Treatment with Polyphenols for Non-alcoholic Fatty Liver Disease Patients

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Abstract

Nonalcoholic Fatty Liver Disease (NAFLD) impacts 25%–30% of the world's population, and its high prevalence is related to dietary and lifestyle changes, not just in developed nations' urban centres but also in Western nations. The reported findings from a number of pharmacological approaches to treating NAFLD are not conclusive. International recommendations called for a decrease in dietary fat and fructose, along with some exercise. According to reports, the traditional Mediterranean diet's protective qualities are linked to its high concentration of antioxidant compounds, especially polyphenols. A diverse group of compounds produced from plants called polyphenols has been shown to have some hepatoprotective properties.

Keywords: Non-alcoholic fatty liver • Polyphenols • Population • Basopenia

Introduction

The phrase Nonalcoholic Fatty Liver Disease (NAFLD) has become more frequently used in clinical settings and study frameworks over the past few decades. In the absence of alcohol abuse and any other causes of liver diseases, it describes the presence of substantial fat accumulation in the liver (> 5% of hepatocytes). [1] The term NAFLD refers to a number of clinical conditions, including Nonalcoholic Steatohepatitis (NASH), or simple fatty liver, which is characterized by steatosis along with necroinflammation, fibrosis, and ultimately cirrhosis and its complications.

The presence of specific liver symptoms, such as cellular ballooning, lobular inflammation, and perisinusoidal and perivenular fibrosis, which are hardly distinguishable from those found in cases of alcoholic liver disease, characterizes NAFLD as a pathological entity according to histological analysis [2]. The well-known risk factors for NAFLD include insulin resistance, visceral fat accumulation, obesity, dyslipidemia, diabetes, and metabolic syndrome [3]. The involvement of variants increasing oxidative stress, a pro-inflammatory profile of circulating cytokines, and abnormalities in the metabolism of glucose and fatty acids is highlighted by studies on genetic and molecular mechanisms predisposed to NAFLD [4]. NAFLD affects between 25% and 30% of the overall population, but the prevalence varies depending on factors like gender, age, ethnicity, and metabolic characteristics. There is no doubt that dietary profile changes and a rise in sedentary behavior, not only in Western nations but also in urban areas of developing countries, are contributing to the global spread of NAFLD diagnoses.

For the treatment of NAFLD, a number of pharmacological approaches have been suggested, but the documented outcomes are conflicting. According to international guidelines, lowering intake of total fat, saturated fatty acids, trans fatty acids, and fructose, as well as increasing physical exercise, is the first therapeutic step in the treatment of NAFLD.

In comparison to healthy controls, the profile of NAFLD patients is characterized by higher dietary energy and simpler carbohydrate consumption. Patients with NAFLD typically receive standard treatment that emphasises lifestyle changes, particularly a healthy diet and regular exercise. In this manner, the benefits of a Mediterranean diet have been documented in literature. The Mediterranean diet is defined as a "set of traditional practices, knowledge, and skills passed on from generation to generation, providing a sense of belonging and continuity to the concerned communities" by UNESCO in its official recognition of it as an Intangible Cultural Heritage of Humanity in November 2010.

Instead of being a structured diet, the Mediterranean diet is a way of life. Given that the Mediterranean region is a virtually geographical area that encompasses many cultures and lifestyles, it is challenging to define the precise Mediterranean diet. The dietetic profile varies significantly between nations and between some areas within a nation, as is the case, for instance, in Italy. However, the typical Mediterranean diet can be visualized as a pyramid with smaller intakes of eggs and sweets and higher intakes of cereals and vegetables like salads, pulses/legumes, bread, pasta, fruits, and nuts. With fish, poultry, eggs, and dairy products being consumed in moderation, extra-virgin olive oil serves as the primary source of fat. Additionally, in the European part of the Mediterranean region, moderate quantities of red wine are typically consumed with meals.

Following the traditional Mediterranean diet is linked to a lower chance of mortality and a lower occurrence of chronic diseases, particularly heart and metabolic problems, neurodegenerative illnesses, depression, and several cancers. These protective benefits are a result of the high antioxidant content of the compounds in this diet. Ancel Keys and his colleagues have been researching the health effects of the Mediterranean diet since the 1950s, and they discovered that until the 1960s, Greeks, particularly those from the island of Crete, had the world's longest life expectancies, followed by those from Southern Italy, Spain, and France. These findings were supported by later research on the elderly in Greece and other European nations, which demonstrated that the Mediterranean dietary pattern as a whole, rather than just one nutrient, had a substantial positive impact on longevity and overall mortality. This premise is fundamental to public health, particularly in the context of Mediterranean-style prevention policies for the primary prevention of serious chronic diseases, which are prevalent not only in Western countries but also in all urban areas around the globe.

A diverse group of plant-derived substances known as polyphenols includes a number of hydro soluble antioxidants that have been suggested as potential health-promoting agents and as treatments for a variety of metabolic diseases. The most significant sources of these bioactive compounds are fruits, veggies, and beverages like coffee, tea, red wine, and dark chocolate. Two types of polyphenols are distinguished by their chemical structures: flavonoids, which all have a common diphenylpropane skeleton (such as proanthocyanidins and anthocyanins), and non-flavonoids, which mostly consist of mono-phenol alcohols (such as hydroxytyrosol) or stilbene phenolic acids. (e.g., resveratrol). While polyphenols are not immediately necessary for living, unlike vitamins, they are now thought to be the primary cause of fruits and vegetables' health benefits. Recent research has looked into their possible role in the management of inflammation and oxidative stress. Polyphenols in particular may have hepatoprotective effects by promoting fatty acid oxidation and controlling insulin resistance, oxidative stress, and inflammation, which are the major pathogenetic factors connected to the development of NASH from simple fat accumulation [5]. The treatment of liver steatosis and its pathogenic and clinical context was found to have positive impacts in a number of in vitro, pre-clinical, and emerging clinical trials. The liver disease known as NAFLD is an impending challenge for hepatologists and health systems around the globe. Chronic illnesses are more common in patients with liver steatosis. Therefore, reducing risk factors like insulin resistance, oxidative stress, and dyslipidemia should be the main goal of therapy for

NAFLD patients. Nutraceuticals may thus play a significant part in the management of NAFLD. The traditional Mediterranean diet, which is characterised by the consumption of foods high in antioxidants in general and polyphenols in particular, can be thought of as a potential new approach in the treatment of NAFLD and even as a useful tool for preventing this disorder, according to literature data.

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