

## ***In-vitro* and *In-vivo* Antioxidant Activity of High-Grown Sri Lankan Black Tea (*Camellia Sinensis L.*)**

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### **ABSTRACT**

The antioxidant potential of high-grown Sri Lankan black tea (BOPF grade, obtained from St Coombs Estate, Talawakelle) was measured in this study. Antioxidant activity was measured both *in vitro* (radical scavenging activity using DPPH assays and inhibition of lipid peroxidation using TBARS assays) and *in vivo* (using DPPH assays on rat serum, following oral administration for three months). The study also estimated total polyphenols, caffeine, theaflavin, thearubigin and total catechin levels, and individual levels of five major catechins (EGCG, EGC, ECG, EC and C).

The results show that Sri Lankan black tea possesses mild but dose-dependant antioxidant activity *in vitro*. The *in-vivo* antioxidant activity was both dose- and time-dependant. The antioxidant activity of serum was elevated only as long as the tea was administered to the rat.

**Key words:** *Camellia sinensis*, Sri Lankan tea, antioxidant activity.

### **INTRODUCTION**

A hot, aqueous infusion of the processed leaves of the *Camellia sinensis L.* plant (black tea) is the most popular and widely-consumed beverage in the world (Lai *et al.*, 2001).

Black tea contains 15 – 30% antioxidant flavonoids, which are polyphenolic phytochemicals, on a dry weight basis (Hara, 1997). The predominant flavonoids in fresh tea leaves are flavanols. The major flavanols in fresh leaf are catechins or flavan-3-ols. Six types of major catechins have been identified: epigallocatechin gallate (EGCG), epigallocatechin (EGC), epicatechin gallate (ECG), epicatechin (EC), galocatechin (GC) and catechin (C) (Hilton *et al.*, 1973).