The Satiety Index List

All of the following foods are compared to white bread, ranked as "100".

Bakery Products
Croissant 47%
Cake 65%
Doughnuts 68%
Cookies 120%
Crackers 127%

Snacks and Confectionary
Mars candy bar 70%
Peanuts 84%
Yogurt 88%
Crisps 91%
Ice cream 96%
Jellybeans 118%
Popcorn 154%
All-Bran 151%
Porridge/Oatmeal 209%

Breakfast Cereals with Milk
Muesli 100%
Sustain 112%
Special K 116%
Cornflakes 118%
Honeysmacks 132%

Carbohydrate-Rich Foods
White bread 100%
French fries 116%
White pasta 119%
Brown Rice 132%
White rice 138%
Grain bread 154%
Whole meal bread 157%
Brown pasta 188%
Potatoes, boiled 323%

Protein-Rich Foods
Lentils 133%
Cheese 146%
Eggs 150%
Baked beans 168%
Beef 176%
Ling fish 225%

Fruits
Bananas 118%
Grapes 162%

The list with the most filling food at the top

Potatoes, boiled 323%
Ling fish 225%
Porridge/Oatmeal 209%
Oranges 202%
Apples 197%
Brown pasta 188%
Beef 176%
Baked beans 168%
Grapes 162%
Whole meal bread 157%
Grain bread 154%
Popcorn 154%
Eggs 150%
Cheese 146%
White rice 138%
Lentils 133%
Brown Rice 132%
Honeysmacks 132%
All-Bran 151%
Crackers 127%
Cookies 120%
White pasta 119%
Bananas 118%
Jellybeans 118%
Cornflakes 118%
Special K 116%
French fries 116%
Sustain 112%
White bread 100%
Muesli 100%
Ice cream 96%
Crisps 91%
Yogurt 88%
Peanuts 84%
Mars candy bar 70%
Doughnuts 68%
Cake 65%
Croissant 47%

Apples 197%
Oranges 202%

A satiety index of common foods.

Holt SH, Miller JC, Petocz P, Farmakalidis E.

Department of Biochemistry, University of Sydney, Australia.

OBJECTIVE: The aim of this study was to produce a validated satiety index of common foods. DESIGN AND SUBJECTS: Isoenergetic 1000 kJ (240 kcal) servings of 38 foods separated into six food categories (fruits, bakery products, snack foods, carbohydrate-rich foods, protein-rich foods, breakfast cereals) were fed to groups of 11-13 subjects. Satiety ratings were obtained every 15 min over 120 min after which subjects were free to eat ad libitum from a standard range of foods and drinks. A satiety index (SI) score was calculated by dividing the area under the satiety response curve (AUC) for the test food by the group mean satiety AUC for white bread and multiplying by 100. Thus, white bread had an SI score of 100% and the SI scores of the other foods were expressed as a percentage of white bread. RESULTS: There were significant differences in satiety both within and between the six food categories. The highest SI score was produced by boiled potatoes (323 +/- 51%) which was seven-fold higher than the lowest SI score of the croissant (47 +/- 17%). Most foods (76%) had an SI score greater than or equal to white bread. The amount of energy eaten immediately after 120 min correlated negatively with the mean satiety AUC responses (r = -0.37, P < 0.05, n = 43) thereby supporting the subjective satiety ratings. SI scores correlated positively with the serving weight of the foods (r = 0.66, P < 0.001, n = 38) and negatively with palatability ratings (r = -0.64, P < 0.001, n = 38). Protein, fibre, and water contents of the test foods correlated positively with SI scores (r = 0.37, P < 0.05, n = 38; r = 0.46, P < 0.01; and r = 0.64, P < 0.001; respectively) whereas fat content was negatively associated (r = -0.43, P < 0.01). CONCLUSION: The results show that isoenergetic servings of different foods differ greatly in their satiating capacities. This is relevant to the treatment and prevention of overweight and obesity.

The Satiety Index

No Need To Be Hungry When Losing Weight

http://www.healthy-weight-loss-made-easy.com/satiety-index.html

How long can you stand being hungry before you start eating again?

Only you know.

The **satiety index** can help you choose slimming food that is filling instead of fattening food that is filling, but to a bad result.

There is no need to go hungry just to lose weight and feeding your hunger in a smart way will keep you on target with your diet. Knowing about the satiety index can help you stay on track.

