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Evaluation of nutrition facts of certain vegetables for weight loss

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Abstract

Obesity has now become a chronic disease that is prevailing worldwide. Prominent reasons other than genetic effects are physical inactivity, sleep cycle disturbance, and poor dietary habits. A balanced diet is essential for attaining good physical health and a normal BMI (Body Mass Index) score. To decrease obesity and losing weight, a diet should be adjusted with high protein contents and low fats and carbohydrates. Excess amounts of calories should be avoided and a daily diet should be a calorie deficit. Vegetables which are the best source of high fiber and protein contents and low carbohydrates are discussed in this study. Spinach, Broccoli, Brussels sprouts, Green peas, Cauliflower, Sweet potatoes, Beans, Pumpkin, and Carrot are narrated from by nutritional point of view. These vegetables are rich in protein and fiber contents which help in losing weight by providing a feeling of fullness. Moreover, these accumulate less in body weight as compared to other dietary products.

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Introduction

In the present times, where the earth has turned into a global village and is being shifted online, overall physical activities are at their minimum level. Lack of physical activities resulted in various diseases in humans such as obesity. Obesity is defined as a lifespan-recognized multi-causal chronic condition arising from long-term positive energy balance with excess adiposity growth that leads to structural changes, metabolic disruptions, and functional impairments over time. Obesity syndrome raises the probability that other chronic diseases will arise and is associated with premature mortality. Obesity is differentiated from various phenotypes, clinical presentations, and therapeutic reactions, as in most chronic disorders (Jastreboff, Kotz, *et al.* 2019). So, to overcome obesity and a healthy lifestyle, maintaining weight is essential along with physical activities (Olson 2017). To maintain weight, extra fats from the body should be reduced which is responsible mainly for obesity. Fats accumulate in the body by having a calorie-rich diet with a higher percentage of fats and carbohydrates (Ingebrigtsen 2020). Therefore, to overcome obesity and losing weight, a diet with higher percentages of proteins and fibers and fewer percentages of fats and carbohydrates should be consumed (Merchant, Vatanparast, *et al.* 2009). In this review, eleven such vegetables are narrated which possess this criterion along with their nutrient values and graphical description.

Obesity

Body mass index (BMI) is a calculation that takes the weight and height of an individual into account to measure body size. Obesity is classified in adults as having a BMI of 30.0 or more, according to the Centers for Disease Control and Prevention (CDC) (Control and Prevention 2011). The CDC reports that between 2017 and 2018, 42.4 % of Americans 20 years old and older are obese (Control and Prevention 2011). Obesity is now considered a critical chronic disease.

A total of 107.7 million children were obese in 2015, and 603.7 million adults. In more than 70 countries, the prevalence of obesity has doubled since 1980 and has steadily risen in most other nations. Although the number of overweight children was lower than that among adults, in many countries the rate of increase in childhood obesity was higher than the rate of increase in adult obesity. Globally, high BMI contributed to 4.0 million casualties, almost 40 percent of which occurred in non-obese individuals. Cardiovascular disease has caused more than two-thirds of deaths linked to high BMI. Since 1990, the disease burden associated with high BMI has risen, but the rate of this rise has been attenuated due to decreases in the underlying rates of heart disease deaths (Collaborators 2017).

Why maintaining weight is necessary?

Keeping in mind all the harmful effects of obesity and higher values of BMI, maintaining body weight is extremely necessary for a healthy lifestyle. To get fitness, maintaining a healthy weight is vital (Fruh 2017). It will also reduce the risk of various diseases, in addition to reducing the risk of heart disease, stroke, diabetes, and high blood pressure. It will also reduce the risks of cardiovascular disease, heart attack, stroke, diabetes, cancer, arthritis, asthma, and infertility (Adair and Lopez 2020) (Jiang, Lu *et al.* 2016).

Which factors result in gaining weight?

Factors that are the lead causes of weight gain, obesity, and metabolic diseases include diet, genes, physical inactivity, sleep, food addiction, and age (Ogden, Stavrinaki *et al.* 2009).

