No Changes in Indices of Glucose Regulation or Insulin Resistance After 6 Months of Daily Consumption of Sugar Sweetened of Diet Beverages

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Introduction

- It has been alleged that dietary sugars may play a role in the development of obesity and related metabolic de-arrangements like insulin resistance and diabetes.
- Since sugar sweetened beverages (SSB) are one of the primary sources of sugars, and fructose specifically (from high fructose corn syrup or sucrose), in our diet, concerns have been raised about their consumption in particular.
- However, experimental models of fructose-induced insulin resistance use a source of fructose (pure fructose) rarely consumed and in doses far beyond typical of those seen in the American diet.
- Therefore, few data are available on how the typical consumption of fructose or sugar in general in humans affects glucose regulation.

Methods

- Seventy-one apparently healthy normal weight or overweight individuals (mean age 32.8 ± 8.6 years) were randomly assigned to one of three groups:
  - 1) SSB (n=21)
  - 2) diet beverage (n=21)
  - 3) water (n=29)
- Participants followed the ADA exchange, weight-maintenance diet for 6 months.
- All participants incorporated 2 servings (12oz each) a day of the required beverages.
  - This is the equivalent to the average American consumption level of fructose
- Blood samples were obtained after completion of a 12 hour overnight fast and glucose and insulin values were used to calculate insulin resistance via the Homeostasis Model Assessment Methods (HOMA-IR).
- In addition a standard 2 hour oral glucose tolerance test (OGTT) was performed and area under the curve (AUC) calculated using the trapezoidal method.
- All measures were taken at baseline and after completion of the six month intervention.
- Data were analyzed using ANOVA with repeated measures using SPSS V18.0
- Data are presented as mean ± S.D.

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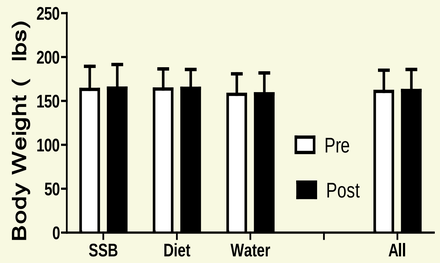
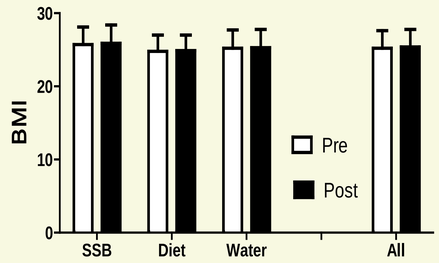
Results



Time p>0.05
Time X Group Interaction p>0.05



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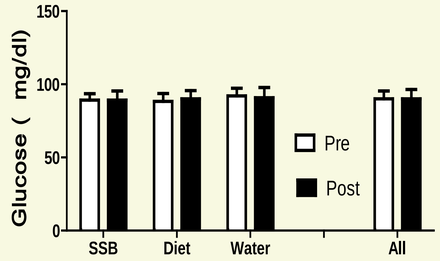

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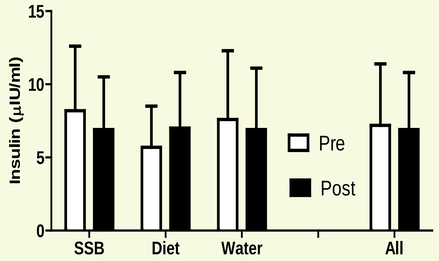

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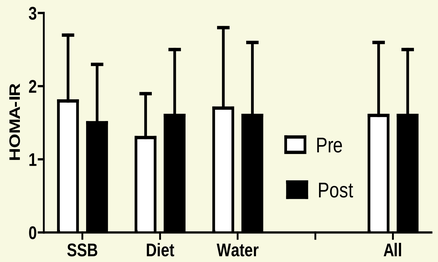

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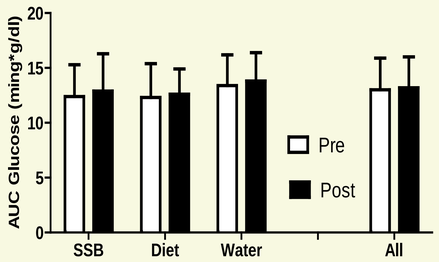

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Discussion & Conclusion

- Dietary sugar (eg. Sucrose and HFCS) delivered from 2 servings a day of regular soda did not produce any changes in glucose regulation.
- These data suggest that experimental models of fructose induced insulin resistance are not applicable to the amount or way in which fructose is typically consumed by humans