If you have ever tried to get rid of excess weight by eating less, you know that ultimately there is no way of winning a battle with your hunger.

The quest is to find slimming foods with the best ability to satisfy your hunger for as long as possible.

Here is where the Satiety Index comes in.

What is the Satiety Index?

It's an excellent tool when choosing the right foods for your weight loss food program. It tells you how you can minimize your hunger pangs, making it easier to follow your weight loss intentions.

The Satiety Index-tool ranks different foods on their ability to satisfy hunger.

The index is based on a study performed at the University of Sydney, Australia in which they compared the filling effects of different foods.

It's clear that certain foods satisfy hunger much better than others.

The test was done by giving a group of volunteers portions of 240 calories from different food sources and then measuring how much they ate when they were allowed to eat again after two hours.

The index of white bread was set at 100. Foods scoring higher than 100 are more filling than white bread and those under 100 are less filling.

The index only takes into consideration for how long a certain food will keep you full, it doesn't say anything about nutritional value or calorie content.

Best "non-hunger" foods

Protein is the nutritive substance that satisfies hunger best based on its energy content and ability to make you feel full over the longest period of time.

Carbohydrates are also good if you exclude plain sugar and well known fast carbs (white bread, etc.).

Fatty foods are surprisingly not filling, even though people expected them to be. Good news for dieters.

Foods rich in fiber also rank high and contain few calories.

Generally speaking, foods that rank high and satisfy your hunger for a longer period of time are foods with high protein, -water- and/or fiber content. These foods will help make you feel full, literally by filling your stomach, and with a full stomach you can more easily avoid nibbling.
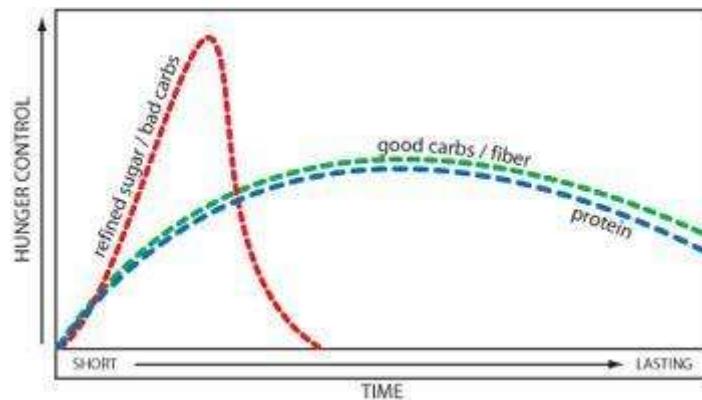
How To Use The Satiety Index

As with any index that measures just one thing, the satiety index has to be put into a context, it can't be used on its own.

Let's look at some examples:

Plain boiled potatoes showed to be the most satisfying food tested according to energy content, three times more satisfying than white bread.

A lot of people, having learned about the Glycemic Index, avoid potatoes during a diet as it doesn't have a low glycemic index but a medium one.
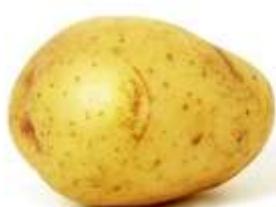
From a nutritional point of view plain boiled potatoes are an excellent choice of diet food, full of vitamins and fibers. Potatoes don't make you gain weight, as long as you don't eat them with butter, sour cream, cheese etc.

So maybe it's time to reevaluate the potato because of its brilliant ability to satisfy hunger? As your stomach shrinks you can remove it from your diet if you want to.

Another example:

Pop corn ranks high and it also contains a greater amount of bulk for each calorie.

You can eat a lot of pop corn without consuming a lot of calories (assuming you're eating them without oil or butter!) when you want to snack, like in front of the television or while reading a book. The best thing, of course, is to not snack at all but if you feel you just have to have something, the value of pop corn as a weight loss food should not be underestimated, it is so much better than potato chips.

Conclusions

So, a good diet for weight loss should, from the satiety point of view, contain at least some slowly-digested carbs and protein.

Together with what you already know of calorie content it's easy to choose the right food.

Good choices are lean meat and chicken without the skin, food rich in fiber, like beans and lentils and whole meal bread.

Also preferable are foods rich in water. Vegetables are especially great for weight loss; they contain lots of nutritional value, few calories and they are filling.

