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# Healthy Nutrition in Current Scientific Research*

## *Güncel Bilimsel Araştırmalarda Sağlıklı Beslenme*

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## Öz

Sağlıklı bir yaşam için kontrol edilebilen faktörlerin başında beslenme gelmektedir. Bu sebeple, sağlıklı beslenmeye dair bilgiler, giderek daha fazla sağlık profesyonellerinin ilgi alanına girmektedir. Ayrıca hastalıklara karşı, koruyucu hekimlik tavsiyeleri arasında ve tedavi kılavuzlarında sağlıklı beslenmenin önemi giderek daha fazla artmaktadır. Hem hastalar hem de hekimler için sağlıklı beslenmenin güncel bilgilerini takip etmek büyük önem arz etmektedir. Bu çalışmada, güncel bilimsel araştırmaların incelenmesiyle, sağlıklı beslenmeye dair doğru öğün sıklığı ve kalori kısıtlaması kavramlarının gösterilmesi amaçlanmıştır. Mevcut güncel kanıtlara göre, sağlıklı beslenmek için; öğün sıklığını azaltmak, mümkünse günlük olarak, sabah geç ve akşam erken olmak üzere iki öğün şeklinde beslenmek, ara atıştırmalıkları kaldırarak bütün kalori alımını iki öğünde toplamak, bireysel ihtiyaca göre hesaplanan günlük kalori ihtiyacını kontrol altında tutmak, kalori aşımını önlemek için kalori kısıtlaması uygulamak, kalori kısıtlamasının olumsuz etkilerinden korunmak için günlük % 20 civarında kalori kısıtlaması içeren ılımlı bir kalori kısıtlaması uygulamak faydalı olacaktır.

**Anahtar Kelimeler:** Sağlıklı Beslenme, Öğün Sıklığı, Kalori Kısıtlaması, Koruyucu Hekimlik.

## Abstract

Nutrition is one of the controllable factors for a healthy life. For this reason, information on healthy eating is increasingly in the interest of health professionals. In addition, the importance of healthy nutrition is increasing more in preventive medicine recommendations and treatment guidelines against diseases. It is of great importance for both patients and physicians to follow up-to-date information on healthy nutrition. In this study, it is aimed to show the concepts of correct meal frequency and calorie restriction regarding healthy nutrition by examining current scientific researches. According to current current evidence, to eat healthy; to reduce the frequency of meals, if possible, to eat two meals a day, late in the morning and early in the evening, to collect all calorie intake in two meals by removing snacks, to keep the daily calorie needs calculated according to individual needs under control, to apply calorie restriction to prevent calorie excess, in order to protect from the negative effects of the restriction, it will be useful to apply a moderate calorie restriction that includes around 20% daily calorie restriction.

**Keywords:** Healthy Nutrition, Meal Frequency, Calorie Restriction, Preventive Medicine.

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## INTRODUCTION

Nutrition is the use of nutrients for growth, maintenance of life and maintenance of health (1). Nutrition is one of the controllable factors for a healthy life. For this reason, information on healthy eating is increasingly in the interest of health professionals. In addition, the importance of healthy nutrition is increasing more in preventive medicine recommendations and treatment guidelines against diseases. It is of great importance for both patients and physicians to follow up-to-date information on healthy nutrition. The increasing incidence of obesity, insulin resistance, Diabetes Mellitus, cardiovascular diseases, stroke and many types of cancer makes healthy nutrition more important. The majority of scientific research on nutrition consists of debates about what should or should not be eaten. In a limited number of studies with high original value, it is shown that before discussing what to eat, it is necessary to clarify "how much" to eat and "how often" to eat. The question of how much to eat brings us the concept of 'calorie restriction'. The question of how often to eat shows us the importance of 'the right meal frequency'. Unless there are clear answers to the two questions, the first steps of proper nutrition will not be possible. How often should we eat? (How many meals a day should we eat?). How should we do calorie restriction? (What degree of calorie restriction would be reasonable and beneficial?). Clinical studies on nutrition are very difficult due to social adaptation difficulties and similar reasons. Comprehensive animal experiments on feeding models are limited in number due to the length of time and the difficulty of implementation (1-21). Accurate analysis of studies that present data based on experiments with controlled and appropriate methods, in accordance with the concept of evidence-based medicine, is of vital importance for a healthy diet. In this study, it is aimed to show the concepts of correct meal frequency and calorie restriction regarding healthy nutrition by examining current scientific researches.

