

# Potential Role of Polyphenols in the Prevention of Cardiovascular Diseases: Molecular Bases

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## Resumen

Cardiovascular diseases (CVD) are the leading cause of mortality worldwide. It is widely accepted that oxidative stress plays a key role in their development and progression; hence oxidative damage might be abrogated by antioxidants. Polyphenols are phytochemicals showing extensively studied antioxidant properties in-vivo. Most representative sources of these compounds include fruits, greens, nuts, herbs, cocoa, tea and coffee. Epidemiological evidence suggests an association between the consumption of polyphenol-rich vegetables and the reduction of cardiovascular disease prevalence. This fact could be related to the anti-inflammatory, antithrombotic and vasodilatory effects of polyphenols. Even though these biological effects could be mainly attributed to the antioxidant activity of polyphenols, other pharmacological mechanisms should also be considered. The latter could comprise direct anti-inflammatory effects, modulation of intracellular signaling and gene expression, improvement of nitric oxide homeostasis, as well as platelet antiaggregation. However, it is noticeable that protocols of interventions to evaluate the properties of polyphenols have failed to show the same positive results reported from observational studies. At present, a controversy exists regarding the actual effectiveness of polyphenols in preventing cardiovascular diseases. Therefore, an improvement of the available knowledge about polyphenol pharmacokinetics, together with a better understanding of the mechanisms of action of these compounds, could be of great benefit. Thus, a rational support for the development of interventional designs could provide reliable evidence on the actual role of polyphenols in CVD prevention.

## Palabras clave

**Palabras clave de autor:** Polyphenols; cardiovascular diseases prevention; vasodilatation; inflammation; thrombosis; atherogenesis

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