The Satiety Index has, as does the glycemic index, limitations. It doesn't tell you anything about the nutritional value of the food; only how well a certain food satisfies your hunger.

If you look at the list you will see that jellybeans score high. One of the reasons, according to the researchers, is that jellybeans made the test volunteers slightly nauseous and therefore they didn't feel like eating for quite a while after eating their portion of 240 calories of jellybeans. Jellybeans are also high in sugar, making them a bad choice from the perspective of the glycemic index.

As you see, the Satiety Index is one of many tools you can use together with your knowledge of nutrition to make your weight loss easier.

Learn why omega 3 fats can benefit your overall health and your weight loss program. Please go to Omega 3 and Weight loss.

⋯ Wodurch fühlen wir uns satt? Die sättigende Kraft von Lebensmitteln ⋯

Was und wieviel wir essen hat Auswirkungen auf unsere Gesundheit und unser Wohlbefinden. Doch welche Lebensmittel sind verantwortlich dafür, dass wir uns satt fühlen und warum neigen so viele von uns dazu, zuviel zu essen?

Lebensmittel dienen hauptsächlich dazu den Hunger zu stillen und lebenswichtige Energie, Nährstoffe und andere Substanzen für Wachstum und Erhalt der Gesundheit zu liefern. Unsere Essensauswahl wird sehr von der Appetitlichkeit der Lebensmittel geprägt, die von Geschmack, Geruch und Textur aber auch vom sozialen Umfeld beeinflusst wird. Unser Appetit ist Ausdruck eines bewussten Hungergefühls, eines erlernten oder gewohnheitsmäßigen Essmusters zu bestimmten Tageszeiten, unserer Vorliebe für verschiedene Arten von Lebensmitteln und des puren Essvergnügens oder der Genusssucht 'Socke: mit 2 oder 3 "s"?? an bestimmten Lebensmitteln, die wir mögen. Während einer Mahlzeit erweitert sich der Magen und interne Nervenrezeptoren messen die Essensmenge und den Druck auf die Magenwand. Diese Rezeptoren senden über den Vagusnerv Signale an das Gehirn,und lösen so das Völlegefühl aus. Wenn sich der Magen zusammenzieht und entleert, fühlt man wieder ein Verlangen nach Essen. Größere Mahlzeiten füllen den Magen für einen längeren Zeitraum und sind sättigender als kleine Mahlzeiten. Die jeweiligen Bestandteile der Mahlzeit und die Temperatur der Lebensmittel können ebenfalls einen Einfluss auf die Geschwindigkeit der Magenentleerung haben und beeinflussen so ebenfalls das Völlegefühl.

Sättigende Kraft

Einige Lebensmittel tragen eher zur Sättigung bei als andere, und dies bezeichnet man als ihre „sättigende Kraft". Die Kalorientabellen, die gängigerweise von Diäthaltenden und Gewichtsbewussten verwendet werden, geben nicht unbedingt diese sättigende Kraft wieder. Studien zur Wirkung von Lebensmitteln auf das „Völlegefühl" können hier hilfreich sein. In einer Studie mit 38 gängigen Lebensmitteln nahmen männliche und weibliche Testpersonen Lebensmittel mit gleichem Kaloriengehalt zu sich und ihr Völlegefühl wurde über zwei Stunden alle 15 Minuten aufgezeichnet. Die höchste Sättigungskraft stellte man bei Lebensmitteln mit einem hohen Gehalt an Proteinen, Ballaststoffen und Wasser fest, eine geringere Sättigungskraft verzeichneten fetthaltigere Lebensmittel. Obst und Gemüse - vor allem gekochte Kartoffeln - erwiesen sich als hochsättigend, wogegen Backwaren wie Kuchen, Croissants und Kekse die am wenigsten sättigenden Lebensmittel waren. Proteinreiche Lebensmittel (Fisch, Fleisch, Bohnen, Linsen und Eier) sowie kohlenhydratreiche Lebensmittel (Nudeln, Vollkornbrot und Getreide) fanden sich unter den am meisten sättigenden Lebensmitteln.

Während Proteine dem Hunger länger vorzubeugen scheinen als Kohlenhydrate, übt Fett den geringsten Einfluss auf Sättigung und Völlegefühl aus. Dies könnte der Grund sein, warum eine fettreiche Ernährung zu einem passiven Über-essen und somit zur Gewichtszunahme führen kann.

