Impact of Wine Consumption on Human Health

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Abstract

Wine has been consumed for ages all throughout the world. Despite its numerous health benefits, there is still much debate concerning the true qualities of its constituents, as well as their effects on cells and molecular interactions. According to in vitro and in vivo studies, a certain amount of daily wine consumption may assist to avoid a variety of chronic diseases. This is due, in part, to the richness and availability of important antioxidants in red wine, which has resulted in an emphasis on them in the study. The most effective wine antioxidants are polyphenols, including resveratrol, anthocyanins, and catechins. Resveratrol shields the brain and nerve cells from free oxygen radicals and reactive nitrogenous radicals. Additionally, it penetrates the blood-brain barrier, safeguarding the nerve cells and brain. Furthermore, it suppresses platelet aggregation, preventing the development of blood clots or thrombi. After reviewing the most recent clinical trials, it is clear that healthy eating and moderate wine intake are associated with cancer prevention. Consumption of antioxidants and polyphenols found in fruits and their products, such as wine and vegetables, has been linked to biological pathways for oncological protection. It is advised to drink wine sometimes, primarily with meals. The main goal of this study is to give a succinct overview of the most recent studies on the positive effects of wine consumption on human organ function, chronic diseases, and the prevention of cardiovascular system damage.

Keywords: Wine, Antioxidants, Resveratrol, Human, Health, Chronic diseases, Cardiovascular System, Cancer

Introduction

Alcohol drinking can have either beneficial or negative impacts, depending on the amount consumed and the consumer's profile. According to the Dietary Guidelines for Americans 2010, moderate alcohol consumption is defined as up to 2 drinks for men and up to 1 for women per day (Artero *et al.,* 2015).

Fresh grape juice or ripe and fresh grapes are fermented with alcohol to produce wine. A biological definition would be a beverage resulting from yeast's alcoholic fermentation of grape juice sugars. Wine has always been linked to human history, either because it is a drink with a distinct flavor and personality or because of the health advantages it offers. Along with the Hindus, other notable ancient civilizations that employed wine as medicine included the Egyptians, Greeks, and Romans. According to historical records, humans have been using wine for medical purposes for over 2000 years (Wurz, Douglas, 2019).

Wine appears to be a fundamental component of the Mediterranean diet and may contribute to the health-promoting effects seen in the Mediterranean population (Guerrero *et al.,* 2009). Due to the existence and quantity of its constituent components, wine is a favorite beverage around the world. Since many millennia ago, winemaking and drinking have been customs. Wine's health advantages were known to the ancient Romans, who also made it popular. Wine is the primary product of grapes. The majority of a wine's chemical composition consists of carbohydrates, minerals, organic acids, water, alcohol, polyphenols, and aromatics. Wine includes compounds that have a substantial impact on several chronic diseases and cardiovascular diseases (Artero *et al.,* 2015).

Numerous studies in the area of wine and health have evidenced that adding red wine to the diet on a regular basis (one to two glasses per day) increases plasma antioxidant capacity, fibrinolytic activity, HDL lipoprotein, and antithrombin activity & vitamin C decreases platelet aggregation and oxidative damage and lowers the risk of cardiovascular diseases (Wurz, Douglas, 2019).

Bioactive components of wine

Wine contains many antioxidants and has been proven that wine drinking consumption is healthy in moderation. The enormous variety of components and the numerous modes of action of each chemical limit our ability to understand the various biological responses of wine. Based on the growing area, method of production, the grape variety, and the aging process, different chemicals are present in different proportions.

Wine is made up of phenolic chemicals, polysaccharides, ethanol, glycerol, water, and various types of acids (Artero *et al.,* 2015). One of the most prominent categories of wine ingredients is polyphenols. The grape variety is one element that affects the composition and precise amount of polyphenols. Red wines typically contain more polyphenols than white wines, in general. According to certain research, red wine polyphenols reduce the risk of cardiovascular diseases and have positive effects on a number of human organs (Snopek *et al.,* 2018).

Resveratrol, catechins, anthocyanins, and tannins (ellagitannins and proanthocyanidins) are the most significant polyphenols in red wine. Red wine and wine grapes are two foods that contain resveratrol, which also has a biological function and is significant in cardiovascular illnesses. Its cardioprotective actions also include lowering inflammation, controlling blood cholesterol levels, and enhancing endothelial function and glucose metabolism. These actions and the favorable benefits of wine are positively impacted by additional wine polyphenols (Snopek *et al.,* 2018). This antioxidant has been associated with a number of health advantages, such as preventing blood clots and inflammation and lowering the risk of cancer and heart disease(Brown *et al.,* 2009).

Literature studied

Janssen *et al.,* (2015) did study the anti-inflammatory effects of wine on human health. They took research with 2,900 women, those who drank one glass of wine per day had considerably lower inflammatory markers than those who abstained from alcohol.

Micallef *et al.,* (2007) conducted a two-week study on forty adults and revealed that drinking 400 ml (13.5 ounces) of red wine every day improved their body's anti-oxidant levels.

Retterstol *et al.,* (2005) investigated the anti-inflammatory impacts of wine. According to the study done on 87 adults with an average age of 50, 5 ounces (150 ml) of red wine per day had only marginally less of an impact on inflammatory markers than not consuming any alcohol at all.

Imhof *et al.,* (2004) carried out research on 4,461 adults and found that drinking wine in moderation was associated with a decreased inflammatory response. The amount of alcohol consumed by study participants was self-reported. Alcohol use of up to 1.4 ounces (40 grams) per day resulted in decreased inflammation compared to non-drinkers.

Health Impacts of Wine Consumption

Wine has antioxidant properties due to its polyphenolic compounds. Its antioxidant capacity is linked to its anti-inflammatory, anti-cancer, and cardiovascular disease prevention activities. Resveratrol has been shown to limit the onset, development, and advancement of cancers, reduce cell death brought on by oxidative stress, prevent platelet aggregation, impede anti-inflammatory action, and lessen the impact of various neurological illnesses like Alzheimer's (Artero *et al.,* 2015).

Chen *et al.,* (2019) investigated research by taking 3 commercial red wines- one young and two mature wines to test the hypothesis that red wine influences the proliferation of cancer cells. This research suggests drinking wines may help prevent the growth of cancer. They randomly selected three supermarket-purchased commercial red wines. In order to track changes in colony formation, cell proliferation, and RNA Pol III gene transcription, They used red wine to treat the cells of numerous human cancer lines.

According to the findings, as compared to diluted ethanol therapy, all three wines reduced the cell growth rates. Along with inhibiting Pol III gene transcription, it also suppresses the oesophageal carcinoma cells and colony formation of breast cancer in humans. Young wine has far less of an impact on these cancer cell morphologies than old wine (brick red) (intense violet). According to these investigations, the bioactive constituents in red wine can prevent human cancer cells from growing, colonizing, and activating the Pol III gene (Chen *et al.,* 2019).

Conclusion

It has been concluded that moderate wine drinking is healthful because wine includes numerous antioxidants. Different compounds are present in varying concentrations according to the grape variety, growing area, method of production, and the aging process. Polyphenols are one of the most significant wine components. Red wine polyphenols have positive effects on numerous human organs and reduce the risk of cardiovascular diseases. Wine is also beneficial for cardiovascular diseases and has a biological purpose. Additionally, it reduces inflammation, regulates blood cholesterol levels, improves endothelial function, and improves glucose metabolism, all of which have cardioprotective effects.

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