

# **Cancer Chemoprevention by Tea Polyphenols- a review.**

梁有志

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## **Abstract**

Tea is one of the most widely consumed beverages, second only to water. Many experimental researches in laboratory animals demonstrated that tea components had an inhibitory effect on carcinogenesis at a number of organ sites. The inhibitory effects of tea against carcinogenesis have been attributed to the biologic activities of the polyphenol fraction in tea. This review summarizes experimental data on chemopreventive effects of tea polyphenols in various tumor bioassay systems. Many laboratory studies have demonstrated the inhibitory effects of green tea polyphenols, especially (-)-epigallocatechin-3-gallate (EGCG), on carcinogenesis in animals models. The majority of these studies have been conducted in mouse skin tumor models, where tea polyphenols were used either as oral feeding in drinking water or in direct local application. Most studies used 12-O-tetradecanoylphorbol-13-acetate (TPA) or ultraviolet (UV) radiation as the tumor promoter and found anticarcinogenic effects caused by green tea polyphenols. Black tea was also found to be effective, although the activity was weaker than that of green tea in some experiments. Other studies showed that black tea polyphenols-theaflavins exhibited stronger anticarcinogenic activity than did EGCG. Caffeine in tea was also important for tea to prevent tumorigenesis. The molecular mechanisms of the cancer chemopreventive effects of tea polyphenols are not completely understood. They are most likely related to the mechanisms of biochemical actions of tea polyphenols, which include antioxidative activities, modulation of xenobiotic metabolite enzymes and inhibition of tumor promotion. In addition, we have also proposed that tea polyphenols function as cancer chemopreventive agents through modulation of mitotic signal transduction. However, the molecular mechanisms involved in this modulation need further investigation.