

Can drinking tea prevent cancer?

A controversy revisited

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Tea remains one of the most consumed beverages worldwide and interestingly, several epidemiological studies suggest that the consumption of tea, in particular green tea, may prevent cancer. This has initiated a controversial debate about the potential anti-carcinogenic effects of tea and the possible mechanisms involved (Jankun et al. 1997; Yang 1997). In a widely cited correspondence, Jankun et al. identified the tea polyphenol epigallocatechin-3 gallate (EGCG), as an inhibitor of urokinase (uPA) (Jankun et al. 1997). EGCG was shown to block His 57 and Ser 195 of the uPA catalytic triad, thereby interfering with the ability of uPA to recognize its substrates (Jankun et al. 1997). However, the theory that tea polyphenols prevent cancer by inhibition of urokinase was almost immediately challenged (Yang 1997). One argument by Chung S. Yang was that the effective concentration of tea polyphenols needed to inhibit urokinase (2–10 mM), suggested by Jankun et al. was at least three or four orders of magnitude higher than concentrations of EGCG normally expected in tissues (Yang 1997).

More than 10 years after the discussion of a role of urokinase inhibition as an anti-carcinogenic effect of tea polyphenols, much knowledge has been added to this field of research. Today, prevention of oxidative stress (Beyersmann and Hartwig 2008; Glahn et al. 2008; Arivarasu et al. 2008; Matés et al. 2008; Hengstler and Bolt 2008a, b; Sivalingam et al. 2008; Do Amaral et al. 2008; Abraham and Sugumar 2008), modulation of carcinogen metabolism (Strassburg et al. 2008; Pelkonen et al. 2008; Narahariseti

et al. 2008; Höhme et al. 2007; Hewitt et al. 2007; Hengstler et al. 2000) and prevention of DNA damage (Flori and Schulz 2008; Zhang et al. 2008; Hengstler and Bolt 2008a, b), mechanisms most frequently addressed in our journal, have also been suggested to contribute to the anti-carcinogenic effects of tea polyphenols. The editors are pleased that Chung S. Yang (University of New Jersey), Joshua D. Lamberg (The Pennsylvania State University) and Shengmin Sang (North Carolina Central University), some of the most recognized experts in the field of tea polyphenols, have accepted our invitation and contributed a comprehensive review about the anti-carcinogenic activities of tea (Yang et al. 2008).

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