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## The influence of the Mediterranean diet on glucose metabolism

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### Abstract

**Introduction:** Insulin resistance is the first stage of diabetes development. It has been defined as a dysmetabolic state in which the biological response of target tissues (particularly liver, muscle and adipose tissue) to circulating insulin is impaired. This leads to hyperinsulinemia, which in turn leads to obesity and type 2 diabetes (T2D). The basic ingredients of the Mediterranean diet, such as fruit, vegetables, fish rich in fat, extra virgin olive oil, tree nuts, red wine, have been defined in the functional food model by the natural content of nutraceuticals such as polyphenols, terpenoids, flavonoids, alkaloids, sterols and unsaturated fatty acids.

**Purpose of the work :** Demonstrate the beneficial effects of implementing the Mediterranean diet in patients with insulin resistance or type 2 diabetes. The appropriate samples were accessed using a search engine in the PubMed database. The reviews and meta-analyzes published over the last 10 years were used.

**Results:** After changing the diet to a diet rich in these nutrients, a greater improvement in IR was shown in obese people compared to other diets. In addition, dietary polyphenols demonstrated clinically significant benefits in metabolic and microvascular functions leading

to lowering of fasting cholesterol and glucose, and anti-inflammatory and antioxidant properties in high-risk and T2DM patients.

**Conclusions:** Mediterranean diets with the addition of extra virgin olive oil or nuts reduced total body weight and improved glucose metabolism.

**Key words:** insulin resistance; Mediterranean diet; type 2 diabetes; unsaturated fatty acids

### **Introduction:**

The Mediterranean diet is a diet inspired by the Mediterranean countries. As of today, it enjoys great popularity and health benefits. One of them is its effect on weight loss and glucose metabolism. Studies conducted by epidemiologists have shown life extension and reduced incidence in Mediterranean countries compared to the US or Northern Europe. [1] This diet is based on foods commonly eaten in Mediterranean countries where large amounts of grains, fruits, vegetables, plant seeds, olive oil (high in unsaturated fats) are eaten, but red and fatty meat (high in fatty acids) is much less common. saturated fat). Consumption of fish, white meat (poultry), legumes, eggs, dairy products, red wine and sweets is moderate. [2] Hence, The Mediterranean diet is high in fiber and vegetable fats, low in saturated acids and trans fats. The Mediterranean diet has been shown to be beneficial in the prevention and treatment of type 2 diabetes, insulin resistance and weight reduction. In addition, it was found that the degree of saturation with fatty acids and the type of polyphenols affect glycemic control and the existence of clear differences in the profiles of fatty acids and polyphenols between olive oil and nuts. [1] [2] that the degree of saturation with fatty acids and the type of polyphenols affect glycemic control and the existence of clear differences in the profiles of fatty acids and polyphenols between olive oil and nuts. [1] [2] that the degree of saturation with fatty acids and the type of polyphenols affect glycemic control and the existence of clear differences in the profile of fatty acids and polyphenols between olive oil and nuts. [1] [2]

## **Discussion:**

Glycemia, i.e. blood glucose concentration. Several cytokines are involved in glycemic control. Adiponectin, which is secreted by adipose tissue, is a key regulator of insulin sensitivity, and low levels of insulin in the serum are associated with a higher risk of diabetes and metabolic syndrome. Likewise, serum leptin, a regulator of adipose tissue, is strongly associated with the metabolic syndrome, possibly because it is closely related to adipose tissue content. [2] It has been shown that the serum adiponectin values following the Mediterranean diet show a good inverse correlation with body weight, and more specifically with adipose tissue content. In turn, this results in a significant improvement in glycemic control. [2] [3] In addition, the use of MD may reduce arterial stiffness, reducing the susceptibility to coronary heart disease and chronic heart disease. Moreover, it is effective in alleviating arrhythmia and thus prevents sudden cardiac death. [3] The studies also confirmed that people who adhered to a diet adhered to a lower heart rate and were protected against cardiovascular disease, type 2 diabetes, even in cases of accompanying overweight or obesity. It was further shown that moderate consumption of red wine can lower the ratio of LDL to HDL cholesterol in carotid patients receiving statins by 13%, regardless of other lifestyle changes, including medical adherence and exercise. [4] [5] [6] that those who adhered to a diet had a lower heart rate and were protected against cardiovascular disease, type 2 diabetes, even if they were overweight or obese. It has further been shown that moderate consumption of red wine can lower the ratio of LDL to HDL cholesterol in carotid patients receiving statins by 13%, regardless of other lifestyle changes, including medical adherence and exercise. [4] [5] [6] that those who adhered to a diet had a lower heart rate and were protected against cardiovascular disease, type 2 diabetes, even if they were overweight or obese. It was further shown that moderate consumption of red wine can lower the ratio of LDL to HDL cholesterol in carotid patients receiving statins by 13%, regardless of other lifestyle changes, including medical adherence and exercise. [4] [5] [6] that moderate consumption of red wine could lower the ratio of LDL to HDL cholesterol in carotid patients receiving statins by 13%, regardless of other lifestyle changes, including medical adherence and exercise. [4] [5] [6] that moderate consumption of red wine could lower the ratio of LDL to HDL cholesterol in carotid patients receiving statins by 13%, regardless of other lifestyle changes, including medical adherence and exercise. [4] [5] [6]

## **Conclusions:**

The Mediterranean diet is able to reduce body weight and improve glucose metabolism. The amount and quality of dietary fat may also play a role in the development of insulin resistance and related metabolic disorders. Changing the quality of dietary fat can affect the way insulin works in humans.

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