Ist also ein Frühstück aus mit magerem Schinken belegtem Vollkornbrot eine gute Wahl, um Hungerattacken bis zum Mittagessen abzuwehren? Es sieht scheinbar so aus - allerdings wissen die Wissenschaftler bisher wenig über die sättigende Kraft ganzer Mahlzeiten aus verschiedenen Nährstoffen.

Andere Einflüsse

Die große Zahl unterschiedlicher Faktoren, die Appetit und Lebensmittelverzehr beeinflussen, macht Studien auf dem Gebiet von Hunger und Sattheit schwierig. Neben der Art der Lebensmittel, Sattheitsgefühl und Schmackhaftigkeit, zählen soziale Umstände, Gewohnheit, Bildungsstand, Mahlzeitengröße und sogar die Stimmung zu den vielen Faktoren, welche die Nahrungsaufnahme und das Körpergewicht beeinflussen. Die Wissenschaftler arbeiten noch immer daran, alle Faktoren aufzudecken, die beeinflussen was und warum wir etwas essen.

Literatur

- Bellisle F, Blundell JE, Dye L et al. (1998) Functional food science and behaviour and psychological functions. British Journal of Nutrition 80 (Suppl. 1), S173-S193
- Blundell JE, Lawton CL, Cotton JR et al. (1996) Control of human appetite: implications for the intake of dietary fat. Annual Reviews of Nutrition 16, 285-319
- Green SM, Delargy HJ, Joanes D, Blundell JE (1997) A satiety quotient: a formulation to assess the satiating effect of food. Appetite 29, 291-304
- Holt SHA, Brand Miller JC, Petocz P & Farmakalidis E (1995) A satiety index of common foods. European Journal of Clinical Nutrition 49, 675-690

http://www.eufic.org/article/de/gesundheit-lebensstil/diat-gewichtskontrolle/artid/wodurch-fuhlen-wir-uns-satt/

Fullness Factor™

ND's patent pending Fullness Factor™ can help you consume fewer Calories without feeling hungry...

- Understanding Hunger and Satiety
- The Fullness Factor - A Better Predictor of Satiety
- Comparing the Fullness Factor to the Glycemic Index
- Fullness Factors for Common Foods
- Fullness Factors for Mixed Meals
- Fullness Factor Dieting
- Satiety References

Understanding Hunger and Satiety

Hunger - one of your body's strongest and most beneficial stimuli - helps insure that you consume enough Calories for your needs. However, it also works against you when you're trying to lose weight. You could easily lose weight just by eating less, but the less that you eat or the longer you postpone eating, the hungrier you become, and the longer it takes your hunger to subside once you do begin to eat. So the hungrier you are, the more likely it is that you'll overeat, consuming extra Calories that can quickly slow or reverse your weight loss.

As you know, the only way to end hunger is to eat. Eating provides satiety - a pleasant feeling of fullness and the corresponding reduction of hunger. But did you also know that some foods are better than others for satisfying your hunger? A baked potato, for example, will probably "fill you up" much better than a serving of candy that has the same number of Calories.

Experiments with Satiety
For years, researchers have studied satiety. While many things are known to influence satiety - including individual differences in endocrine levels from one person to another - one of the biggest factors is the type of food that you eat. Some foods fill your stomach faster and/or remain in your stomach longer, and therefor do a better job of holding off hunger.

One of the most detailed studies that demonstrates this was conducted by Suzanna Holt and her fellow researchers at the University of Sydney. The results of their study, "The Satiety Index of Common Foods", were published in the European Journal of Clinical Nutrition, September 1995. In this study, the researchers fed human test subjects fixed-Calorie portions of thirty-eight different foods, and then recorded the subjects' perceived hunger following each feeding.

The results of Holt's study, like many similar studies, indicate that satiety is most strongly related to the weight of the food consumed. In other words, the foods that weigh the most, satisfy our hunger best, regardless of the number of Calories they contain. However, higher amounts of certain nutrients, such as protein and dietary fiber, also appear to improve satiety.

Can Satiety Be Predicted?
If there was a way of predicting satiety, we'd be able to select foods that satisfied our hunger, but contained fewer Calories. These foods would greatly improve our ability to create meals that were effective for weight loss.