The amount and consistency of balanced dietary food have a powerful influence on weight. It should be claimed that it is difficult to reach body weight control without a healthy diet (Stiegler and Cunliffe 2006). Some individuals are genetically inclined to accumulate fat more quickly or to store fat around the midsection than others. However, chromosomes do not have to become fate, and evidence shows that maintaining a balanced diet, remaining busy, and preventing risky habits may prevent the hereditary inclination to the risk of obesity (Qi, Chu *et al.* 2012).

Physical exercise or working out has a lot more positive effects in maintain weight. It also helps in decreasing the risk of contracting heart disease, certain kinds of cancer, and other chronic illnesses. So, the main aspect of weight management and wellness is physical exercise (Haskell, Lee *et al.* 2007). Researchers clarify that there is a link between how long people sleep and how much they weigh. Generally, adults and children who sleep very little appear to carry more weight than people who sleep plenty (Patel and Hu 2008) (Patel, Malhotra *et al.* 2006). Some people, when they age, add weight. In young adulthood, people who have a typical BMI frequently tend to gain weight and eventually gain weight till they are 60 to 65 years of age. Moreover, as teenagers, children who have obesity are more likely to have obesity (Sasaki 2015).

Given all the factors discussed above, diet is more crucial in attaining the ideal weight. Undoubtedly, the most rapid factor which results in gaining or losing weight is diet (Price 2005). A balanced or healthy diet is a diet that includes certain amounts and proportions of various kinds of foods so that the need for calories, fats, minerals, vitamins and substitute nutrients is adequate and a limited supply is reserved for extra nutrients to survive the short period of leanness. Furthermore, bioactive phytochemicals such as dietary fibers, vitamins, and health supplements that have positive health effects should be given by a healthy diet. A diet that gives 60-70 % of total calories from carbohydrates, 10-12 % from proteins, and 20-25 % from fats could be considered as a healthy diet (Health 2019).

How to lose weight by diet?
Reducing diet or a low diet is not the solution to obesity, rather having a balanced diet helps lose weight maintaining body health and fitness. It could be achieved by summarizing a healthy diet for losing weight. Having a high protein breakfast will help to minimize cravings and calorie intake through the daytime (Bonnema, Altschwager *et al.* 2016). Similarly, empty sugar calories are not beneficial for the body and can inhibit weight loss. Sugary

beverages and fruit juices should also be prevented (Gill and Sattar 2014).

The research found that drinking water decreased calorie consumption before meals and could help control weight (Jeong 2018). Studies also suggest that weight loss can be facilitated by soluble fibers. Also, fiber supplements can improve (Thompson, Hannon *et al.* 2017). Intake of coffee improve the body's metabolic output (Tabrizi, Saneei *et al.* 2019). Moreover, Whole foods are more nutritious, filling and far less likely than packaged foods to induce overeating. Most importantly, eating rapidly will contribute to weight gain over time while eating slowly helps you feel fuller and enhances hormones that decrease weight (Hawton, Ferriday *et al.* 2019).

Importance of proteins and fibers
A healthy diet that helps in losing weight consists of more proteins and fibers and fewer carbohydrates and fats. Carbohydrates provide calories to attain energy which assists the daily normal functioning of the human body. Similarly, proteins, fats, and fibers also do so but carbohydrates are the principal source of energy for the body (Reynolds, Mann *et al.* 2019). The calories which remain unused by the body start accumulating in the body and thus results in weight gain (Robertson and Lunn 2019).

Various studies show that a high-protein diet has an important fat loss and metabolic health effects (Westerterp-Plantenga 2008). Protein helps in losing weight as its consumption makes feel that the stomach is full although having less food (Halton and Hu 2004). This is partly because the amount of the starvation hormone ghrelin is decreased by protein. It also increases peptide YY levels, a hormone that helps the body feel whole (Blom, Lluch *et al.* 2006). Such effects on appetite can be successful in losing weight.

A study showed that raising protein consumption from 15% to 30% of calories made women who are overweight consume 441 fewer calories per day without reducing it deliberately (Weigle, Breen *et al.* 2005).

Table 1. Comparison of major macronutrients and ANDI (Aggregate Nutrient Density Index) scores in vegetables.

