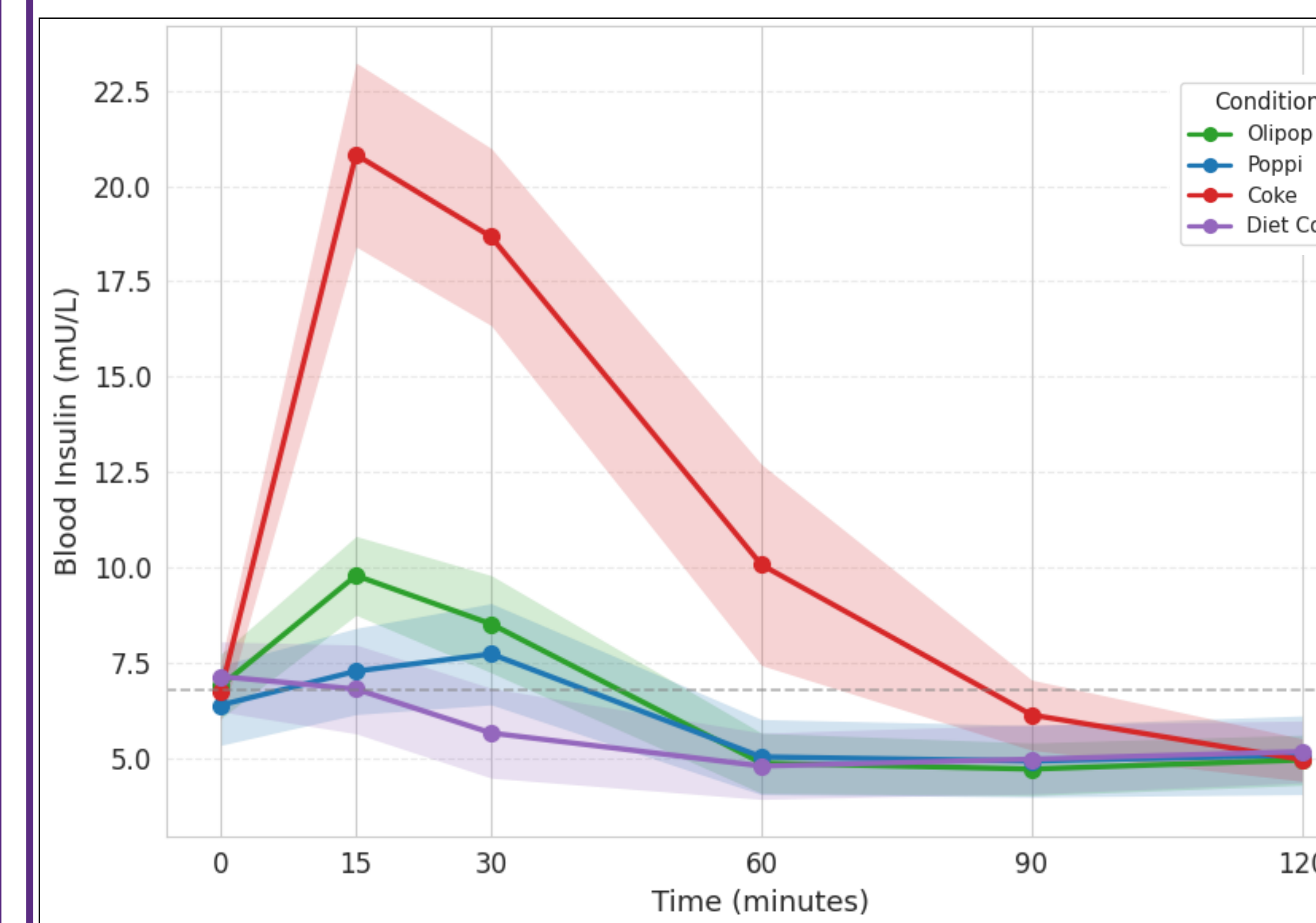


Figure 2: Insulin Response

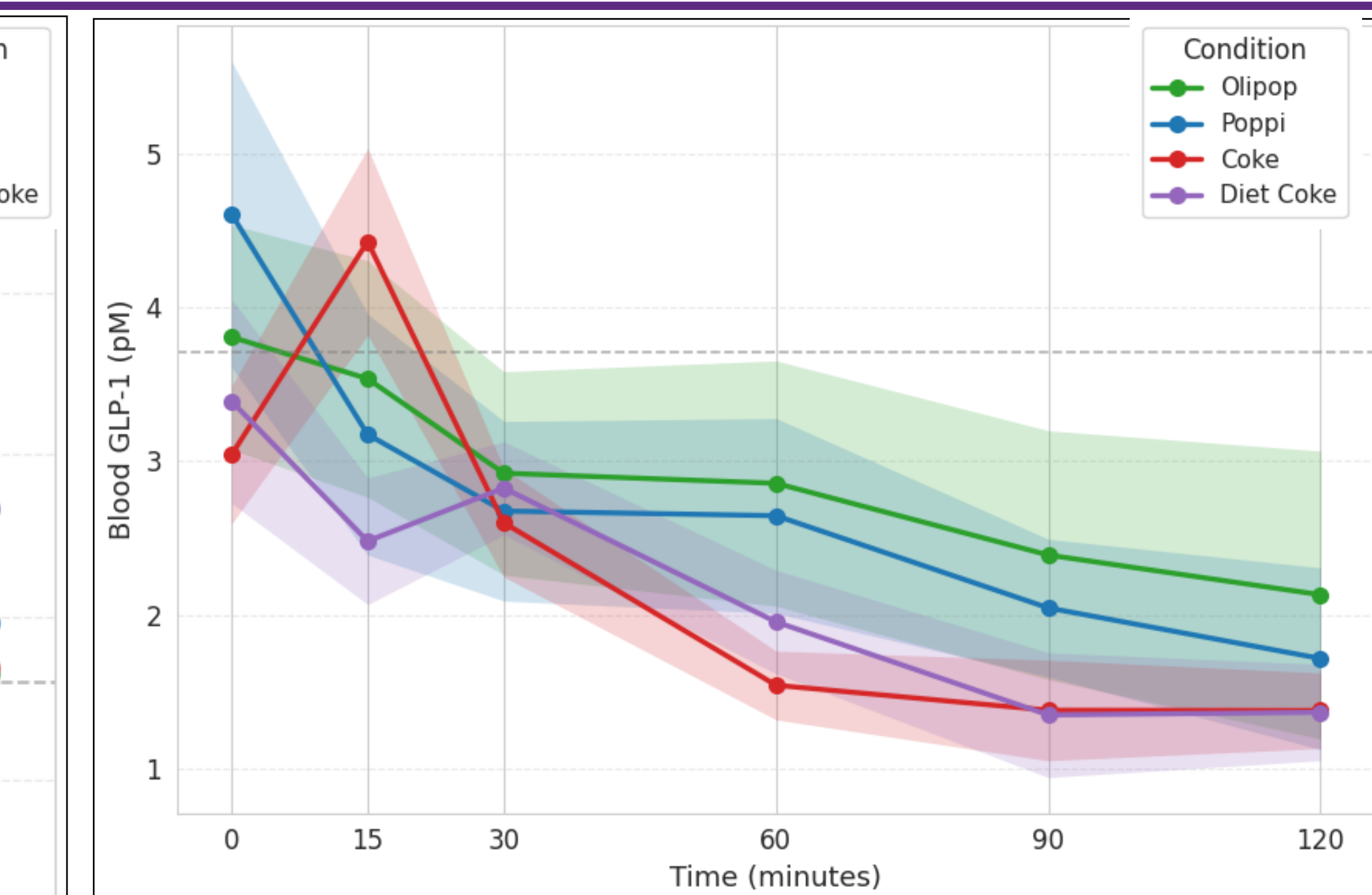


Figure 3: GLP-1 Response

