Inhibitiory effect of trilinolein on endothelin-1-induced c-fos gene expression in cultured neonatal rat cardiomyocytes

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摘要

Abstract

Trilinolein, isolated from the traditional Chinese herb Sanchi (Panax notoginseng), has been shown to have myocardial protective effects via its antioxidant ability. However, the cellular and molecular mechanisms of the protective effect of trilinolein in the heart remain to be elucidated. Oxidative mechanisms have been implicated in neonatal cardiomyocyte hypertrophy. We previously reported that ET-1 induces ROS generation via the ET(A) receptor and ROS modulates c-fos gene expression. We have therefore examined whether trilinolein attenuates ROS production and ET-1-induced c-fos gene expression in cardiomyocytes. Cultured neonatal rat cardiomyocytes were stimulated with ET-1 (10 nM), and c-fos gene expression was examined. Trilinolein (1 and 10 microM) inhibited ET-1-induced c-fos gene expression in cardiomyocytes. We also examined the effects of trilinolein on ET-1-increased NADPH oxidase activity and superoxide formation. Trilinolein inhibited ET-1-increased NADPH oxidase activity and superoxide formation in a concentration-dependent manner. This increase in superoxide production by ET-1 was significantly inhibited by trilinolein, diphenyleneiodonium, or N-acetylcysteine. Trilinolein also decreased ET-1- or H2O2-induced extracellular signal-regulated kinase (ERK) phosphorylation, c-Jun NH2-terminal kinase (JNK) phosphorylation, and activator protein-1 activation. These data indicate that trilinolein inhibits ET-1-induced ERK phosphorylation, JNK phosphorylation, and c-fos gene expression via attenuating superoxide production in cardiomyocytes