Chemoprotective mechanism of the natural compounds, epigallocatechin-3-O-gallate, quercetin and curcumin against cancer and cardiovascular diseases.

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Abstract
Cancer and cardiovascular disease (CVD) chemoprevention can be achieved by the use of natural, synthetic, or biologic compounds to reverse, suppress, or prevent the development of diseases. Chemoprevention is a potential anti-cancer approach, which has reduced secondary effects in comparison to classical prophylaxis. Natural compounds such as flavonoids reduce oxidative stress, which is the most likely mechanism in the protective effects of these compounds. Even though the exact mechanisms of action are not well understood another central action mechanism of polyphenolic flavonoids seems to be an induction of apoptosis as demonstrated in numerous cellular systems. Moreover, flavonoids may modulate protein and lipid kinase signaling pathways. Understanding the mechanism of these natural products will contribute to the development of more specific preventive strategies against cancer and CVD. Much of the research in the field is focused on epigallocatechin-3-O-gallate (EGCG), quercetin and curcumin, which were found to have beneficial effects against cancer and CVD. We review the chemoprotective mechanisms through which these natural compounds exert their beneficial effects against cancer and CVDs.

PMID: 19355899 [PubMed - indexed for MEDLINE]