

## THE EXTENT OF INHIBITION OF LIPID AND PROTEIN OXIDATION BY HIGH GROWN GREEN TEA AND BLACK TEA (BOPF) *In vitro*

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Tea (*Camellia sinensis*) is one of the most commonly consumed drinks in the world, which has many health benefits. BOPF graded black, green and white teas are types of processed teas in Sri Lanka. The antioxidants in tea are able to inhibit oxidation of lipids and proteins and thereby assist to prevent diseases. This study aims to determine the inhibition of oxidation of proteins and lipids by high grown black and green tea extracts *in vitro*. Lipid peroxidation was evaluated by measuring the level of thiobarbituric acid reactive species (TBARS), using ascorbic acid as the standard. Protein oxidation was assessed by measuring protein carbonyl contents using gallic acid as the standard. The results of the TBARS assay showed that there is an increase in the inhibition up to 200  $\mu\text{g/ml}$  of dried tea leaves for green tea and up to 150  $\mu\text{g/ml}$  of dried tea leaves for black tea with a maximum inhibition of 40.58% and 30.36% respectively. Both types of teas showed a negative deviation for higher concentrations over above

concentrations. The EC<sub>50</sub> values for inhibition of protein oxidation were 684.68 and 967.79  $\mu\text{g/ml}$  of dried tea leaves for green tea and black tea respectively. These results also indicate that the extracts have a protective ability against oxidative damage to lipids and proteins by reducing the activity of Reactive Oxygen Species (ROS). In this study, it has been proved that antioxidant properties of green tea have a higher ability than black tea to inhibit the oxidation of biomolecules. The analysed plant extracts were comparable to or even more effective in scavenging DPPH which have been studied previously. Therefore, this may be beneficial in the prevention of diseases related to oxidative stress such as cancer, and cardiovascular and inflammatory diseases.

**Keywords:** Protein carbonyl content, Thiobarbituric acid, Peroxidation