Effect of different cooking and processing methods on the nutritional quality of green leafy vegetables

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Nutritional values of vegetables may vary due to different cooking methods. The purpose of the study was to evaluate the nutritional losses during preparation of leafy vegetables, with particular reference to vitamin A (Carotene), Vitamin C (Ascorbic acid) and protein in five selected leafy vegetables with a view to recommending the most suitable way of preparation of green leafy vegetables. The leafy vegetables used were Kankun (*Ipomoea aquatica*), Anguna (*Dregea volubilis*), Penelawel (*Cardiospermum helicacabum*), Basella (*Basella alba*) and Coriander (*Coriandrum sativum*). These were treated with heat (steam, boil, stewed), blanching solutions (1.2% NaCl, 2% NaCl, $NaHCO_3$, citric acid, $CaCl_2$, sucrose) and air (shade dried) and analyzed for nutrient levels. Moisture, ash, crude fat and crude fiber content were also determined for the selected raw leaf samples. All the nutrients were estimated on fresh weight basis.

The moisture content was highest in Kankun, while the highest ash content was in Anguna. The crude fat and crude fiber were highest in Penelawel and Anguna respectively. Results of this study indicated that moisture, ash, crude fat, crude fiber, vitamin C, carotenoids, and protein contents in raw leafy vegetables were in the range of 82.5 % - 90.03 %, 1.3333 % - 3 %, 0.25833 % - 3.8333 %, 5.47 % - 31.65 %, 90.5 mg / 100 g – 138.25 mg / 100 g, 1210 microgram / 100 g – 3130 microgram / 100 g, and 3.0075 g / 100 g – 4.4175 g / 100 g respectively. The bio-availability of carotenoids was calculated in terms of retinol equivalents. Of the green leafy vegetables, retinol equivalent was highest in coriander (3130 microgram / 100 g) followed by Basella leaves (2980 microgram / 100 g). Anguna had the lowest (1210 microgram / 100 g) with moderate values ranging from 1465 microgram / 100 g 1945 microgram / 100 g.

Steaming is preferred over boiling because it results in less loss of nutrients. Employing appropriate cooking/ blanching/drying methods using minimal time and moderate temperatures can minimize loss of nutrients. Blanching and cooking resulted in a significant loss of nutrients. Based on the results of this study, the vegetables were good dietary sources of vitamins. The content of protein, carotene and ascorbic acids in leafy vegetables were significantly affected by the treatments.

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