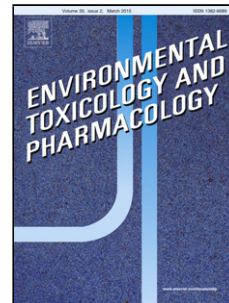


Accepted Manuscript

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PII: S1382-6689(17)30251-X
DOI: <http://dx.doi.org/10.1016/j.etap.2017.08.026>
Reference: ENVTOX 2861

To appear in: *Environmental Toxicology and Pharmacology*

Received date: 29-3-2017
Revised date: 22-8-2017
Accepted date: 28-8-2017

Please cite this article as: <http://dx.doi.org/>

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<AT>Sulforaphane Mitigates Cadmium-Induced Toxicity Pattern in Human Peripheral Blood Lymphocytes and Monocytes

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<ABS-HEAD>Highlights ► Cd exhibited dose- and time-dependent cytotoxicity ► Sulforaphane treatment resulted in 17–20% recovery from Cd-induced cell death ► Sulforaphane modulates Cd toxicity pattern

<ABS-HEAD>Abstract

<ABS-P>Cadmium (Cd) is a highly toxic and widely distributed heavy metal that induces various diseases in humans through environmental exposure. Therefore, alleviation of Cd-induced toxicity in living organisms is necessary. In this study, we investigated the protective role of sulforaphane on Cd-induced toxicity in human peripheral blood lymphocytes and monocytes. Sulforaphane did not show any major reduction in the viability of lymphocytes and monocytes. However, Cd treatment at a concentration of 50 μM induced around 69% cell death.

<ABS-P><ST>Treatment</ST> of IC₁₀-Cd and 100 μM sulforaphane combination for 24 and 48 h increased viability by 2 and 9% in cells subjected to Cd toxicity, respectively. In addition, IC₂₅ of Cd and 100 μM sulforaphane combination recovered 17–20% of cell viability. Cd induced apoptotic and necrotic cell death. Sulforaphane treatment reduced Cd-induced cell death in lymphocytes and monocytes. Our results clearly indicate that when the cells were treated with Cd+sulforaphane combination, sulforaphane decreased the Cd-induced cytotoxic effect in lymphocytes and monocytes. In addition, sulforaphane concentration plays a major role in the alleviation of Cd-induced toxicity.

<KWD>Keywords: environmental exposure; Cadmium; sulforaphane; food

<H1>1. Introduction

Metallic elements with high atomic weight and high density are referred to as heavy metals, and they have great potential to cause toxicity in living organisms. Heavy metals are highly toxic as they induce toxicity even at low levels of exposure (Duruibe et al., 2007). Currently, heavy metal toxicity is receiving great attention because of the exponentially increasing global and ecological public health concern associated with

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