

Evaluation of the antioxidant activity of the six selected herbal teas used in Sri Lanka

K. M. N. P. Kumari, K. Siridewa

Department of Biochemistry and Molecular Biology, Faculty of Medicine, University of Colombo, Sri Lanka

Oxidative stress, resulting from an imbalance between reactive oxygen species (ROS) and antioxidants, is a key factor in the progression of many chronic diseases. Plant-derived secondary metabolites are well-documented for their antioxidant properties, which have been a therapeutic target for various metabolic diseases. Plants have been consumed in different states, including herbal teas, which is a common cultural practice all over the world. This study is designed to assess the antioxidant potential of six selected herbal teas used in Sri Lanka. Decoctions were prepared by boiling 5 g of fresh plant material in 50 mL of distilled water at 95 °C for 1 h, yielding an initial concentration of 100 mg/mL (fresh weight basis). The tested plants included whole plants of *Cardiospermum halicacabum* (Wel penala), *Eleusine indica* (Belathana), *Hemidesmus indicus* (Iramusu), *Bacopa monnieri* (Lunuwila), and bark and leaves of *Terminalia arjuna* (Kumbuk). Decoctions were filtered and tested for antioxidant activity using the ABTS radical cation decolorization assay at 734 nm. Ascorbic acid was used as the standard reference. The IC₅₀ values were expressed in mg/mL. Data were analyzed using Tukey's one-way ANOVA, with significance set at $p < 0.05$. Among the tested samples, *T. arjuna* bark exhibited the strongest antioxidant activity with an IC₅₀ of 1.25 mg/mL, followed by *T. arjuna* leaves (6.994 mg/mL) and *H. indicus* (25.14 mg/mL). The remaining teas from *C. halicacabum*, *E. indica*, and *B. monnieri* demonstrated comparatively lower activity (IC₅₀ > 1.0 mg/mL). The differences between *T. arjuna* bark and the other samples were statistically significant ($p < 0.05$). Kumbuk bark tea is the best potential therapeutic for oxidative stress among the tested samples. Further evaluations are necessary to perceive antioxidant compounds and other associated metabolites in potential herbal teas to develop precise therapeutic strategies for oxidative stress with minimal side effects.

Keywords: *Antioxidants, Herbal teas, IC₅₀, Oxidative stress*