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Reasons for Needing to Consume 350 g of Vegetables a Day



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Jun Kobayashi*¹, Mamoru Tanaka², Keiichi Ikeda³

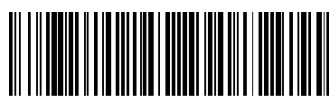
¹Faculty of Nutrition, University of Kochi, 2751-1 Ike, Kochi, Kochi 781-8515, Japan; ²College of Bioscience and Biotechnology, Chubu University, 1200 Matsumoto-cho, Kasugai, Aichi 487-8501, Japan; ³Faculty of Pharmaceutical Sciences, Hokuriku University, 3 Ho, Kanagawa-machi, Kanazawa, Ishikawa 920-1181, Japan.

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ABSTRACT

It has long been thought that vegetable consumption is good for human health and wellbeing. As a developmental action, the Japanese government has therefore been emphasizing the National Health Promotion Campaign in the 21st Century (Health Japan 21), which recommends that individuals consume 350 g of vegetables each day. Private companies are taking advantage of this movement by offering many relevant products, including juices, smoothies, and supplements, which are designed to facilitate the consumption of vegetables in large quantities. However, it is not clear whether the 350 g amount is credible, nor is it certain that large quantities of vegetables are truly good for the human body. This paper discusses the nutritional value of the vegetables themselves and examines whether it is necessary to consume 350 g on a daily basis.



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INTRODUCTION

Health consciousness is a growing issue in Japan, where much of the population is concerned about healthy eating. In fact, “Let’s eat a lot of vegetables!” has become a popular slogan. On the other hand, many people find it difficult to eat large quantities of vegetables, especially due to limitations in their living and working environments. For this reason, many supplemental products are now advertised on television and in magazines, thus offering easier methods for people to consume vegetables. In Japan, it is specifically recommended to eat 350 g of vegetables each day. However, many people find it troublesome to continually prepare and cook these items, and may also have difficulty consuming very large quantities on a daily basis (Fig. 1). There are some alternatives to this, including commercially available vegetable and green juices, smoothies, and supplements. In this regard, it is common to see catchphrases such as “foods that can offer 350 g of vegetables a day.”¹⁾ However, few people understand why it is so important to consume vegetable amounts of 350 g. Many see the idea as lacking context and are unsure if the reasoning behind the recommendation is correct. As such, this study investigated current daily vegetable intake in Japan, with a particular focus on the 350 g target amount.

The nutritional value of vegetables and ways to consume them

During meals, it is recommended to eat other ingredients along with vegetables. However, vegetables are particularly known for containing large amounts of vitamins and minerals, which are important elements found among the five major nutrients (sugar, fat, protein, vitamins, and minerals)²⁾. They are also suitable sources of dietary fiber. Vegetable consumption is also thought to help prevent many diseases. For example, antioxidant vitamins (e.g., ascorbic acid and vitamin E), potassium, calcium, and dietary fiber are known to protect against lifestyle-related disease, cardiovascular issues, and cancer²⁾. Nevertheless, sufficient amounts of vitamins and nutrients cannot be obtained by ingesting 350 g of vegetables per day without other ingredients¹⁾ (Table 1).

Although most people are aware of the need to eat vegetables, the busy pace of modern life makes it difficult to properly cook meals each day. This problem is often solved through newly devised cooking methods and/or processed foods. For example, it can be time-consuming to cook vegetables, but raw vegetables such as those found in salads are usually considered large and bulky. Many people therefore choose to prepare vegetable-based or

miso soups. Further, devices such as microwave ovens remove the need to boil items in pots, therefore making it simpler to prepare hot vegetables³).

Reasons for eating 350 g of vegetables

The 350 g target amount was established prior to the year 2000 by the Ministry of Health and Welfare (currently the Ministry of Health, Labor and Welfare), and is currently part of the National Health Promotion Campaign in the 21st Century (Health Japan 21) by 2010^{4,5}). From the perspective of preventing lifestyle-related diseases such as cancer, heart disease, stroke, and diabetes, individuals are specifically recommend to achieve average daily vegetable intake amounts of 350 g or more³). The 1995-1997 National Health and Nutrition Survey analyzed food intake data from approximately 30,000 men and women over the age of 20. It was thus estimated that 350 g or more of vegetables was required to gain appropriate amounts of major nutrients (dietary fiber, potassium, vitamin C)²). However, it should be noted that individuals who consume more than 350 g of vegetables each day also tend to consume many other nutritious foods, thereby resulting in appropriate amounts of many nutrients. Vegetables do not provide sufficient amounts of fiber, vitamins, and minerals by themselves (Table 1). In the context of eating various foods in order to achieve sufficient nutrition, however, vegetable consumption has attracted significant attention as a way to supplement many deficiencies. Many people believe that proper nutrition can be achieved simply by increasing their vegetable intake while continuing to eat the same ingredients as before. Nevertheless, vegetables contain low amounts of the three major nutrients (sugars, fats, and proteins), meaning that it is difficult to obtain energy through vegetables alone, even if eating large quantities.

