

## **Development of antioxidants rich herbal tea bags and determination of the effect of infusion conditions on antioxidant activities**

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Antioxidants protect cells from oxidative damage. The study was aimed to develop antioxidant-rich herbal tea bags and determine the effect of infusion conditions on antioxidant potential. Herbal tea bags were prepared by incorporating different proportions of *Osbeckia octandra* (Heen bovitiya) leaves, *Camellia sinensis* (green and black tea) leaves, *Vanilla planifolia* (Vanilla) pods, *Zingiber officinale* (Ginger) rhizomes and *Allium sativum* (Garlic) bulbs. Extracts were obtained at 80 °C, 90 °C and 100 °C for 7 minutes and at 100 °C for 3, 5 and 7 minutes. Total phenolic content (TPC), total flavonoid content (TFC) and antioxidant activity using 2,2-diphenyl-1-picrylhydrazyl (DPPH) and ferric-reducing antioxidant power (FRAP) assays were determined for each extract. Data was analyzed with one sample t-test. It was found that TFC, TPC and antioxidant activity were significantly different at different infusion conditions ( $p < 0.05$ ). At constant infusion time (7 minutes), TFC, TPC and antioxidant activity of *O. octandra* incorporated black tea bags were higher when brewed at 100 °C compared to 80 °C and 90 °C while they were higher for *O. octandra* incorporated green tea bags when infused at 80 °C compared to 90 °C and 100 °C. At constant infusion temperature (100 °C), values for black tea bags were higher when brewed for 3 minutes compared to 5 and 7 minutes whereas it was higher for green tea bags when infused for 7 minutes compared to 3 and 5 minutes. Hence, it was concluded that antioxidant activity of each extract was significantly higher than tea samples developed without addition of *O. octandra* leaves. Further, to obtain antioxidant rich tea, *O. octandra* incorporated black tea should be brewed in boiling water (100 °C) for a short period (3 minutes) and *O. octandra* incorporated green tea should be brewed for a long period (7 minutes) at a low temperature (80 °C).

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