??	Carbohydrates (g/ 10 Oz)	Fats (g/ 10 Oz)	Proteins (g/ 10 Oz)	Calories (/ 10 Oz)	ANDI
Spinach	10.67	1.0	8.67	66.67	707
Broccoli	18.67	1.0	8.0	116.67	340
Brussels sprouts	19.75	0.75	7.5	95	490
Green peas	44.46	0.67	15.33	240	63
Cauliflower	11.71	1.14	5.14	65.71	315
Sweet potatoes	59.14	0.57	5.71	257.14	181
Beans	18.67	1	24	360	64
Pumpkin	14	0.25	2	57.50	
Carrot	21.68	0.66	2.88	115.04	458
Asparagus	11	0.5	6.5	55	205
Cucumber	6.5	0.5	1.5	35	87

(Joel Fuhrman 2017) (Hussain, Khan *et al.* 2009) (Kongkachuichai, Charoensiri *et al.* 2015) (freedieting 2020).

Vegetables that help in weight loss

High protein or fibers and low carbohydrate and fat-foods which help in weight loss include eggs, leafy green vegetables, chicken, beans, legumes, and fruits. Vegetables that could help in weight loss summarized in this article are spinach, broccoli, peas, brussels sprouts, cauliflower, sweet potato, beans, pumpkin, carrot, asparagus, and cucumber.

Spinach

Spinach is lower in calories, delivers a dietary punch, and is flexible to use in all manners of recipes. It is also known as the powerhouse crop, among other leafy greens. A decreased risk of chronic illnesses, including type II diabetes, heart diseases, and certain types of cancers is closely linked with it (Di Noia 2014).

Broccoli

This is one of the most famous vegetables because of its versatility. It is also a perfect way to bring additional fiber material into the. It is filled with nutrients that are necessary and include fiber, which leads to satiety. Several essential nutrients are known to encourage weight loss in broccoli, and their phytochemicals show the ability to break down fats (May).

Brussels sprouts

To make the body feel completed quickly and keeping happy for a while, these cruciferous vegetables are filled with fibers. They are very low in carbs, but after eating them, they have the potential to make the body feel less hungry. There are only 38 calories in a cup of Brussels sprouts (Gebhardt, Lemar *et al.* 2008).

Green peas

Green peas can aid in achieving the fiber targets with approximately 9 grams of fibers per cup and then make the body feel complete with ease (Lambert, Parnell *et al.* 2017). This sweet and earthy legume has a remarkable nutrient profile. Peas are an ideal addition to every balanced diet which is fortified with vitamin K, manganese, and vitamin C (Dary and Hurrell 2006). Peas are often filled with iron, which helps in avoiding anemia and improving energy. It is also a strong source of trace elements and folate. Naturally, having peas in the diet could also improve immunity levels due to their high content of vitamin C (Dary and Hurrell 2006).

Cauliflower

About 27 calories per cup are found in this vegetable. It contains fibers that help to slow digestion and promotes a sense of fullness. Cauliflower is also fat-free, low in sodium, and free of cholesterol (Gebhardt, Lemar *et al.* 2008).

Sweet potato

Sweet potatoes have a refreshing sweet taste that plays well with foods like kale and black beans, and a little more fibers than white potatoes. They are

regarded as low-glycemic foods that do not induce an acute increase in blood sugar levels, thus helping to successfully control weight. Besides, the high water content of sweet potatoes makes them perfect for reducing weight (Antial, Akpanz *et al.* 2006).

Beans

For weight loss, beans and other legumes are useful. This contains lentils, kidney beans, yellow beans, and several others. They appear to be rich in proteins and fiber contents. They seem to produce a certain resistant starch as well (Winham, Webb *et al.* 2008).

