Vitamin A, an essential micronutrient has its deficiency remaining as a major public health problem in developing countries. The deficiency is caused by insufficient intake of foods rich in Vitamin A or pro-vitamin A carotenoids and its prevalence contributes substantially to morbidity and mortality among children. Carotenoids, with B-carotene as the primary pro-vitamin carotenoid in dark green leafy vegetables (DGLVs) are important for their various biological functions. The DGLVs are season dependent but can be preserved by dehydration to ensure their availability during the dry seasons to reduce cases of the deficiency. The B-carotene content and retinal (Vitamin A) in serum of preschool children after consumption of dehydrated cowpeas and amaranthus leaves were quantified. Preschool children (study subjects) were involved in a 13-week intervention period. Extracts from vegetable and serum samples were analysed by High Performance Liquid Chromatography. Elution was performed isocratically with systems of methanol:dichloromethane:water (79:18:3, V:v:v), methanol:dichloromethane:water (83:15:2, v:v:v) and acetonitrile:water (85:15, v:v) for vegetable samples, serum B-carotene (S-BC) and serum retinal (S-R) analysis respectively. Fresh blanched vegetable leaves, contained high levels of the all-trans B-carotene; 779-827 ug/g DM for cowpeas and 553-639ug/g DM for amaranthus. Although they reduced with dehydration and cooking, retentions for B-carotene were over 50% after dehydration and cooking. Thus, receipts provided sufficient amounts of retinal equivalents (RE)/day from both fresh and sun-dried vegetables to meet the recommended daily allowances for the study subjects. Serum beta-carotene concentrations were found to be within the normal range at baseline and increased significantly post-interventional for both study groups (p<0.000, df = 110, for fresh vegetable group and p<0.000, de = 38 for dehydrated vegetable group. There was a negative correlation between baseline S-BC and change in S-BC for study subjects. However, the increase in S-BC of subjects in the fresh vegetable group was higher as compared to those of the sun-dried group. Although the control group for the fresh vegetable study group had an increase in S-BC, that of the dehydrated group had a decrease, but these changes were not statistically significant. The subjects in the fresh and dehydrated vegetable groups had marginally lower S-R concentrations at baseline but there was significant changes after intervention (p<0.000, df = 110, for fresh vegetable and p<0.000, df = 38 for dehydrated group). McNemars chi-square tests showed that at baseline, 55% and 70% of study subjects in the fresh and dehydrated vegetable study groups respectively had low S-R concentrations with the percentages reducing to 36% and 30% respectively post-intervention. Correlation analysis was negative between the baseline S-R and change in S-R for subjects in both the study and control groups. While data from individual subjects support the homeostatic regulation of vitamin A improved the bio-availability of beta-carotene and bioconversion of beta-carotene to retinal. The findings contribute to the link between increased consumption of carotenoids from DGLVs and bio-availability of the same.

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