Because of the strong relation between satiety and a food's weight, some researchers have recommended the consumption of foods with low Caloric densities - i.e. foods that have the fewest total Calories per gram. One of the most notable of these researchers is nutritionist Barbara Rolls, Ph.D., whose prior best-selling diet book, *Volumetrics*, explained her use of low Caloric density foods for weight loss. A more recent diet that makes use of low Caloric density foods is the Negative Calorie Diet. There are also many specialty diets that use a low Caloric density approach. Included among these are the cabbage soup diet and the grapefruit diet.

Unfortunately, Caloric density alone is not a reliable predictor of satiety, and it overlooks many enjoyable foods that would make wonderful additions to your diet. What you need is a better way to predict satiety.

Back to top

The Fullness Factor™ - A Better Predictor of Satiety

FF=MAX(0.5, MIN(5.0, 41.7/CAL^0.7 + 0.05*PR + 6.17E-4*DF^3 - 7.25E-6*TF^3 + 0.617))

where CAL is total Calories per 100g (30 minimum),

PR is grams Protein per 100g (30 maximum),

DF is grams Dietary Fiber per 100g (12 maximum), and

TF is grams total Fat per 100g (50 maximum).

After studying the results of numerous satiety studies, NutritionData used an advanced multivariate analysis of the existing data to create a new mathematical formula that predicts satiety from the nutrient content of a given food or recipe. This formula yields a value that we call the Fullness Factor (FF):

FF values fall within the range of 0 to 5. Foods with high FF's are more likely to satisfy your hunger with fewer Calories. Foods with low FF's are less likely to satisfy your hunger.

Comparing the Fullness Factor with Existing Satiety Data
After creating this formula, ND plotted its predicted values against the experimental data taken from Holt's 1995 study. Below is a graph that shows this comparison, and following the graph is some further discussion.

The Satiety Index of Common Foods
- Experimental values
- Fullness Factor prediction
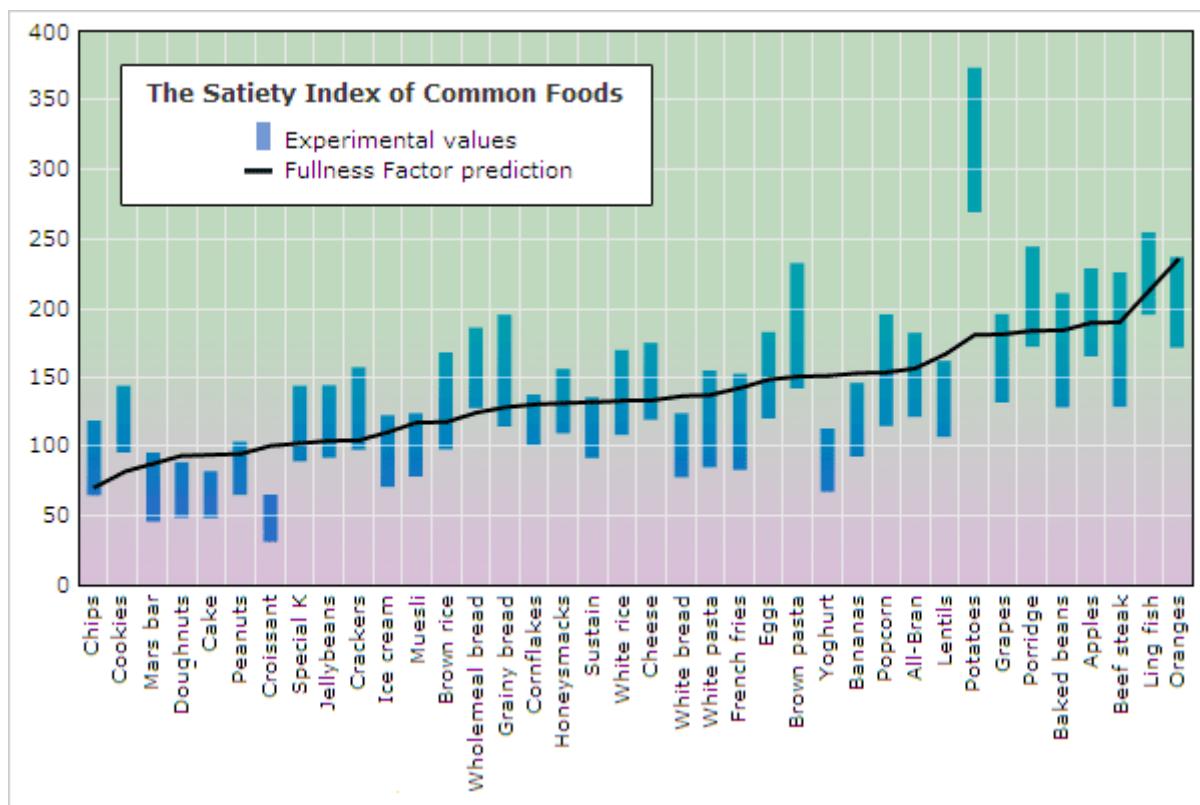
Discussion
In the above graph, each blue bar represents the range of reported satiety values for each experimental food. (Approximately 12 human subjects participated in each food test, and results varied from one subject to another.) The black line represents the calculated Fullness Factors. As you can see, the Fullness Factor does a reasonably good job of predicting the satiety responses, with the possible exception of potatoes. Note, however, that the methodology of this particular study may have contributed to an artificially high satiety value for potatoes. Per the study's design, the participants were separately fed 220-Calorie servings of each food. A 220-Calorie serving of plain

