Potential Mechanism of Blood Vessels Protection by Resveratrol, a Red Wine Component

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Abstract

Resveratrol-mediated heme oxgenase-1 (HO-1) induction has been shown to occur in primary neuronal cultures and has been implicated as having potential neuroprotective action. Further, antioxidant properties of resveratrol have been reported to protect against coronary heart disease. We attempted to examine the HO-1 inducing potency of resveratrol and the regulatory mechanism of its induction in rat aortic smooth muscle cells (RASMC). We showed that resveratrol-induced HO-1 expression was concentration- and time-dependent. The level of HO-1 expression and its promoter activity mediated by resveratrol was attenuated by nuclear factor-kappa B (NF-kappaB) inhibitors, but not by mitogen-activated protein kinase (MAPK) inhibitors. Deletion of NF-kappaB binding sites in the promoter region strongly reduced luciferase activity. Collectively, we suggest that resveratrol-mediated HO-1 expression occurs, at least in part, through the NF-kappaB pathway.