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Protective effect of lycopene against chemical and natural toxins: A review

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Abstract

People are exposed to a number of environmental, occupational, and therapeutic toxic agents which may be natural or man made. These hazardous substances may manifest as direct side effects on the function of organs or indirectly induced alteration of gene expression, cancer-associated metabolic pathways, and/or alter homeostasis. Lycopene, as a one of the most potent antioxidant, is found in fruits and vegetables. High-intake of lycopene has been shown to be effective in decreasing the risk of both natural toxins including mycotoxins, bacterial toxins, and chemical toxins including heavy metals, pesticides as well as herbicides. Recently, there is growing attention in understanding the mechanisms of the phytochemicals and carotenoids as antioxidative, antiapoptotic, radical scavenging, and chelating agents and their roles in the modulation of inflammatory pathways. This review summarizes available data from several recent studies about lycopene and its role against chemical and natural toxicants. © 2018 BioFactors, 45(1):5-23, 2019.

Keywords: antioxidants; carotenoid; heavy metals; lycopene; mycotoxins.

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