potatoes is larger and much less palatable than the other foods studied. The size of this serving may have influenced a repulsion to this test food that goes beyond the normal satiating response.

Note: As calculated, ND's Fullness Factor falls within the range of 0 to 5. For this comparison, the Fullness Factors were appropriately scaled (60X) to match the range reported in the study. Also, the foods names shown within the above chart are exactly as reported in the study, and do not necessarily match similar named foods from ND's database. To insure validity of this comparison, all nutrient values were taken directly from the study, which used foods primarily of Australian origin.

Limitations of the Fullness Factor

The Fullness Factor is calculated from the food's nutrient content, using values from those nutrients that have been shown experimentally to have the greatest impact on satiety. There are, however, other things that can influence a food's ability to satisfy our hunger. In particular, a food's specific taste and texture - i.e. its palatability - can encourage or discourage consumption. Palatability of a food is a highly individual and subjective value, though, that can't be accurately measured. The Fullness Factor, by design, merely provides an *estimate* of food satiety prior to consumption.

Benefits of the Fullness Factor

The benefits of the Fullness Factor far outweigh its limitations. The satiating effect of a food can now be more accurately predicted, solely from its nutrient content. This means that you can anticipate which foods and recipes will be most supportive of your diet.

Values of the Fullness Factor range from 0 to 5, with the Fullness Factor for white bread being 1.8. That means that for servings of equal Calories, those foods with FF's above 1.8 are more likely to fill you up than white bread, and foods with FF's below 1.8 are less likely to fill you up than white bread.

Back to top

Comparing the Fullness Factor with the Glycemic Index

The Fullness Factor and the Glycemic Index are both nondimensional ratings which are used to predict your body's response to particular foods. While the Glycemic Index applies only to foods containing carbohydrates, the Fullness Factor can be used to evaluate all foods. A very detailed explanation of the Glycemic Index and Fullness Factor, as they relate to diet, can be found on ND's Glycemic Index page.

Back to top

Fullness Factors for Common Foods

Fullness Factors for Common Foods

Food	FF
Bean sprouts	4.6
Watermelon	4.5

Grapefruit	4.0	More filling per Calorie
Carrots	3.8	
Oranges	3.5	
Fish, broiled	3.4	Less filling per Calorie
Chicken breast, roasted	3.3	
Apples	3.3	
Sirloin steak, broiled	3.2	
Oatmeal	3.0	
Popcorn	2.9	
Baked potato	2.5	
Lowfat yogurt	2.5	
Banana	2.5	
Macaroni and cheese	2.5	
Brown rice	2.3	
Spaghetti	2.2	
White rice	2.1	
Pizza	2.1	
Peanuts	2.0	
Ice cream	1.8	
White bread	1.8	
Raisins	1.6	
Snickers Bar	1.5	
Honey	1.4	
Sugar (sucrose)	1.3	
Glucose	1.3	
Potato chips	1.2	
Butter	0.5	

The table below shows values of the Fullness Factor for a few common foods...

General Observations
Foods that contain large amounts of fat, sugar, and/or starch have low Fullness Factors, and are much easier to overeat. Foods that contain large amounts of water, dietary fiber, and/or protein have the highest Fullness Factors. These high-FF foods, which include most vegetables, fruits, and lean meats, do a better job of satisfying your hunger.

