

Oxalic acid content in green leafy vegetables

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Abstract

Oxalic acid is toxic in increased quantity due to the promotion of kidney stone formation, inhibition of mineral absorption etc. Oxalic acid is a metabolic end product naturally present in plant materials. Green leafy vegetables being an essential part of a Sri Lankan diet often beneficial with high amount of fiber, β -carotene and minerals may contain oxalic acid. Thus, the objective of the present study was to determine the oxalic acid content of some green leafy vegetables commonly consumed in Sri Lanka since this data is not currently available.

Plant materials were collected mainly from the Western province. The edible portion was homogenized, extracted and titrated with potassium permanganate solution. According to the oxalic acid contents of the plant materials, the plants were categorized in to 3 groups. a) Leaves with high oxalic acid content *mukunuwenna* white and red stemmed (245-892 mg/100 g), *sarara* (creeper and plant) 400-1071 mg/100 g, spinach [326-563 mg/ 100 g], *thampala* red and green stemmed [209-947 mg/100g]; b) Leaves with low oxalic acid (≤ 200 mg/100g) content (passion fruit [39-62 mg/100g], manioc red and white stemmed [75-200 mg/100g], *katurumurunga* [46-71 mg/100g], *kankun* [20-54 mg/100g], *kohila* [20-93 mg/100g], *asamodagam* [16-78 mg/100g], *anguma* leaves [15-34 mg/100g]) 8 and c) Leaves with undetectable amount [<14 mg/100g] of oxalic acid (*gotukola*, lettuce and cabbage).

The contribution of oxalic acid to the diet by green leafy vegetables is relatively low when the edible portion is considered in all the leaves analyzed in the present study. However, inclusion of a variety of leaves in the diet will be more beneficial instead of frequent consumption of high oxalic containing leaves which may decrease the absorption of minerals in the meal. In addition, people with kidney stone diseases or family history of the kidney stone diseases should avoid frequent consumption of high oxalic acid containing green leafy vegetables such as *nivithi*, *sarana*, *mukunuwenna* and *thampala*.