B-73: Pro-vitamin A carotenoids in some leafy vegetables

R M S Ratnayake[1], W R Wimalasiri[1], P A J Perera[2], K N H Weligama[2]
([1]Dept of Biochem, Faculty of Dental Sciences & [2]Dept of Biochem, Faculty of Medicine, Univ of Peradeniya)

Vitamin A deficiency is observed mainly in rural, dry and arid zones. It is probably due to non-availability and poor knowledge of vitamin A rich foods. Although vitamin A is most available in foods of animal origin, the high cost of these makes them less available to many people in Sri Lanka.

This project tries to identify cheap sources rich in pro-vitamin A and to evaluate the concentrations of different carotenoids in them. Further, the bioavailability of carotenoids will be calculated in terms of retinol equivalent.

The edible portion of fresh leafy vegetables, in duplicate, were extracted with a mixture of petroleum and acetone. The extracts after concentration were chromatographed on calcium hydroxide using a gradient of petroleum and acetone mixtures. The carotenoids, α, β and y, eluted from the column were identified by UV spectroscopy and thin layer chromatography. The concentration of each carotenoid was determined by colorimetry.

The leafy vegetables analysed comprised: Anguna *(Dregia volubili)*, Erabadu *(Erythrina variegata)*, Ikiriya *(Hydrophila asiatica)*, Kankun *(Ipomea aquatica)* kiriala *(Colocasia esculenta)*, Thampala *(Amaranthus oleraceus)*, Thebu *(Costus speciosus)*, Vel; penela *(Cardiospermum halicacabum)*, Water spinach *(Basella alba)* and Yellow pumpkin *(Cucurbita maxima)*. The retinol equivalent was highest in Thebu *(18.7μg/g)* followed by kiriala (17.4μg/g). Intermediate values were seen in Anguna (7.0μg/g) and Vel penela (10.0μg/g) with all others having values between 5.6 and 2.2μg/g. Among the carotenes, β carotene was the highest, α carotene intermediate and y the lowest, with the exception of Kiriala, when the y carotene was higher than α carotene content.