

# Oxidative Stress in Hypertension: Mechanisms and Therapeutic Opportunities

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## Resumen

Hypertension is a highly prevalent disease worldwide. It is known for being one of the most important risk factors for developing cardiovascular disease, including acute myocardial infarction and stroke. Therefore, during the last decades there have been multiple efforts to fully understand the mechanisms underlying hypertension, and then develop effective therapeutic interventions to attenuate the morbidity and mortality associated with this condition. In this regard, oxidative stress has been proposed as a key mechanistic mediator of hypertension, which is an imbalance between oxidant species and the antioxidant defense systems. A large amount of evidence supports the role of vascular wall as a major source of reactive oxygen species. These include the activation of enzymes, such as NADPH oxidase and xanthine oxidase, the uncoupling eNOS and mitochondrial dysfunction, having as a major product the superoxide anion. Among the stimuli that increase the production of oxidative species can be found the action of some vasoactive peptides, such as angiotensin II, endothelin-1 and urotensin II. The oxidative stress state generated leads to a decrease in the bioavailability of nitric oxide and prostacyclin, key factors in maintaining the vascular tone. The knowledge of the mechanisms mentioned above has allowed generating some therapeutic strategies using antioxidants as antihypertensives with different results. Further studies are required to position antioxidants as key agents in the treatment of hypertension. The current review summarizes evidence of the role of oxidative stress in hypertension, emphasizing in therapeutic targets that can be considered in antioxidant therapy.

## Palabras clave

Palabras clave de autor: [hypertension](#); [cardiovascular risk management](#); [oxidative stress](#)

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