

Effects of black and green tea on *in vitro* lipoprotein oxidation in human serum

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Results of several studies suggest that a higher tea consumption may reduce cardiovascular disease risk. Potential mediators of such an effect are antioxidant phenolic compounds found in tea which may inhibit lipoprotein oxidation. Dietary antioxidants that prevent or inhibit oxidative damage to lipoproteins may help to prevent atherosclerosis. Both black and green teas can be major dietary sources of flavonoids and other phenolics with antioxidant activity. Flavonoids constitute about 20 to 30 % of the weight of the green tea leaf and less than 5% of the black tea leaf. The black tea leaf is higher in phenolic compounds derived during the fermentation process used to manufacture black tea. Differences in composition may result in differences in antioxidant activity. Antioxidant effects of flavonoids and other phenolic compounds found in tea have been demonstrated in many *in vitro* studies. However, there is little data on the antioxidant activity of teas as they are used for human consumption. The aim of this study was to examine and compare the antioxidant activity of aqueous extracts of black and green teas.

The tea extracts were prepared using a method similar to that used to prepare infusions of tea for drinking. Antioxidant activities of seven black teas and four green teas, and pooled black and green tea, were assessed using an *in vitro* assay that measures Cu^{2+} -induced oxidative modification of lipoproteins in human serum. Diene formation from lipoprotein fatty acids in diluted serum was assessed by measuring change in absorbance at 234nm.

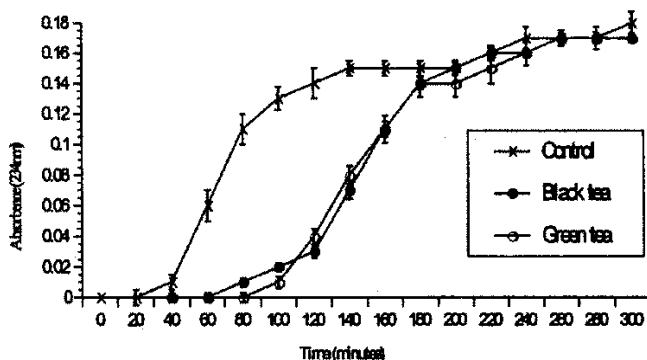


Figure. Effect of 1 in 3000 dilutions of pooled black and green tea on lipoprotein oxidation in human serum [Each point represents the mean of 8 measurements, and results are presented as mean \pm SEM]

All tea extracts inhibited *in vitro* lipoprotein oxidation in human serum. Results for the pooled extracts of black and green tea are presented in the Figure above. No significant difference in mean antioxidant activity was found between the black and green teas tested. These results are consistent with those of previous studies in which antioxidant effects of tea and its flavonoid components have been shown in various *in vitro* assay systems. However, the results suggest that non-flavonoid components of black tea can contribute to antioxidant activity. Further studies are required to determine if black and green tea consumption results in antioxidant effects *in vivo*.