

The Ice Diet™ - The discovery.

This is an excerpt from the upcoming book *The Ice Diet*

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Many pounds ago, when I was determined to lose weight, I resolved to change my eating habits and exercise regimen. One of the first changes I made was to give up my beloved ice cream. As an accommodation, I substituted Italian ices. I would typically enjoy these confectionary ices sold at the supermarket, available in 6-ounce cups. These cups characteristically list their calorie content as 100 Calories. That number is calculated by knowing the number of grams of carbohydrate, high fructose corn syrup, in the container (25 grams), multiplied by the known Calories per gram (4 Calories per gram). One evening, in a burst of insight, I realized this calculation was incorrect. The manufacturer of the ices did not calculate the energy required to melt the ice, and did not deduct this from the calorie calculation.

After reviewing the Internet and the medical and clinical dietary literature, I found that no one had previously identified this oversight. I could not locate references to considerations of the implications of the energy content of ice as food. I discussed this in detail with my son, Alex, an engineering student at Rutgers University in New Jersey at the time. He reviewed this and agreed with my rough calculations.

I wrote up this observation, and the editors of the *Annals of Internal Medicine* were kind enough to publish it in a letter to the editor in their August 17, 2010, edition(59). The *Annals* is the leading journal in internal medicine in the US, published by the American College of Physicians.

I believe this observation may be important to people trying to lose weight.

At this point, I also want to make two clarifications. First, as a clinical gastroenterologist, I speak to patients all day long about what they eat. For most patients, their problem was not in the details of food selection, but in the management of their illness. Most of my work, therefore, was in the management of disease. It is ironic that I am now making detailed food recommendations. As a second clarification, I have long prided myself on being a scientifically trained physician. I would usually cringe when patients brought up the weight loss diet of the day, usually some

poorly documented and improbable strategy. I never thought I would be actively promoting and discussing weight loss diets. I earnestly hope not to get lumped in with the counter-productive fad diet [snake oil] promoters.

Up until August 17, 2010, if you wanted to lose weight, you needed to: 1. comply with a calorie-deficient diet; 2. increase your level of exercise; or 3. both. With regard to calorie-deficient diets, there are many proposed strategies for modulating the diet, several active drugs, and several surgical procedures. Some weight loss drugs act to increase the basal metabolic rate and increase the burning of calories. These drugs are controversial because of concerns about side effects and potential for addiction.

One of the well-known side effects of the use of marijuana or cannabis is an increase in appetite, otherwise known as the 'munchies'. This occurs because the active compounds in marijuana stimulate special receptors in the brain called cannabinoid receptors. Medical researchers developed a medication that blocked those receptors in the brain that caused people to eat more food. Rimonabant (also known by the brand name Zimulti), a cannabinoid receptor antagonist or blocker, had been used in Europe as an appetite suppressant that resulted in significant weight loss. My former gastroenterology practice was selected as a site for US studies of this drug, in the treatment of NASH (non-alcoholic steatohepatitis), thought to be a potentially profound side effect of obesity. Although this drug had been used for years in Europe, the US FDA initially approved it and then removed it from the American market, stopping my study, in 2007. The drug was subsequently removed from the overseas market because of concerns about psychiatric side effects in 2009. This ground-breaking US study was cancelled(60).

The Ice Diet is a proposed new weight loss treatment choice with a unique mechanism. The Ice Diet works by increasing the basal metabolic rate. When ingesting clinically significant amounts of ice, the body must burn energy to melt and then warm the ice to body temperature. The ingestion of ice would also provide some level of satiety. The ingestion of 1 liter of ice [equals 1.06 quart] would burn about 160 Calories, the amount of energy a physically large adult man

uses in running one mile. This approach has paradoxical potential to cause weight loss while consuming food. This is the realization, the achievement of the whimsical Don Quixote quest-equivalent of the bariatric world. Ingesting ice at this level should not have any obvious adverse consequences in those who are otherwise healthy.

By the way, in the case of the six-ounce cup of Italian style ices, noted to have 100 calories on the label, you are only consuming 70 net calories.

Nutrition Facts		
Serving Size 1 container (133g)		
Servings Per Container 1		
Amount Per Serving		
Calories 100	Calories from Fat	0
% Daily Value*		
Total Fat 0g		0%
Saturated Fat 0g		0%
Trans Fat 0g		
Cholesterol 0mg		0%
Sodium 15mg		1%
Total Carbohydrate 26g		9%
Dietary Fiber 0g		0%
Sugars 24g		
Protein 0g		
Vitamin A 0%	•	Vitamin C 9%
Calcium 0%	•	Iron 2%
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:		
	Calories:	2,000 2,500
Total Fat	Less than	65g 80g
Sat Fat	Less than	20g 25g
Cholesterol	Less than	300mg 300mg
Sodium	Less than	2,400mg 2,400mg
Total Carbohydrate		300g 375g
Dietary Fiber		25g 30g
Calories per gram:		
Fat 9	*	Carbohydrate 4 * Protein 4

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Trans Fat 0g		
Cholesterol 0mg		0%
Sodium 15mg		1%
Total Carbohydrate 26g		9%
Dietary Fiber 0g		0%
Sugars 24g		
Protein 0g		
Vitamin A 0%	•	Vitamin C 9%
Calcium 0%	•	Iron 2%
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:		
	Calories:	2,000 2,500
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Calories per gram:		
Fat 9	*	Carbohydrate 4 * Protein 4

Figure 8, Left. A generic label from a 6-ounce portion of Italian-style ices, with high fructose corn syrup as a source of calories.

Figure 9, Right. The corrected label, with the calories associated with melting ice subtracted from the total