



Comparison study of the oxalate content in commonly used green leafy vegetables

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Consumption of large amount of oxalate could be harmful because of the formation of calcium oxalate deposits in vital tissues or organs of the body. Patients with kidney stone problems are advised to limit dietary oxalate intake to 40-50 mg per day. In this study, commonly consumed green leafy vegetables (GLVs) such as spinach, Gotukola, cup leaves, *Mukunuwanna*, leeks, *Kangkung*, *Hathawariya*, *Minchi*, *Kathurumurunga*, *Thebu*, curry leaves, *Bulath*, manioc, cabbage and salad leaves were studied gravimetrically to determine the oxalate content. Edible portion of plant material was air dried, homogenized, refluxed for 12 hours, filtered, extracted with analytical grade diethyl ether, saturated with a calcium solution and then separated. The diluted and acidified solution with distilled water was titrated with standard KMnO_4 assuming oxalate was the only oxidizable species. The experiments were carried out in triplicate for each species. Only a very few related studies are available in literature and the results were comparable. The results revealed that oxalate contents in GLVs ranged from (556.04 ± 1.60) mg to (3.20 ± 2.45) mg per 20 g of raw GLV portion. Also, the results confirmed that the GLVs can be divided into four categories based on the oxalate content as high (> 200 mg), medium (199 mg – 100 mg), low (99 – 10 mg) and undetectable (< 10 mg). *Hathawariya*, spinach, curry leaves and *Kangkung* showed the highest amount of oxalate ranging from 556.04 ± 1.60 to 238.04 ± 1.84 mg per 20 g, while cabbage, salad leaves and leeks showed undetectable amount of oxalate ranging from 7.47 ± 1.84 to 3.20 ± 2.45 mg. It is interesting to note that commonly consumed GLVs by Sri Lankans have detectable amount of oxalate content which exceeds the minimum advisable level according to American Diabetes Association. Adding such GLVs to meal along with calcium supplements may worsen the health condition of kidney stone patients.

Keywords: Oxalate content, Green leafy vegetables, Gravimetry, Kidney stones

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