

Choosing by Energy Density and Nutrient Density of Foods: The Basis of The Volumetrics Diet

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Results (cont'd)

In another 2007 study, 49 infants with faltering growth were randomized and fed either nutrient-dense formula (NDF) or energy-supplemented formula (ESF). The "NDF group received 42% more protein and 15-40% more vitamins and minerals. Blood urea concentration in the ESF group fell by over 50%. . . Suggesting a suboptimal protein : energy ratio"(6). This shows the value of nutrient rich diets over energy rich diets.

Diets with a low ED and high ND are considered healthier because they contain lots of nutrients and few calories. The encouraged foods tend to be less filling and so one is encouraged to eat large, satisfying portions of things like vegetables, fruits, or whole grains. Such a diet is rich in antioxidants, vitamins, and water to help metabolic processes and to cleanse the body of toxins and free radicals. The positive effects of this diet are improved upon with regular exercise.

The ED and ND values can be calculated in any food. ED is found by calculating the number of calories per gram in any food. One simply refers to the nutrition label and divides the calories per serving by grams per serving. ND is theoretically the ratio of nutrients to mass of food, however, "there is still much debate surrounding the exact formula for determining nutrient density"(5). Table 1 provides foods exemplifying ND/ED values.

Discussion

By finding and comparing the best and worst foods meeting the ND/ED criteria, Volumetrics provides a list of "dos and don't" for healthy eating. The selling point of this diet is that the dieters get to eat more food, specifically more wet and filling food. The idea behind this is to make oneself physically full on high volume, low calorie foods rather than full on lots of high calorie, low volume foods. An example is: "instead of eating a bowl a chips and dip one should eat a plate of fresh veggies and low calorie dip"(2). This way one becomes fuller faster and is full of mostly water and not dried snack foods, preservatives, or just calories. This contrasts with the idea that one feels full after eating a certain amount of calories, not just a large volume of food (1).

Abstract

The Volumetrics diet is well-marketed nutritional common sense. Nutrient density is the ratio of valuable nutrients to the mass of a food; whole foods have a high Nutrient Density. Energy density is the ratio of calories to the volume of the food, processed foods have a high energy density. Eating a diet with high nutrient density (ND) and low energy density (ED) will have healthy results. I evaluated peer-reviewed papers on ND and ED and created a table of foods that would be useful in this diet as well as the foods that would be useful to replace. Results show that a diet with high ND and low ED like fresh fruits, vegetables, and whole grains will be nutritionally better than one with preserved food and fatty meats. This diet is straightforward; drink more water, eat more vegetables, and eat fewer dry, salty, preserved things. The recommended way to accurately maintain this diet is to be aware and check the ED and ND of your food choices.

Introduction

ED "refers to the number of calories per gram in a given food"(5). ED is the ratio of calories to the volume of the food. Processed foods, even so-called natural ones like table sugar, have a high ED. Nutrient-dense foods, on the other hand, contain "a large number of nutrients (e.g., vitamins, minerals, antioxidants, etc.) and relatively few calories"(5). Unmodified natural foods have a high ND.

In the Volumetrics diet created by Dr. Barbara Rolls, foods are assigned a rating based on ED and ND. Nutrient rich foods have the highest scores. There is no daily quota on points but one is encouraged to eat lots of high scoring foods. The Volumetrics Diet involves eating lots of fresh foods meeting 3 criteria: a high ND, a large percentage of water, and a low ED. This diet appears to be very straightforward; eat more vegetables, more water, and fewer dry, salty, preserved things. The recommended way to do so is to "calculate the energy densities of foods among the book's exhaustive lists and keep daily records"(3).

Hypothesis

Eating a diet with high ND and low ED will have healthy results.

Method

This information was obtained through a review of government, peer-reviewed, and other internet sources.

Results

A study in 2007 showed that low ED, high ND diets are of higher nutritional quality than others but also more expensive. For this research a cross-sectional study of 1332 French adults was studied through their answers in the Enquete Individuelle et Nationale sur les Consommations Alimentaires (Investigation on the National Consumption of Foods) data set in 1999.

Table 1: Examples of high ED and high ND foods High Nutrient Density Foods (by type)-

Fruits: blueberries, avocado, apricots, cantaloupe, watermelon

Vegetables: red peppers, carrots, pumpkin, spinach, mustard greens, broccoli

Meat: oysters, clams, beef liver, chicken liver

Dairy: skim milk, nonfat yogurt

Grains: whole grains

High Energy Density Foods-

Dry, salty, oily, processed items such as:

Chips, snack crackers, processed meats, TV dinners, fried foods, fast food.

References:

- 1) "Diet Matchmaker". Being Green, 2007
<http://www.goodhousekeeping.com/health/diet-comparison/>
- 2) "The Volumetrics Eating Plan". Rolls, Barbara. Harper Collins, 2007.
<http://www.volumetricseatingplan.com/>
- 3) "Popular Programs and Diets". Weknowdiets.com, 2007
<http://www.weknowdiets.com/Volumetrics.html?bt.x=0&bt.y=0&find=volumetrics>
- 4) "Quantitative approaches to nutrient density for public health nutrition". Baer, Jeffrey R. 2003. Public Health Nutrition: 6(8), 829-837
- 5) "Two Food Concepts Explained: Energy and Nutrient Density". Platkin, Charles, 2007. <http://www.dietdetective.com/content/view/2049/159>
- 6) "Randomized comparison of a nutrient-dense formula with an energy-supplemented formula for infants with faltering growth". Clarke, SE. Journal of Human Nutrition and Dietetics. 2007 Aug; 20(4): 329-39.
- 7) "Low energy density and high nutritional quality are each associated with lower energy costs in French adults". Maillot, M. American Journal of Clinical Nutrition. 2005; 86(3): 690-6.