Pumpkin

Pumpkin is filled with different nutrients, but it has less than 50 calories per cup (245 grams). This makes pumpkin a nutrient-dense vegetable. It is also a strong source of fiber that can reduce appetite (Lu, Yu *et al.* 2019). Its anti-oxidant content decreases cancer risk as well (Dreher and Junod 1996).
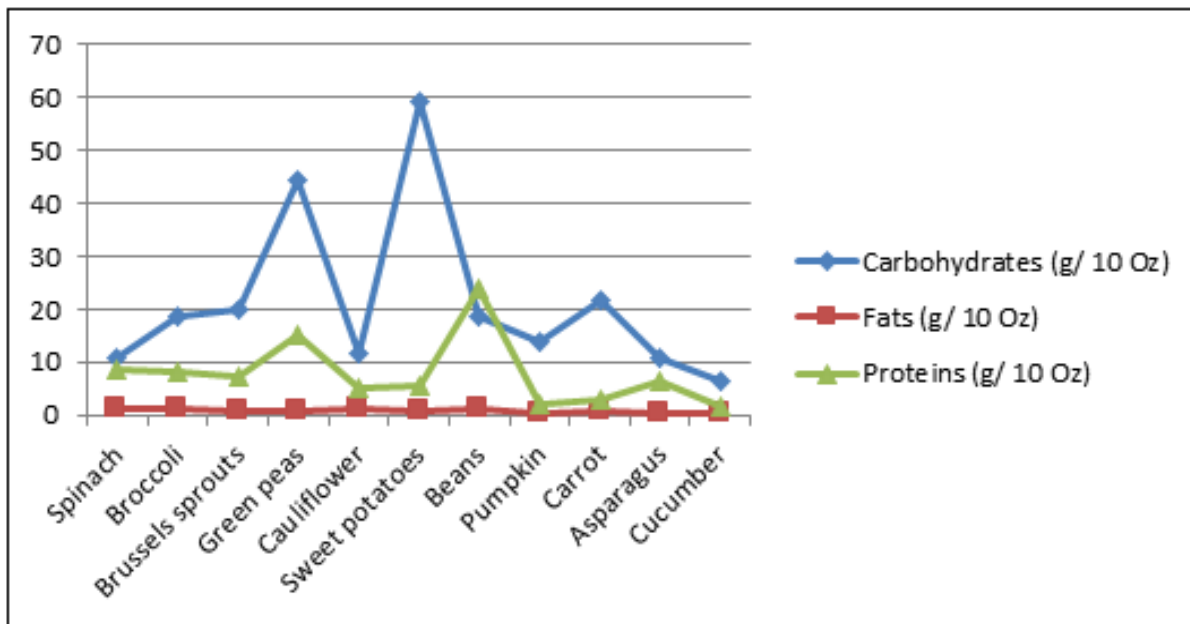

Fig. 1. Comparison of the number of Carbohydrates, Proteins, and Fats of the described vegetables.

Carrot

The noshing diet on carrots is going to help you lose weight. And why are you asking? It's because they are low in calories and full of nutrients that will assist your attempts at weight loss. There are just 50 calories in a cup of raw carrot sticks, which is just three percent of the daily calorie budget for a 1,500-calorie diet (Freisling, Haas *et al.* 2010).

Asparagus

No trials have currently evaluated the impact of asparagus on weight loss, but it has a variety of properties that could theoretically aid in weight loss. Firstly, with just 20 calories in half a cup, it is very low in calories. This means it is possible to consume a lot of asparagus without eating a lot of calories. Besides, it is around 94 percent water, and evidence shows that weight loss is associated with eating low-calorie, water-rich diets (Stelmach-Mardas, Rodacki *et al.* 2016). Asparagus is also abundant in fibers that are associated with decreased body weight and weight loss (Lattimer and Haub 2010).