An Important Note
The above table just provides an example of the Fullness Factors for a few typical foods, and is not meant to be a complete food list. Use ND's search engine to find the foods that you currently eat and to determine their specific Fullness Factors. Similarly named foods can have much different FF's, depending on their ingredients. For example, plain popcorn (air-popped, without butter) has a higher FF than popcorn prepared with added butter.

Fullness Factors for Liquids
Although all of the items in the above table are solid foods, the Fullness Factor can also be calculated for liquids, including soups and drinks. Most liquid foods will have above average Fullness Factors, due to their high water content. Liquid foods do, in fact, have a relatively high satiating effect, at least for the short term. However, low viscosity liquids (such as water, juice, or soft drinks) will empty from your stomach quickly, and may leave you hungry again in a relatively short time. Keep this in mind if you are using the Fullness Factor to select foods for weight loss.

Back to top

Fullness Factors for Mixed Meals

A Fullness Factor can be calculated for a mixed meal (i.e. the combination of several foods) in exactly the same way that it's calculated for an individual food. In fact, this is the most practical use of the Fullness Factor, since nearly everyone consumes multiple foods when they eat. And ND makes it especially easy to do this calculation. Simply "build" your meal as a recipe using the My Recipes feature in My ND. Click "Save and Analyze" to see the Fullness Factor™ for that meal.

Note: To learn how to create recipes, please see the My Recipes Help page.

Back to top

Fullness Factor Dieting

The Fullness Factor can be used in conjunction with nearly any type of diet or approved food list. By simply selecting foods with higher Fullness Factors, you'll improve your chances of consuming fewer Calories, while simultaneously minimizing your hunger.

For a diet that uses the Fullness Factor as its central concept, see our own Better Choices Diet and our special page on Dieting and Weight Loss.

Back to top

Satiety References

Below are a few of the many published studies that address satiety:

- Anderson, G.H., and Woodend, D., "Effect of glycemic carbohydrates on short-term satiety and food intake," *Nutr Rev* 2003; 61(5): 17-26
- Araya, H., et al., "Short-term satiety in preschool children: a comparison between high protein meal and a high complex carbohydrate meal," *Int J Food Sci Nutr* 2000; 51(2): 119-124
- Blundell, J.E., and MacDiarmid, J.I., "Fat as a risk factor for overconsumption: satiation, satiety, and patterns of eating," *J Am Diet Assoc* 1997 97(7): S63-S69
- Bell, E.A., et al., "Sensory-specific satiety is affected more by volume than by energy content of a liquid food," *Phys Behav* 2003; 78(4): 593-600
- Green, S.M., et al., "Effect of fat- and sucrose-containing foods on the size of eating episodes and energy intake in lean males: potential for causing overconsumption," *Eur J Clin Nutr* 1994; 48(8): 547-555
- Guinard, J-X, and Brun, P., "Sensory-specific satiety: comparison of taste and texture effects," *Appetite* 1998; 31(2): 141-157
- Holt, S.H., et al., "A satiety index of common foods," *Eur J Clin Nutr* 1995 Sep; 49(9): 675-690
- Holt, S.A., et al., "The effects of equal-energy portions of different breads on blood glucose levels, feelings of fullness and subsequent food intake," *J Am Diet Assoc* 2001; 101(7): 767-773
- Marmonier, C., et al., "Effects of macronutrient content and energy density of snacks consumed in a satiety state on the onset of the next meal," *Appetite* 2000; 34(2): 161-168
- Pasman, W.J., et al., "Effect of one week of fiber supplementation on hunger and satiety ratings and energy intake," *Appetite* 29(1): 77-87
- Porrini, M., et al., "Effects of physical and chemical characteristics of food on specific and general satiety," *Phys Behav* 1995; 57(3): 461-468
- Porrini, M., et al., "Evaluation of satiety sensations and food intake after different preloads," *Appetite* 1995; 25(1): 17-30
- Rigaud, D., et al., "Effects of a moderate dietary fiber supplement on hunger rating, energy input and faecal energy output in young, healthy volunteers. A randomized, double-blind, cross-over trial," *Int J Obes* 1987; 11(1): 73-78
- Rolls, B.J., and Roe, L.S., "Effect of the volume of liquid food infused intragastrically on satiety in women," *Phys Behav* 2002; 76(4): 623-631

http://www.nutritiondata.com/topics/fullness-factor