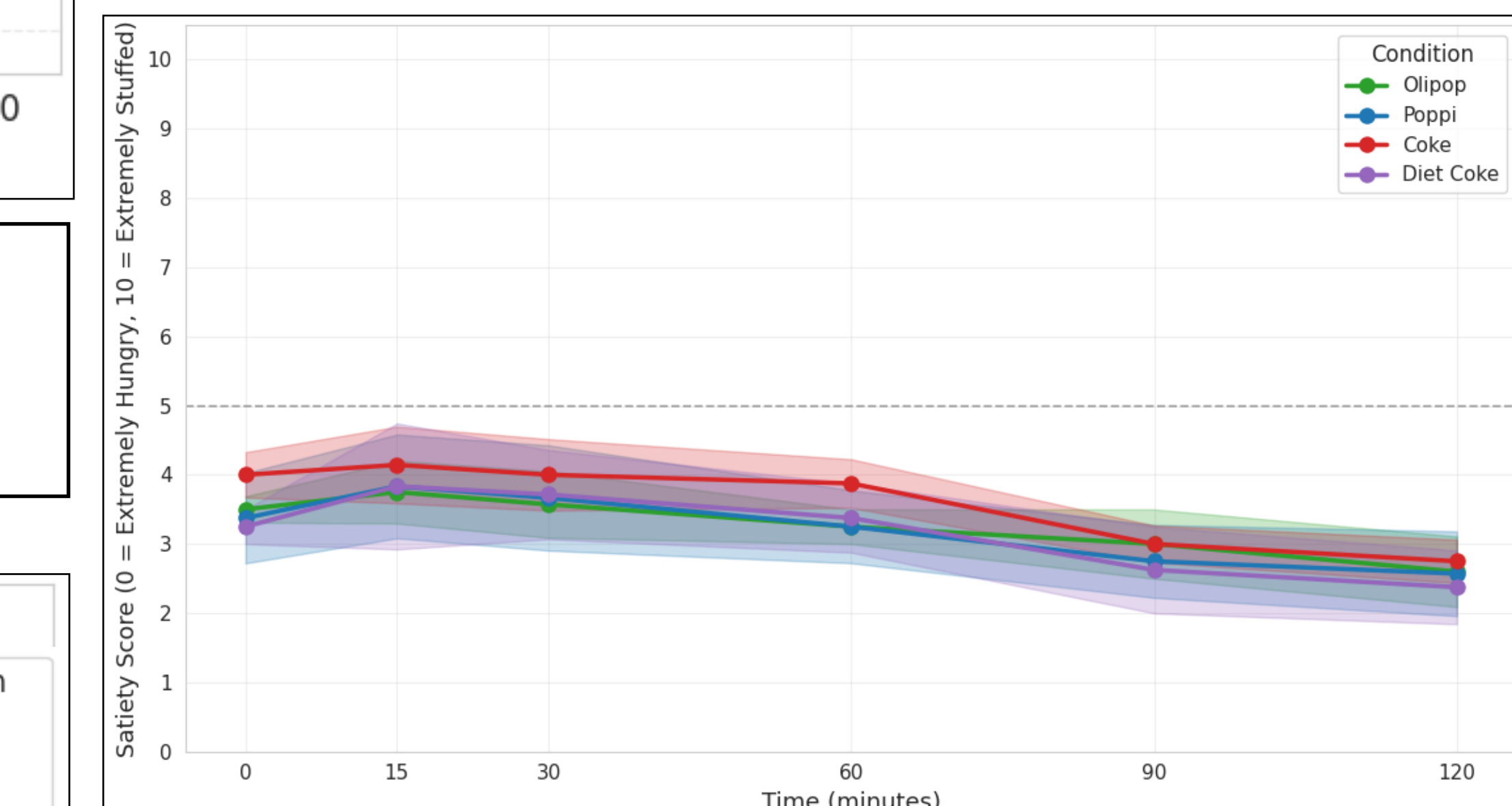


Figure 4: Beverage Ratings

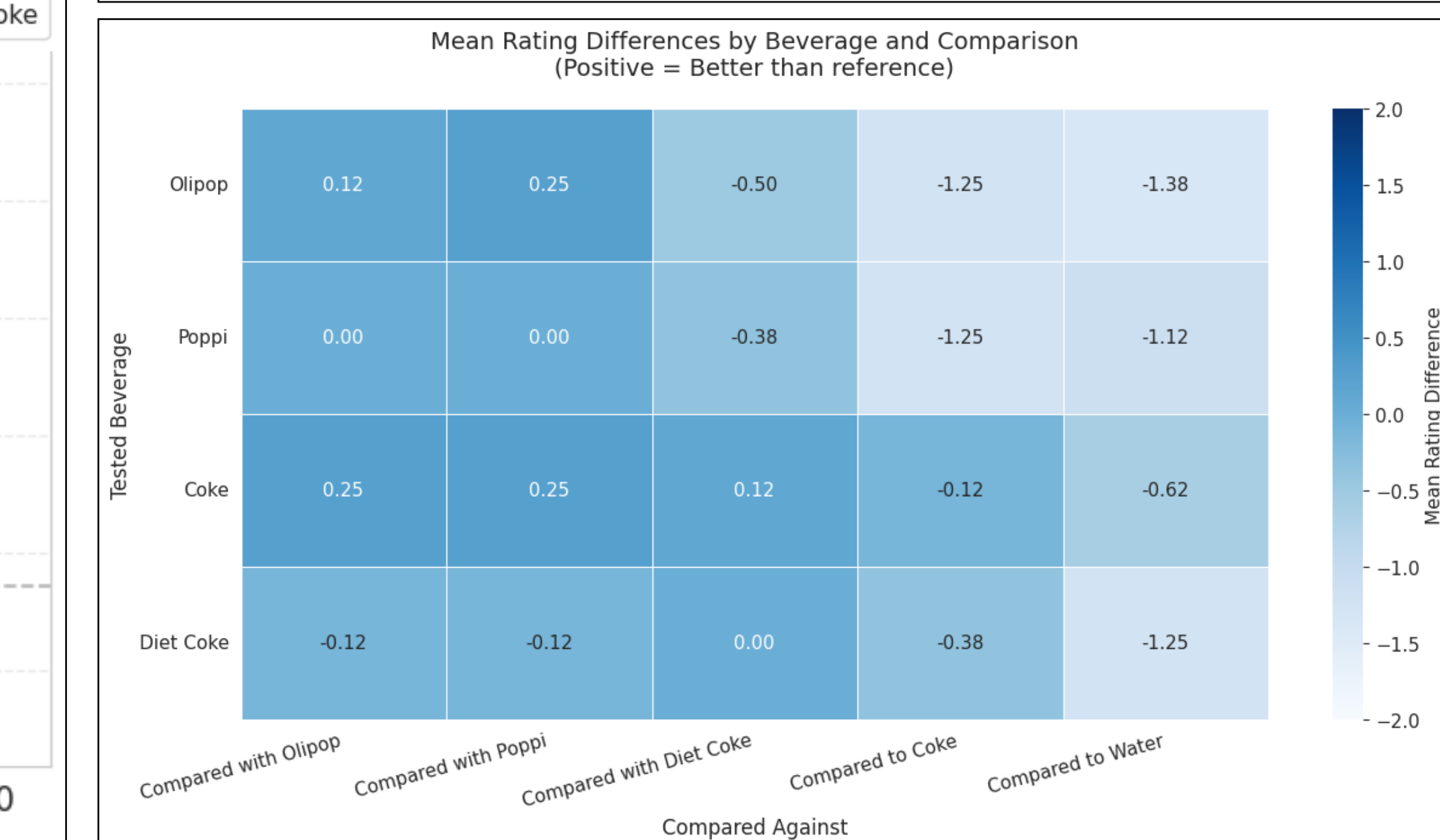


Figure 4: Beverage Ratings

Background

Objectives

- Determine the immediate effects of beverage consumption on blood glucose, insulin, and GLP-1 levels
- Determine the satiating effects of various beverages
- Determine the overall palatability of new prebiotic beverages
- Measure gastrointestinal effects of prebiotic beverages



Conclusions

References