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Effect of resveratrol on endothelial cell function: Molecular mechanisms.

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Abstract

The polyphenolic natural product resveratrol (RV), best known for its occurrence in grape skin and red wine, is considered a candidate drug for prevention and treatment of cardiovascular diseases. This review aims to summarize the molecular effects of RV on endothelial cells, which line the inner walls of blood vessels and play a key role in the development of those diseases. We describe how RV enhances endothelial nitric oxide production, improves endothelial redox balance and inhibits endothelial activation in response to pro-inflammatory and metabolic insults. Furthermore, we summarize effects of RV on endothelial senescence, apoptosis, endothelin-1 release, and endothelial progenitor cell function. As many of RV's actions seem to be mediated by SIRT1, different mechanistic possibilities how RV may lead to SIRT1 activation are discussed.