

Oxidative stress and protective effects of polyphenols: Comparative studies in human and rodent kidney. A review

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Reactive oxygen species (ROS) play a key role in the pathophysiological processes of a wide range of renal diseases. Thus, antioxidants are expected to decrease the vulnerability of the kidney to oxidative challenges. Polyphenols, particularly abundant in red wine, could act as ROS scavengers, iron chelators and enzyme modulators. In addition, chronic exposure to moderate amounts of ethanol results in increased activity of the renal antioxidant enzymes, further supporting a renoprotective effect of red wine based on its antioxidant properties. An enhancement of plasma antioxidant capacity following red wine consumption has been reported both in man and rodents, thereby providing a contributory factor to its renoprotective effect because the kidney is a highly perfused organ. Although phenol concentration of red wine does not influence the activity of antioxidant enzymes of the kidney, the concentration of these compounds is negatively correlated with tissue lipid peroxidation, assessed