## FROM CURRENT NUTRITION RESEARCH

The amount and energy content of the foods eaten are very important for a healthy diet. Keeping the amount of calories under control is imperative for a healthy diet. Every food consumed in addition to the daily calorie requirement, which varies individually and must be determined according to the person, is added to the metabolism as excess calories. Excess calories are stored for short-term and long-term use in case of need. Normally, these warehouses are sufficient to meet the need in an emergency. If more calories are taken continuously than the need, these excesses begin to accumulate as adipose tissue. Since there is no need, these warehouses are never used. In the meantime, there are various studies showing that the amount and activity of the enzymes in charge for storage do not function. For this reason, even if it is needed, the necessity of getting hungry quickly and consuming more calories instead of using it from the warehouse due to the effect problem of enzymes can turn into a big problem. Extra calories in the long term impair cell, tissue and organ structures. For this reason, various diseases begin to appear. Aging is accelerated. Oxidative stress increases. Antioxidant capacity is insufficient. The amount of reactive oxygen species increases and extensive cell damage occurs. Weight gain accelerates. The incidence and severity of obesity are gradually increasing. Morbid obesity can occur and health problems can reach very serious levels. Major cardiovascular diseases, diabetes and many types of cancer can be counted as very serious diseases accompanying this condition. The solution is moderate calorie restriction. Moderate calorie restriction, it will be possible to limit 20% of the daily calories to be taken and thus to be protected from the negative effects of calorie restriction in the current literature (11-12). In current studies, it has been found that it is an ideal meal practice to reduce the frequency of meals, to eat two meals a day, to take the morning meal between 09:00-10:00 and the evening meal between 16:00-17:00. In this way, it will be possible to lose weight, reduce insulin resistance, reduce oxidative stress, activate metabolic pathways and enzymes, and prevent most chronic fatal diseases. The expected health benefits can be increased even more by applying two meals a day and calorie restriction together (13-14). According to a recent study, meal frequency and increasing of calorie intake trigger cell death by causing selective loss of permeability and increased permeability in the ion channels of the cell. In addition, the increase in calories and meal frequency adversely affects energy production and metabolism by disrupting mitochondrial homeostasis (14). The current scientific studies have shown that it is possible to activate the sirtuin-1 gene, which provides cell rejuvenation, thanks to intermittent meal frequency and calorie restriction. There are seven variants of the Sirtuin family (SIRT 1-7). Mammalian sirtuins; It affects many cellular functions, including human metabolism, aging, cancer and cell survival. In a study on the expected human life-prolonging capacity of sirtuins, it was observed that Alzheimer's enters the recovery process with the activation of the SIRT-1 gene. In

another study on Multiple Sclerosis, it was observed that the expression levels of many of the SIRT-1 genes were quite low in patients compared to the control group. It is thought that SIRT-1 genes will gain more importance every day in the development of advanced treatment methods due to its relationship with many events such as human metabolism, aging, cancer and neurodegeneration. SIRT-1; It becomes active especially in times of hunger and has a rejuvenating effect on cells. Therefore, in order to be healthy and stop aging, it is necessary to apply calorie restriction and reduce the frequency of meals. (22).

## CONCLUSION

As a result, according to current evidence, for healthy nutrition; to reduce the frequency of meals, if possible, to eat two meals a day, late in the morning and early in the evening, to collect all calorie intake in two meals by removing snacks, to keep the daily calorie needs calculated according to individual needs under control, to apply calorie restriction to prevent calorie excess, in order to protect from the negative effects of the restriction, it will be useful to apply a moderate calorie restriction that includes around 20% daily calorie restriction. In this way, it may be possible to reduce the frequency of obesity, insulin resistance, type II Diabetes Mellitus, cardiovascular diseases, stroke and many types of cancer, and to lose weight. The second important agenda of nutrition, the effects of the content of edible foods on health, the results of research on ingredients such as food additives, genetically modified foods and processed foods should be discussed in a separate article. In order to live in a healthy way, it will be beneficial to avoid frequent and more than necessary meals.

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