

Antioxidant Activity in Selected Fresh Vegetables in Jaffna

M. G. A. N. Karunasiri

Department of Botany,
Faculty of Science,
University of Jaffna, Sri Lanka

asirinisk@gmail.com

N. Ravimannan

Department of Botany,
Faculty of Science,
University of Jaffna, Sri Lanka

nravi@jfn.ac.lk

P. Sevvell

Department of Botany,
Faculty of Science,
University of Jaffna, Sri Lanka

sevvell@jfn.ac.lk

Abstract

Generally, fruits and vegetables are very good source of natural antioxidants which consist of many different antioxidant components. Though there are many vegetables available with high antioxidant values and high mineral composition, most of them are very expensive. So as an alternative source of minerals and antioxidants we can move to conventional vegetables. The vegetable samples were selected from Thirunelveli market in Jaffna. The procedure was carried out to determine the antioxidant activity in the formulation which was proposed by Brand Williams, and it is based on the inhibition of the free radical 2, 2-diphenyl-1-picrilhydrazil (DPPH) in ethanol extract of the samples. According to the results, Okra (*Abelmoschus esculentus*) had the highest EC₅₀ value (9.255 ± 0.130 mg/mL) while beetroot (*Beta vulgaris crassa*) had the lowest EC₅₀ value (0.743 ± 0.032 mg/mL) among these vegetables. It showed that Okra (*A. esculentus*) had the lowest antioxidant activity while beetroot (*B. crassa*) had the highest antioxidant activity. Beetroot (*B. crassa*) got lowest EC₅₀ value, but this EC₅₀ value was higher than the standard L-Ascorbic acid (0.005 ± 0.001 mg/ml). None of the samples showed significantly more or less similar EC₅₀ for standard L - Ascorbic acid. All the selected vegetable samples are significantly different from each other as well as from L- Ascorbic acid. The EC₅₀ value reduced significantly ($p < 0.05$) ie., okra (*A. esculentus*) 9.255 ± 0.130 mg/mL > bittergourd (*Momordica charantia*) 6.532 ± 0.083 mg/mL > brinjal (*Solanum melongena*) 5.785 ± 0.022 mg/mL > tomato (*Solanum lycopersicum* L.) 3.243 ± 0.137 mg/mL > banana peppers (*Capsicum annum*) 3.151 ± 0.079 mg/mL > green chili (*Capsicum annum*) 2.702 ± 0.074 mg/mL > carrot (*Daucus carota*) 1.893 ± 0.018 mg/mL > yard long beans (*Vignaun guiculata* subsp. *Sesquipedalis*) 1.476 ± 0.095 mg/mL > beans (*Phaseolus vulgaris*) 1.066 ± 0.074 mg/mL > beetroot (*B. crassa*) 0.743 ± 0.032 mg/mL. Conversely DPPH antioxidant activity increased significantly in ascending order. Considering these results, the local vegetables also contain high antioxidant activities and can be included in our diet to lead a healthy life.

Keywords - Antioxidants, DPPH method, EC₅₀ value, Radicals, Vegetables