Epidemiological studies have shown that it is possible to investigate the correlations between mortality and life expectancy in the context of various lifestyles. Previous research has shown that the current recommended amount of vegetable intake (350 g) is observed by people with the lowest mortality rate⁶). While eating this amount may actually help avoid malnutrition, it should not be considered a way to wholly prevent sickness or death.

No need to eat many vegetables

Some people believe there is no scientific basis for eating many vegetables. In fact, an online magazine recently cited an investigation by professor Kunihiko Takeda at Chubu University in saying there was little evidence for eating 350 g per day⁷). In addition to the fact that

individuals in Japan were already found to consume about 280 g of vegetables per day in 2017, it seems vague to simply suggest greater amounts. For these simple reasons, it is thought that there is little supporting evidence for the specific amount of 350 g. As shown in Fig. 1, vegetable intake was gradually increasing due to national policies when professor Takeda was conducting his investigation.

Professor Takeda seems to be discussing the results from after the increase. From another angle, the amount of food an individual can consume in a given day before becoming full is virtually constant. An additional 70 g of vegetables will therefore require a person to reduce their intake of other foods by the same amount to avoid problems related to satiety and stomach capacity. As people age, their diet also becomes thinner, meaning there is less overall food intake. It is therefore unclear whether the practice of solely increasing vegetable intake is actually healthy. Indeed, there is no solid data showing the exact daily amount of vegetables that is considered healthy⁷⁾. This is because many healthy people have not been properly investigated to determine the amount of vegetables they eat in a given day. The data shown in Fig. 1 are based on the National Health and Nutrition Survey, which only examined household vegetable intake at a certain time of the year. As such, the yearly average values are unclear, nor is it certain how intake is distributed throughout the household or how consumption differs based on age. While there are cases in hospitals in which patients are thoroughly examined for nutrition, this may not reflect conditions for healthy persons, and therefore fails to constitute basic data. After all, a bias may have been created beginning with the common idea that “vegetables are good for health.”

Although not from a report on vegetables alone, it is said that a “balanced” diet according to guidelines set by the Ministry of Health, Labor and Welfare will result in excess sugar⁸⁾. More specifically, the ministry says that proper nutritional balance is achieved by consuming 20-30% sugar, 20-30% fat, and 13-20% protein. Indeed, most people will consume excess sugars when adhering to these proportions. However, reducing the amount of sugar while replacing the missing proportion with increased amounts of protein will result in too much of that. It is thought that this places undue strain on the kidneys, which must excrete it from the body, thus increasing the risk of kidney disease⁸⁾.

Even public institutions have become fascinated with the 350 g vegetable recommendation. For example, Miyazaki Prefecture has set two related goals. First, the Health Miyazaki Action Plan 21 (second) encourages citizens to increase their vegetable intake to 350g over

the course of a 10-year plan (2013-2022). Second, they intend to reduce the proportion of people with low vegetable intake from 90 to 45%⁹⁾. For this reason, an intervention test was previously conducted at a university in the prefecture. Improvements and preventive effects on hypertension and obesity were thus observed, which suggests that vegetable intake does aid in the prevention of lifestyle-related diseases. However, the study did not impose restrictions on the intake of foods other than vegetables, which means it is unclear whether this changes alongside increased vegetables consumption. Further, the test was only conducted among 11 men and women aged 43.6 ± 10.5 years, with an average BMI of 23.9 ± 2.8 kg/m², which means that generalizability may be limited.

CONCLUSION

We cannot say that eating large quantities of vegetables is bad for the human body. This is clear from the fact that animals, including humans, have long been ingesting vegetables as an important foodstuff and energy source. However, various findings show that it may not be correct to suggest that all people must eat 350 g of vegetables each day. One of the reasons for this is that different vegetables naturally contain different amounts and types of nutrients. Even if vegetables are grouped or color-coded, individual items still contain different nutritional components, so it is difficult to establish whether a certain amount is good⁷⁾. It is true that vegetables are characterized by similar general aspects, but there are also known differences. In this regard, vegetables can be thought of in a similar way to meats and fish. For example, lamb contains fewer calories and has different fat contents than other meats, while fish differ based on whether they are pelagic or inshore species. In other words, it is natural to think of vegetables in the same way. Further, some fat-soluble vitamins may result in poisoning due to overdose. Following this line of thought, the 350 g amount should consist of a combination of vegetables that are highly effective for health rather than focusing on the overall number alone.

