Evaluation of Antioxidant Properties of Heen bovitiya (*Osbeckia octandra* L.) Leaf Extract

K. Saagarey[1], K. Thadchajini[1], S. Kirushanthan[1], and S. Thatchaneshkanth [2]
[1]Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna, Sri Lanka
[2]Department of Animal Science, Faculty of Agriculture, University of Jaffna, Sri Lanka
*kaartheevan.saagarey@gmail.com

Antioxidants neutralize free radicals and reduce oxidative damage in biological systems and food matrices. Growing concerns over synthetic antioxidant safety have driven interest in plant-based alternatives. *Osbeckia octandra* (Heen Bovitiya) is an indigenous Sri Lankan medicinal plant traditionally used in herbal treatments, known for its rich phytochemical profile. This study evaluated the antioxidant properties of *O. octandra* leaf extract. Leaves were dried, powdered, and extracted using 80% (V/V) methanol under varying shaking times (1, 6, 12, 24, and 48 hours) and dilution factors (1:10, 1:50, 1:100, 1:200, and 1:250; sample: solvent). Statistical analysis was performed using R Studio, with mean values compared via Tukey post-hoc test in triplicates. Total phenolic content (TPC) and total flavonoid content (TFC) were determined using Folin–Ciocalteu and Aluminium Chloride colorimetric assays, respectively. The highest TPC (888.37 ± 0.1 mg GAE/g (mg gallic acid equivalents per gram)) was recorded at 24 hours with 1:250 dilution, while maximum TFC (2.27 ± 0.06 mg QU/g (mg quercetin equivalents per gram)) was obtained at 24 hours with 1:100 dilution. Antioxidant activity was assessed through DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2'-azino-bis (3-ethyl benzo thiazoline-6-sulphonic acid)) radical scavenging assays. The DPPH IC_{50} was 37.17 µg/mL at 24 hours and 1:250 dilution, comparable to standard ascorbic acid, while the ABTS IC_{50} was 24.00 µg/mL under the same conditions, reflecting stronger activity. Overall, *O. octandra* leaves demonstrated significant ($p<0.05$) antioxidant properties. The biphasic extraction pattern observed indicates differential compound release and stability, with prolonged extraction potentially causing degradation. These findings support the development of standardized extraction protocols and establish Heen bovitiya as a promising natural antioxidant for food preservation and functional product applications.

Keywords: ABTS, Antioxidant, DPPH, Extraction kinetics, Heen bovitiya