Cucumber

Cucumber has zero fat and low calories, which makes it a perfect snack for those who want to lose weight. A weight-loss diet that claims to help in losing 15 pounds (7 kg) in 7-14 days is the cucumber diet. Cucumbers are low in protein, which is a fuel the body requires to keep the skin, muscles, and joints healthy (Mukherjee, Nema *et al.* 2013). The diet, therefore, advises pairing the cucumbers with certain protein-rich foods for this purpose (Mienaltowski and Birk 2014).
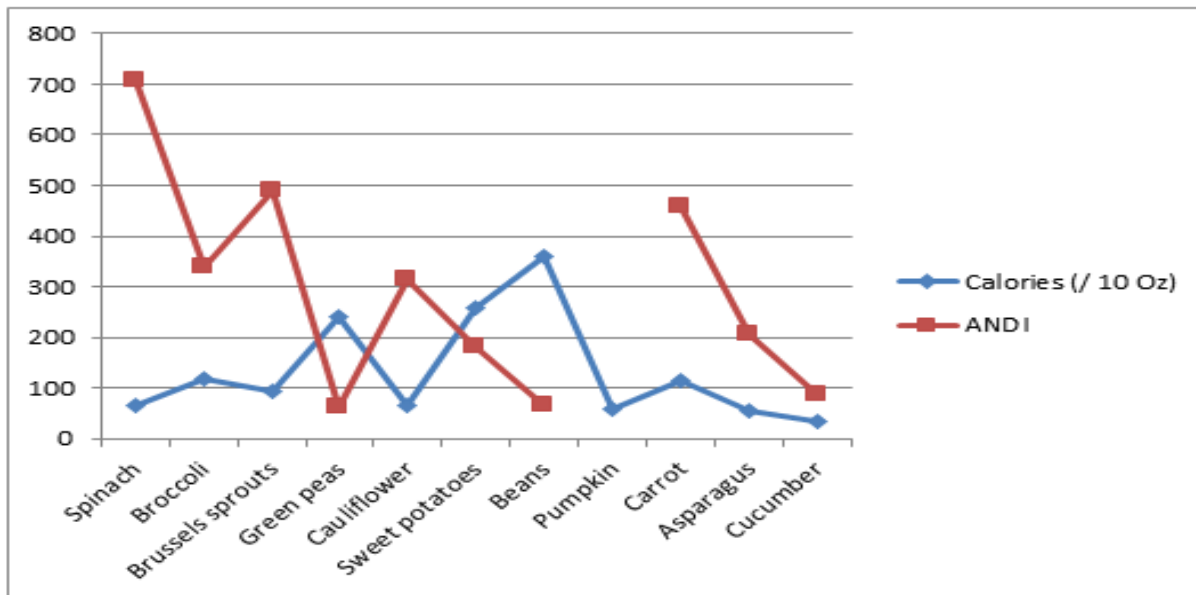
Fig. 2. Comparison of ANDI and Calories of the described vegetables.

Replacement of the above-mentioned vegetables in the diet with the diet containing more fats and carbohydrates will help out in losing weight. A Comparison of major macronutrients, calories, and ANDI (Aggregate Nutrient Density Index) scores in vegetables described above is shown in tabular form following in Table 1.

An equal-calorie serving of each food was analyzed to assess the ANDI (Aggregate Nutrient Density Index) scores. The evaluation included the following nutrients: fiber, calcium, iron, magnesium, phosphorus, potassium, zinc, copper, manganese, selenium, vitamin A, beta-carotene, alpha-carotene, lycopene, lutein and zeaxanthin, vitamin E, vitamin C, thiamin, riboflavin, niacin, pantothenic acid, vitamin B6, folate, vitamin B12, choline, vitamin K, phytosterols, glucosinolates, metabolites of angiogenesis, organosulfides, aromatase inhibitors, resistant starch, resveratrol plus ORAC (Oxygen Radical Absorbance Capacity) score (Joel Fuhrman 2017).

A comparison of vegetables and macronutrients including carbohydrates, fats, and proteins is graphically described in Fig. 1. This graph clearly describes which vegetable is suitable for a person according to his/ her dietary needs. Another comparison of vegetables and their calorie count and ANDI (Aggregate Nutrient Density Index) scores are graphically described in Graph 2. This graph helps in choosing suitable vegetables according to the daily calorie needs of a person.

Conclusion

In the modern are of extreme workload and office work, chances of various diseases are far more to have prevailed. The third decade of the 21st century is going to be an online decade where most of the workload will be unloaded online.

In these circumstances of less physical activities and physical exercise, the chances of severe diseases like obesity are much more than ever before. After improving physical activities, the best way to overcome obesity is to lose weight through diet. A balanced diet should consist of naturally available healthy products with more protein and fiber contents and fewer fats and carbohydrates ratio.

In this case, vegetables are the best source to achieve this goal. 11 vegetables are described in this article which meets the criteria of a described healthy diet. So, to overcome obesity and healthily lose weight, the consumption of these vegetables must be increased. Unhealthy junk food and diet with more fats and carbs should be replaced with these vegetables.

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