We agree that eating more vegetables will certainly lead to higher vitamin intake. Since a large amount of dietary fiber will also be taken, fecal impaction will be suppressed, which may aid in the prevention of lifestyle-related diseases. We also believe that it may be necessary to use the 350 g target value because general consumers do not know how much they need simply by being told they must “eat a lot.” However, it seems strange for the government to propose a content amount with little scientific reasoning. It may also be problematic for private companies to piggyback on the proposal by offering various new

products. Further, there may be issues with educating citizens at the prefectural level. In the future, it may thus be necessary to concretely establish a certain combination of vegetables leading to the 350 g amount and/or scientifically confirm how the amount contributes to health based on substantial data.

As a tangent to the main subject, it is also important to consider vegetable juices and smoothies, which are easy to ingest due to their liquid form. This may make it difficult to quickly reach satiety and therefore result in excess ingestion. Further, commercially available processed products are often associated with problems such over-sugaring, which also requires care during ingestion⁸⁾.

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Table No. 1: Vegetable nutrients

Nutrients	“Target amount” or “recommended amount” per adult per day	National daily intake average per adult (2004)	Estimated daily intake of “350 g of vegetables” per person
Dietary fiber			
Total amount (g)	17-20	14.3	7.0
Water-soluble (g)		3.4	1.9
Insoluble (g)		11.0	5.1
Vitamin A (µg)	650-900	885	734
Folic acid (µg)	240	309	141
Vitamin C (mg)	100	125	45
Potassium (mg)	2600-3000 \cong	2372	698
Calcium (mg)	650-800	520	120
Magnesium (mg)	270-370	258	48
Iron (mg)	6.0-10.5	8.3	1.5
Zinc (mg)	7-10	8.3	0.8

Based on data available in reference 1).

Insufficiencies are indicated in blue text, while excesses are indicated in red text.

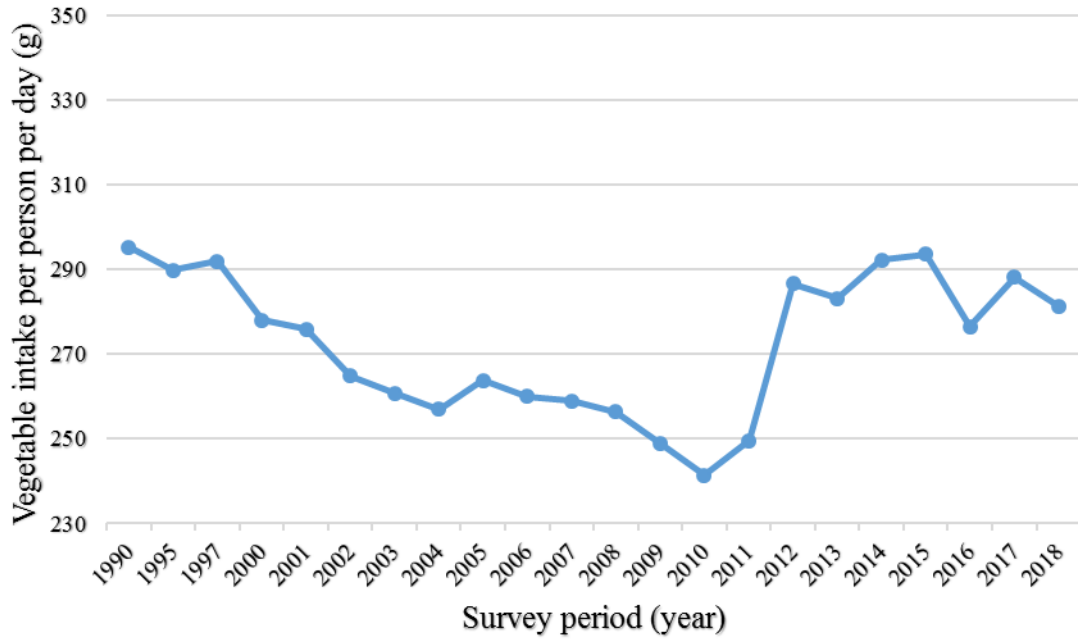


Figure No. 1: Changes in daily vegetable intake

Based on data available in references 5) and 10).

