

Obesity, Jellybeans and Soda

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Obesity in the United States and other western nations continues to rise rapidly. It is known that many people underestimate the amount of energy they consume, and this may be partially explained by the way we process liquid energy. In the United States, since 1978, soda consumption has increased 40%,¹ and juice intake has risen 22%.¹ Fruit drink consumption (noncarbonated sugar water with a small amount of juice), sweetened, ready-to-drink teas, and high-calorie coffee drinks are new sources of liquid energy that gained popularity in the 1990s. Sales of sports drinks have also increased.

The Jellybean and Soda Study

Fifteen people (seven men and eight women) were divided into two groups for a crossover trial.² For four weeks, the first group was given 450 calories a day of jellybeans, with no diet restrictions. After a one-month hiatus from the jellybeans, the procedure was repeated, but this time the 450 calories a day came from soda. The second group followed the same protocol, but in the reverse order. Multiple questionnaires were filled out prior to the study for the researchers to establish individual baseline dietary intakes for each person.

Results

In both groups, when the jellybeans were added, daily energy consumption was similar to levels found prior to the study. That is, participants subconsciously reduced the amount of food they consumed at a level equal to the energy provided by the jellybeans.

In contrast, when dietary records were analyzed during the "soda" month, the free-feeding energy from other foods was not reduced. There was no dietary compensation for the addition of the liquid calories from soda. Body weight and body mass index were higher in both groups following the addition of 450 daily soda calories for 30 days. There were no differences between the sexes. This finding agreed with a meta-analysis of 42 studies that showed that the compensatory response to liquid food challenges was only one-third that of solid foods.³ In other words, drinking calories does not affect our satiety center the same way eating calories does.

Another interesting finding in this study was the sources of the compensating calories. When the jellybeans were consumed, there was an equal reduction in energy from protein, carbohydrates, and fat. However, when the groups were given soda, the amount of energy from both protein and fat increased when compared to their established baselines. In this study, the soda caused a shift in food selection to fat and protein. This finding was in line with a similar observation that showed increases in protein and fat consumption when people were given fruit juice, beer, or soda.⁴

Comment

This study confirms what many health care professionals have already known or suspected - it is easy to gain weight by consuming liquid calories. It also supports those who feel that the obesity

problem is caused by total calories (as opposed to total carbohydrates).

Doctor Andersen's Tips for Liquid Calories:

- The only thing to drink like water is water.
- Don't drink your fruit, eat it.
- Alcohol is not low in calories and should be used in moderation.
- Sodas, fruit drinks, sweetened teas and coffee drinks should be considered desserts and consumed accordingly.

If you do consume liquid energy (sodas - juices - fruit drinks - coffee drinks):

- Always order the small size.
- Don't get the free refill.
- Always ask for extra ice in cold drinks.
- Request two cups and split a bottle or can with a friend.

References

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4. DeCastro JM. The effects of spontaneous ingestion of particular foods or beverages on meal patterns and overall intake of humans, *Physiol. Behav*. 1993: 53;1133-1144.

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