

Carotenoids retention in leafy vegetables based on cooking methods

ABSTRACT

Green leafy vegetables are good sources of carotenoids. Generally, food composition databases related to raw foods are available, but data on cooked foods in Malaysia are still lacking. Since carotenoids are prone to degradation during cooking processes, the present study was undertaken to evaluate the extent of nutrient loss in vegetables subjected to two conventional cooking methods, which were boiling and stir-frying with cooking durations of 4 and 8 minutes. The vegetables selected were Chinese cabbage (*Brassica Pekinensis* var. *cephalata*), swamp cabbage (*Ipomoea aquatica*), spinach (*Spinacia oleracea*), Ceylon spinach (*Basella rubra*), red spinach (*Amaranthus gangeticus*), white spinach (*Amaranthus viridis*) and tapioca shoots (*Manihot utilissima*). Percentage losses of nutrients after cooking treatment were calculated based on retention factors. Results obtained showed that stir-frying had reduced lutein content for all vegetables ranging from 8-89% while the effect of boiling for lutein varied (0-428%) with different vegetables at both cooking durations of 4 and 8 min. Boiling for 8 min increased retention of β -carotene in all vegetables ranging from 18-380% except for Chinese cabbage and spinach compared with 4 min, while stir-frying generally increased the retention of β -carotene for all vegetables 2-3 times except for spinach. Cooked vegetables have variations in carotenoids composition brought by varying cooking conditions (time and temperature), type of vegetables and the interaction between cooking methods and type of vegetables.

Keyword: Vegetables; Retention; β -carotene; Cooking methods, Lutein